

**Francine Gignac**

**BUILDING**  
**SUCCESSFUL**  
**VIRTUAL**  
**TEAMS**



**CD-ROM  
INCLUDED**

# **Building Successful Virtual Teams**

## DISCLAIMER OF WARRANTY

The technical descriptions, procedures, and computer programs in this book have been developed with the greatest of care and they have been useful to the author in a broad range of applications; however, they are provided as is, without warranty of any kind. Artech House, Inc. and the author and editors of the book titled *Building Successful Virtual Teams* make no warranties, expressed or implied, that the equations, programs, and procedures in this book or its associated software are free of error, or are consistent with any particular standard of merchantability, or will meet your requirements for any particular application. They should not be relied upon for solving a problem whose incorrect solution could result in injury to a person or loss of property. Any use of the programs or procedures in such a manner is at the user's own risk. The editors, author, and publisher disclaim all liability for direct, incidental, or consequent damages resulting from use of the programs or procedures in this book or the associated software.

For a complete listing of the *Artech House Professional Development and Technology Management Series* turn to the back of this book.

# **Building Successful Virtual Teams**

Francine Gignac



**ARTECH  
HOUSE**

BOSTON | LONDON  
[artechhouse.com](http://artechhouse.com)

**Library of Congress Cataloging-in-Publication Data**

A catalog record for this book is available from the U.S. Library of Congress.

**British Library Cataloguing in Publication Data**

A catalog of this book is available from the British Library.

ISBN 1-58053-878-9

**Cover design by Igor Valdman**

© 2005 ARTECH HOUSE, INC.

685 Canton Street

Norwood, MA 02062

All rights reserved. Printed and bound in the United States of America. No part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

All terms mentioned in this book that are known to be trademarks or service marks have been appropriately capitalized. Artech House cannot attest to the accuracy of this information. Use of a term in this book should not be regarded as affecting the validity of any trademark or service mark.

International Standard Book Number: 1-58053-878-9

10 9 8 7 6 5 4 3 2 1

# Contents

	<b>Preface</b>	<b>vii</b>
	Reference	x
	<b>Introduction</b>	<b>xi</b>
<b>1</b>	<b>Collaboration in the Twenty-First Century</b>	<b>1</b>
1.1	The Knowledge Era	1
1.2	The Knowledge Worker—The New Economic Resource	11
1.3	Knowledge Management and Collaboration	16
1.4	The Virtual Team—A Promising Investment	20
1.5	Building the Business Case	30
	References	39
<b>2</b>	<b>Collaborative Technologies</b>	<b>41</b>
2.1	Technologies Overview	41
2.2	Selecting the Right Technology	48
2.3	Integration Issues	55
<b>3</b>	<b>From the Traditional to the Virtual Team</b>	<b>61</b>
3.1	The Virtual Challenge—Building Trust	61

3.2	Group Dynamics	67
3.3	Smart People Getting Smarter	73
3.4	Dealing with Cultures	79
3.5	Facilitating the Team	84
3.6	Measuring Results	90
<b>4</b>	<b><u>Ecollaboration Methodology</u></b>	<b><u>97</u></b>
4.1	A Methodology—A Basic Recipe	97
4.2	Resources, Roles, and Responsibilities	100
4.3	Plan and Deliverables	109
4.4	The Tasks in Detail	112
	Phase 1 Project and Change Management	112
	Phase 2 Analysis and design	123
	Phase 3 Implementation	154
	Phase 4 Ecollaboration management	162
<b>5</b>	<b><u>Key Success Factors</u></b>	<b><u>179</u></b>
<b>6</b>	<b><u>Conclusion</u></b>	<b><u>187</u></b>
	<b><u>Appendix A: List of Templates Included on the CD</u></b>	<b><u>193</u></b>
	<b><u>Appendix B: How to Use the CD-ROM</u></b>	<b><u>195</u></b>
	<b><u>List of Acronyms</u></b>	<b><u>197</u></b>
	<b><u>Selected Bibliography</u></b>	<b><u>199</u></b>
	<b><u>About the Author</u></b>	<b><u>207</u></b>
	<b><u>Index</u></b>	<b><u>209</u></b>

# Preface

In 1978, I enrolled in a bachelor of commerce degree program at McGill University in Montreal, Quebec. Upon graduation, and with little business experience, I decided to pursue a master's degree in business administration, specializing in information systems and statistics. I remember the asynchronous terminals, the computer cards, and getting very interested and curious about the Argyris theory. His theory, as discussed in Section 3.2, focuses on organizational and action learning. It brings a new dimension to the way we learn and react to learning by integrating emotions and personal transformation into the process. Most of my peers who had been in the labor market for some time did not share this interest and were quite skeptical on the application of this theory.

In fact, some were quite upset that this theory, concerned with emotions, was even in the curriculum. They were convinced that it was not applicable in business, that it was pure fiction and a total waste of their time. The traditional management approach with control at its center had already made its mark on them. Peer influence finally took hold of me and I endorsed the industrialist formula of management: plan, manage, and control. I turned to strategies, organizational structures, plans, procedures, statistics, and all those fancy management techniques aimed at improving business performance. Yet I kept the book by Argyris on my library shelves.

After graduation, I joined Nortel Networks as a business systems architect. This was the start of a very interesting career in information technology. As my career progressed, I assumed various roles—as IT manager, project manager, and consultant at Bombardier, IBM Global Services, Fujitsu, and some consulting firms before I started my own consulting practice in 1998.



Over these past 20 years or so, I have used many forms of media to work in teams. I can remember the electronic system on the mainframe system named PROFS. I used Lotus Notes and Microsoft Mail. I enjoyed teleconferencing, especially when I got the cameraman role! I never really liked audio conferencing because of the noisy effects. Video conferencing is quite interesting if one has the right telecommunication setup. I often get overloaded with e-mails and sometimes have difficulty keeping up with the discussions and events. Overall, the best method for teamwork is collaborative technology that integrates all those features and more.

Despite the technological progress, I can only bear witness to the limitations of the traditional management approach to teamwork. While information is more available and accessible than ever, it is often not producing the expected results in organizations. Indeed, it is not because we are more and more connected that collaboration happens. Things just do not change because there is a technological solution.

Challenged by these issues in my work and consulting assignments, in 2001 I enrolled in a master's program at Fielding Institute in Santa Barbara, California. I specialized in organizational change, and, more specifically, in virtual team design. Based on a virtual collaborative approach and state-of-the-art technology, the program allows for an appropriation of the new ways of working, learning, and innovating. Most importantly, it reconciles the Argyris theory with the new organizational challenge of shifting from competition to cooperation and collaboration.

It was then that I realized that I had kept the Argyris book. I removed the book from the shelf and discovered that his theory had evolved since my undergraduate years. His theory was now very much apropos.

What was believed to be fiction in the early 1980s was making sense in the context of the twenty-first century. The current trend to knowledge management and collaboration implies changes in the way we work with others.

A first impact of this trend relates to the information we use and how we are using it. Indeed, we are now in a better position to question the validity of the information and assumptions so that the purpose and problems are properly defined, understood, and shared by all parties involved. Another impact concerns how we are choosing the course of actions. We create more opportunities to make free and informed choices. We also recognize that we share the ownership of the task and problems to be solved. A third impact focuses on how we are sharing knowledge. We understand better the value of learning through experience and others. In this context, lifelong learning and knowledge transfer are being encouraged. Mistakes are accepted as part of the learning process. Hidden agendas and protection behaviors are being abandoned. Not surprisingly, one last impact deals with how we are taking risks. We are becoming more inclined

to try new ventures and to discuss what we previously thought was nondiscussable and nonnegotiable.

These resulting behaviors are now the basis for the survival and growth of twenty-first century organizations. Such organizations no longer consider themselves as pieces of clockwork machinery; instead, they see themselves as the universal understanding that they are subject to creative disorders, such as the Internet, the e-mails, and other collaborative technologies connecting the workers. They are becoming living systems in a complex world of interactions and unpredictability. Planning, managing, and controlling are not enough to survive and grow.

Organizations in the twenty-first century must acknowledge the self-organizing capability of the emerging workplace and offer an environment where the participants can most efficiently perform. This organizational shift requires work behaviors and conditions to be redefined, with social networks, leadership, and purpose as the key elements. In simple words, these working conditions must get people to want to contribute, to make a difference, to feel good about themselves and their peers, to grow, to learn, to develop themselves, and to build healthy relationships.

On the other hand, it does not mean throwing out structures and plans. It means making better use of them by integrating extraordinary management skills, or what is required for an organization to transform management in an ever-changing climate. In other words, it means getting the managers to rapidly develop agility of thought based on the fostering of diversity required to support organizational longer-term success.

These extraordinary skills include the ability to build trust, to share responsibilities and roles, and to use information as well as knowledge to create more knowledge. Postindustrial managers acknowledge that the most important assets reside in each worker and that the team contributes to the creation of a work environment where the values can drive the organization.

I would like to relate the story of Morihei Ueshiba, the founder of Aikido and generally considered to be history's greatest martial artist, to illustrate the need for organizations to merge extraordinary and ordinary management to remain competitive and to survive in the twenty-first century. Apparently, Ueshiba was a small man who could win over bigger opponents. He appeared to be perfectly centered. When off-balance, he could return very fast to his center, as if disequilibrium did not exist. He explained his agility by referring to his feeling of harmony with life and to knowing what center feels like. From his perspective, the center corresponds to "who we are, our pattern of behavior, our values, our intentions."

But life can be disturbing or be disturbed at times. Being always perfectly centered may not be feasible in the turbulence of the twenty-first century. This reality can be quite challenging for changes in behaviors to occur. Individuals

and organizations can expect fuzzy edges on the path of transition. They need to have faith in the benefits of playing with the paradoxes of group life, to let go of control, to share knowledge and learning, to accept mistakes, to take risks, and to demonstrate trust and patience. As King [1] puts it, “Better knowledge for better behavior for better performance.”

Shifting to collaborative virtual teams is not something an organization does overnight. It goes beyond the implementation of a collaborative technology. It requires executive commitment, managing changes, getting the right people together, and understanding cultural differences and group dynamics. It means managing a long-term project, doing careful planning, using a structured approach, and learning from experiences. So, are you up to collaborative virtual teams, that is, *Ecollaboration*?

One of my colleagues at Fielding quoted her mom in her graduation speech: “Shoot for the moon; the worst that can happen is that you will land on stars.” In this spirit, I wish you the best with your *Ecollaboration* initiatives. This book will definitely help you bring together many stars in your virtual world.

For my part, I would like to thank my personal stars, who have played a role in the completion of this book project: my parents; my spouse, Yves; my sister-in-law, Gracelyn; the virtual cohort IX members and professors from the Fielding Institute; and the team at Artech House.

Virtually Yours,  
*Francine Gignac*

## Reference

- [1] King, W. R., “Strategies for Creating a Learning Organization,” *Information Systems Management*, Vol. 18, No. 1, 2001, pp. 12–20.

# Introduction

Do you remember being part of a great team, a team that performed? A team that got results and where you felt energized. A team where you could learn, share your knowledge, and contribute to the learning of others. A team where it felt safe to express yourself and to ask questions you would not have dared to ask in another group. A team where you trusted the members. A team that pushed you to outperform yourself in a positive way. A team where you felt good and proud of yourself. A team whose members you might meet years after the work assignment was completed and recall with them good moments of great achievement.

This type of team constitutes an experience we do not forget--one that we wish we could experience again and again. It can be compared to an adventure trip where we meet strangers, make friends, and discover a new and exciting world. Unfortunately for many of us, those team experiences can be counted on the fingers of one hand. We often wish that each new team we join could be as stimulating, fulfilling, and rewarding. What would it take to always make teaming a successful professional and personal experience? How can the synergy be created and sustained in teams? How can people, tasks, organization, and now technology be amalgamated for the best outcomes? Are there any formulas or tricks toward such success?

We are now entering the era of collaborative technologies. We will soon be working more and more in virtual teams where there will be little or no face-to-face contact. In fact, virtual teams are expected to multiply even more rapidly given current world events, such as September 11th, the SARS virus, the war in Iraq, and the demographic shift, to name a few.

It is complicated enough to team now. One can only wonder how collaborative technologies will impact teamwork. How can we create a positive synergy and encourage collaboration when there are so many challenges not resolved in the traditional teams?

This book will provide answers to these concerns and to the issues faced by business leaders and managers looking to implement collaborative technologies in a productive way. This audience will use this book to:

- Increase their knowledge of collaborative technologies and virtual teaming concepts and requirements;
- Build the business case for Ecollaboration and measure the returns on investments;
- Select and implement collaborative technologies through a structured approach;
- Analyze, design, and implement virtual teams in their fields using a methodology based on the best business practices in project management, change management, and virtual team design;
- Ensure that all the critical success factors are accounted for.

Following is a presentation of the topics addressed within each chapter:

Chapter 1 revisits the concept of collaboration. It discusses the foundation of the knowledge era and the influences of wealth, power, and knowledge on the evolution of the worker. The historical references, starting from the medieval age, demonstrate that these same elements characterize successful organizations today and that people are still at the center of changes.

Chapter 1 also looks at the technological innovations from the 1990s to today in terms of waves and an enterprise perspective. It discusses the best lessons learned, a critical one being that technology is not an end in itself, but simply a mean. This is worth repeating over and over again, as many of us tend to forget it and concentrate our efforts on the technological issues. These waves include the client server architecture, the process reengineering movement, the enterprise resource planning (ERP) system, the business-to-business (B2B) system, the customer relationship management (CRM) system, business intelligence and knowledge management applications, and finally collaborative technology or Ecollaboration.

Chapter 1 continues with a definition of knowledge workers and explains how and why they are becoming the new economic resource. The purpose of this definition and explanation helps to reinforce the need to focus on the people side of the equation in Ecollaboration initiatives. Chapter 1 then relates collaboration and knowledge management and examines the different types of knowledge. More specifically, it discusses combining the “know that” and the

“know how” to improve the “know how to be” that is essential for collaboration. It presents the organizational maturity stages or balances in the transitional process where the dynamic pushes toward evolution and growth. This in turn supports the assertion that organizations cannot manage knowledge nor the knowledge workers, but only the environment in which the knowledge is created.

Chapter 1 also explains why collaborative virtual teams can be a wise and promising investment for organizations in the twenty-first century from a financial and intellectual capital perspective. It provides examples of successful implementations in different industries. Finally, it presents a sample business case for the justification of Ecollaboration. The topics discussed in this chapter are used within the methodology presented in Chapter 4. They are embedded in the tasks relative to organizational change management and the management of the Ecollaboration initiative.

Chapter 2 defines and clarifies collaborative technology and presents an overview of the functionalities and features integrated into the best-of-breed software. It differentiates collaborative software from informational and transactional portals and other forms of information sharing and exchange applications. It presents my approach, labeled the Partner Capital approach, for the selection and planning of the collaborative technology. This approach addresses the importance of an enterprise strategy and focuses on business partners and capital management, the drivers for a successful collaborative project. It concludes with a discussion on integration issues including the interfaces to portals and business systems, the conversion of data and the technology infrastructure aspects. The concepts discussed in this chapter are also integrated into the methodology detailed in Chapter 4, more specifically into the activities relative to the technology analysis, design, and implementation.

Chapter 3 concentrates on the transition from the traditional face-to-face team to the virtual team. It discusses the importance and challenge of creating trust in the virtual team. It presents what I consider the Ecollaboration paradigm with its four key domains: team, task, organization, and technology, surrounded by trust and with performance at their intersection. It extrapolates the paradigm to create the concept of an Ecollaboration ecosystem. It continues with group dynamics or how participants in the collaborative environment must develop the capability to internalize new and shared explicit knowledge, as well as broaden, extend, and rethink their tacit knowledge. It presents the collaborative processes based on several adjustments to the traditional management practices and the workplace itself. It then innovates with a model for virtual dynamics that I have developed, namely, the Virtual Star Team model.

Chapter 3 also elaborates on how smart people get smarter and contribute to the emergence of true collaboration in virtual teams. It emphasizes the necessity to expand people capacity to create the results desired and to encourage

member participation and personal development. It discourses on the necessity to comprehend and deal with cultural differences. It values the importance of facilitation, looks at potential team traps and provides tips for the facilitator. It proposes facilitation techniques and measurements for Ecollaboration results. Finally, this chapter recognizes that the most important assets reside in each of us and within the virtual team. The concepts discussed in this chapter are also used in the methodology, more specifically in the activities related to the task, organization and team analysis and design, and the phases of implementation and Ecollaboration management.

Chapter 4 proposes a structured methodology for the implementation of successful virtual teams. This methodology is based on the concepts discussed in the previous chapters and the best business practices in project management, change management, technology, and virtual team design. First, the metaphor of a recipe is used to explain the importance of the methodology, the basic ingredients, and the steps to implement Ecollaboration initiatives. An overview of the methodology follows with a description of the four phases. In summary, the first phase involves the task of managing the project and the changes for the Ecollaboration initiative. This phase is executed in parallel with the other three phases. Phase 2 is concerned with the analysis and design of the components of the virtual team. These components include the work to be achieved by the team, the team itself and its members, the organization within which the team operates, and the collaborative software and technology infrastructure supporting it. The third phase targets the implementation, including the deployment of the technological environment and the launching of the team. The last phase includes the management of the work, the facilitation of the team, the management of the collaborative technology environment, as well as the evaluation.

Chapter 4 also presents the resources required for the Ecollaboration project and includes the roles, responsibilities, and profile in terms of skills and competencies. It proposes an organizational structure for the Ecollaboration project. Finally, it describes every task of the methodology by presenting the deliverables, the dependencies or how the task relates to other tasks, the approach to realize the task, and the resources involved, along with their specific responsibilities. It then offers practical templates and tools (offered on the CD-ROM) to support the realization and documentation of the tasks.

Chapter 5 reinforces the key success factors for the implementation of collaborative virtual teams. It discusses the commitment of the executive management team, the assignation of a project sponsor, the need for an organizational culture focused on human resources and shared leadership, the investment in organizational change management, a robust Ecollaboration ecosystem, the application of the structured Ecollaboration methodology presented in Chapter 4, the deployment of facilitation strategies, a solid

technology infrastructure combined with proven collaborative software, and the involvement of Ecollaboration experts.

Finally, the conclusion discusses the many paradoxes that organizations face in the context of the twenty-first century. It then reinforces the main elements for building successful virtual teams in a knowledge management and collaborative philosophy.





# 1

## Collaboration in the Twenty-First Century

### 1.1 The Knowledge Era

Throughout the ages, wealth, power, and knowledge have been intimately related. This situation is not different for organizations of the twenty-first century that wish to implement virtual teams to improve their competitiveness. This chapter substantiates this assertion with a look at some historical events. It discusses the latest technological evolution and the impacts on the workers. It presents the Ecollaboration enterprise model. Finally, it differentiates the industrial from the knowledge culture, or what constitutes a necessary shift to develop successful virtual teams.

Back in the feudal system of medieval England, land ownership constituted the primary source of wealth. While the feudal system provided the peasants with a sense of security from marauders and barbarians, it grew at the expense of the common people. Speed and access to information were limited, and it was only in the late 1700s that the feudal system was abolished.

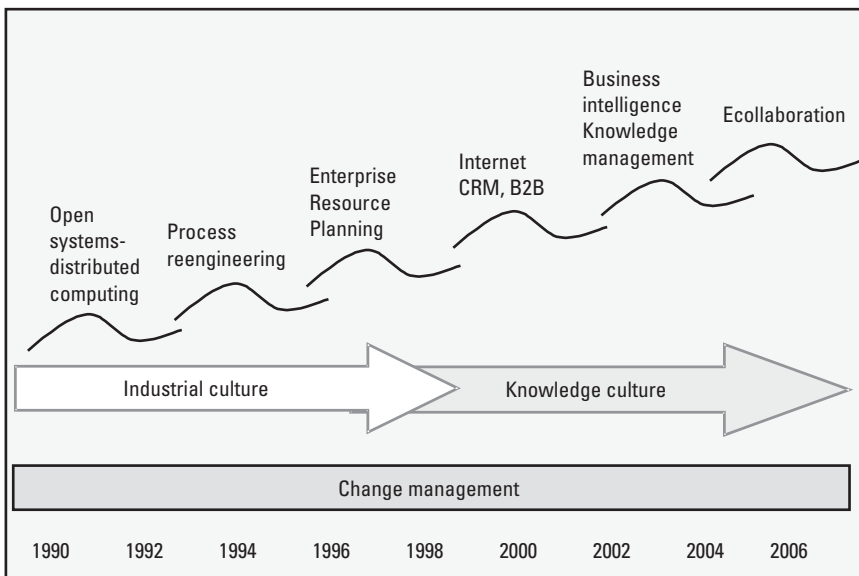
The Industrial Revolution in England saw the development of a new source of great wealth through the development of machinery and the ownership of factories, with capitalists providing an impetus to the speedy growth of the industrial era. As society moved from an agriculturally to industrially based economy, workers moved in droves to cities in search of ever-expanding opportunities. However, the conditions in which people lived in these factory towns were generally horrendous, unhealthy, and dangerous. While many industrial workers did not read or write, their proximity favored information access and speed and supported the creation of unions. Under this structure, they could more easily work together to exercise power against the abuse of employers. Finally, their efforts resulted in the Factory Acts enacted by Parliament in the

mid-1800s, which regulated the number of hours that men, women, and children were allowed to work.

The industrial era is now coming to an end in many regions in the world. Technology is changing the way that we work and knowledge is becoming a new economic resource. Many inventions, such as televisions, computers, and the internet, have contributed to the improvement of information access and speed. This has also led to a change in workers' profile and importance. Indeed, more and more workers are using technology in their work, thereby requiring different skills and competencies and more knowledge than ever before.

Take the example of the office secretary. The traditional secretarial position basically required typing and shorthand skills and some administrative competencies. Today, many secretaries have shifted to administrative assistant positions requiring solid computer skills and knowledge of basic and advanced administrative software, as well as being able to operate and manage office equipment such as fax machines, photocopiers, and printers. In addition, many of the traditional secretarial functions have been transferred to professional workers. It is not unusual to see the boss typing, formatting, and printing documents today.

Let us now have a closer look at the last 15 years and their impact on technology and people. Figure 1.1 presents a summary of the information technology evolution and transition from the industrial to the knowledge culture from a business perspective.



**Figure 1.1** Information technology evolution.

From the mid-1980s to the beginning of the 1990s, open systems and distributed computing were gaining popularity in enterprises. Open systems and distributed computing can be defined as a set of standard programming interfaces, conventions, and functionalities for the distribution of applications across networks of computers. Another name for this period is the transition to client-server architectures. Traditionally, mainframe computers or minicomputers were used to store data, programs, and applications. In other words, those computers were being used as data and application servers using dumb terminals. Microcomputers followed and offered more power and memory. They could replace the dumb terminals, allowing for variations in the distribution of data, programs, and applications.

At the time that client-server architectures were being deployed, microcomputers were also becoming smaller, lighter, more portable, and more accessible in terms of price. Change management specialists, best known at the time as methods and procedures analysts, became involved in training and supporting the multiplying users. New job positions emerged, such as local area network (LAN) architect and LAN security administrator. More responsibilities were also assigned to help desks, which resulted in additional employment opportunities. Yet there were numerous deployment initiatives that failed to address people (i.e., the users) up front. My experience has been that machines were moved in and installed before the users were informed and properly trained. I can still remember my first experience as a user of a computer network. It was only after the print queue became repetitively jammed, the one-person help desk was consistently overwhelmed, and the users started screaming that formal training was finally organized.

The open systems wave and its client-server architectures offered new opportunities for managing business processes. As these new environments were being completed, the wave of process reengineering initiatives began around 1992. This approach gained in popularity and complemented the traditional system analysis and design methods. Its main objective was to review business processes in order to simplify and streamline operations, improve productivity, and reduce costs, as well as to allow for custom systems development.

Unfortunately, this approach often targeted a large spectrum of processes, involved many users, and led to long periods of questioning before any software programs could be tested or new processes implemented. There was a mixed level of satisfaction with this approach, some exceeding and others simply failing to deliver the anticipated benefits. Nonetheless, the initiative allowed for best practices to emerge and be recognized in many business areas. Somehow, and maybe because of the participation of the users in the analysis and design processes, the reengineering period marks the transformation of methods and procedures to the change management practice that we know today. One successful reengineering initiative I remember concerned the development of a sales

and distribution system in a large telecommunication systems manufacturer. The initiative involved key users from the beginning and focused on the main issues instead on dwelling on exceptions. The project team was very motivated to deliver a solution that improved the critical business processes within the time frame and budget available. However, most of the efforts were concentrated on the system delivery; change management was limited to user training with minimal documentation, which was typical in those days. Nonetheless, the end users adapted and the system remained in use for more than 10 years (i.e., until it was replaced by an ERP system).

The knowledge acquired during the waves of open systems and client-server architecture and process reengineering contributed considerably to the next one, the ERP period, which really picked up in 1996. The ERP systems offered an integration of data and processes into a client-server architecture, based on best business practices. That they were often considered a solution for Year 2000 issues partially explained their popularity. They usually covered the back-office functions and associated processes from finance and control, sales and distribution, material management, production, plant maintenance, human resources, and payroll to project management. ERP systems from software manufacturers such as SAP, BAAN, JDEdwards, PeopleSoft, Oracle, and Lawson, to name a few, were and are still popular.

While many ERP systems implementations were successful, many failed for various reasons, such as lack of management commitment, deficient or weak project and change management strategies, desire for customization instead of compliance to best business practices, and lack of involvement by users and ERP experts. The ERP initiatives were also often perceived as technology projects driven by technology people, or at least very much influenced by them. The ability for organizations and people to adapt and the impact analysis on the business were typically not integrated into the technology plan; if they were, they were often underestimated. Consequently, many ERP projects did not deliver the expected benefits and returns on investment. Yet this wave helped to confirm the importance of managing changes. It also marked the shift from the industrial to the knowledge era based on the high level of data and processes integration and the resulting quality and timeliness of information. Take the case of an organization that targeted the whole spectrum of back-office processes and involved more than 5,000 users. It started the project from a technology perspective. It did involve many key users in the planning stage but did not develop a thorough change management strategy. It basically concentrated on a training program. It identified the benefits but did not articulate a plan to monitor and measure them. Consequently, resistance and issues resulting from the changes were mainly addressed piece by piece. In fact, the changes were still having impacts years after the system had been implemented. The anticipated benefits could not be measured or realized despite the efforts. However, the

organization did acknowledge important lessons (i.e., plan for change from the start and monitor benefits all the way).

Around 1998, the Internet gained in popularity. Businesses, professionals, and households were getting connected all around the world. Information and knowledge were now at one's fingertips, as easy and as fast as the communication lines could allow. At that time, e-commerce applications, B2B, and CRM systems were being deployed, encouraging the transition to the knowledge era for workers, clients, suppliers, and other business partners.

B2B, CRM, and other e-commerce systems represent an extension of ERP systems. B2B systems are commonly tied to back-office systems and cover functions from parts catalogues, material reservations, and purchase orders to requests for quotations, proposals, and quotations. CRM systems, often called front-office systems, are also integrated to the back-office systems and include functions such as sales forecasting, marketing planning, campaign management, telemarketing, lead generation, customer segmentation, contact management, sales force automation, and service and claims management. Other e-commerce applications deal with functions such as shopping, ordering, shipment tracking, and invoicing.

Those systems were built and implemented based on the lessons learned from the ERP period, that is, top management commitment, reliance on best business practices, adequate project and change management strategies, and the involvement of all parties affected by the changes—from the suppliers, to the customers, to the employees. While many projects are still ongoing, the success ratio is promising. Indeed, e-commerce applications have multiplied since 1998, with more and more users being connecting to the Internet, using web services, and performing business transactions. Take the case of the organization discussed earlier. The project management team was smart to remember the ERP lessons learned when embarking in the B2B initiative. The system deployment went smoothly, with the users and business partners being cooperative and receptive of the changes. Measuring the benefits was also possible. On the other end, the CRM project undertaken later was limited in terms of change management strategy. The best lessons learned from the previous waves were not integrated as technology, system functionalities and business processes were the main concerns from the start. The impacts on the target population, which was largely unionized, were loosely addressed. While the users received sufficient training to operate the system, the changes to the processes and the impacts on the unions shook the organization for many months after implementation. It is then that best lessons were assimilated. Better late than never!

The beginning of the twenty-first century corresponds in many organizations to the deployment of knowledge initiatives, namely, knowledge management and business intelligence. Knowledge management projects include the implementation of business information warehouses linked to the ERP, B2B,

and CRM applications, as well as external information banks such as Dun and Bradstreet. The information contained in these warehouses typically includes statistics on sales, customers, and suppliers. Business intelligence can be associated with the creation of knowledge repositories holding information such as sales proposals, project guidelines and tips, software manuals, equipment operating and maintenance manuals, and experts' comments and advice.

So far, these projects have known mixed success, mainly because of how they are being implemented and how the environments are being maintained and promoted. Those that have been truly successful are making the best use of the lessons learned from the previous waves: mainly, that they are not technology projects but business projects requiring management commitment, users' participation, and adequate investment in change management. Indeed, users must not only be knowledgeable of the information available, but they must also be skilled, encouraged, and committed to using, adding, sharing, and maintaining it. A successful example of the business intelligence wave is one from a medium-size manufacturer. Known for its innovative and competitive initiatives, this organization has undertaken a business information warehouse project that brought many benefits to the sales and marketing team. The project, promoted by top management, focused on the development of business indicators into a dashboard. It involved key users from the start and encouraged the participation of other users in the validation process. The implementation was a success, with key business indicators being available at a glance and updated daily. The sales and marketing people make extensive use of the dashboard in their daily activities and keep adding indicators to improve the comprehension of the market.

This brings us to the next wave, Ecollaboration, which has already been implemented in some visionary enterprises. The main objectives of Ecollaboration are to exchange, communicate, share, and create information; simplify teamwork; and improve collaboration. In essence, Ecollaboration involves the innovative features of all previous waves. It is based on open systems architecture and is tied to the Internet. It uses best business practices and information contained in the ERP, CRM, and B2B systems, as well as knowledge warehouses and repositories. Ecollaboration can also be defined as a working environment driven by collaborative technologies or the convergence of telecommunications and information technology. In other words, the collaborative environment offers an integration of the information contained in the ERP, B2B, CRM, and legacy systems; business warehouses; and repositories with asynchronous and synchronous communication facilities. Ecollaboration is often associated with a portal solution, yet it involves more functionalities than merely the diffusion of explicit information and links to business transactions. These functionalities and facilities, discussed in more detail in Chapter 2, include discussion forums with e-mail notification and pooling, audio conferencing, video conferencing, and

much more. Section 1.4 presents several cases of successful Ecollaboration initiatives that obviously integrated the best lessons learned from the previous waves.

Figure 1.2 pictures the Ecollaboration enterprise model. The employees are central to the Ecollaboration model, as they are the ones responsible for the collaboration. The external partners and parties that gravitate around the enterprise include the financial partners, that is, banking institutions, insurance companies, and brokerage firms; the distribution partners, that is, transportation companies and reseller associations; the customers, competitors, and industry networks, including industry associations and trade unions; and the supply chain or the individual suppliers themselves.

Ecollaboration offers numerous opportunities, but the transition to the collaborative model presents many challenges and issues for organizations and people. The gaps in functions, time, places of events, languages, and cultures between the people and the organizational units may cause confusion and conflict. This can result in unnecessary pressure on the employees unless carefully planned and managed. According to T. A. Pearson, chairman of the Measurement Quality Division at the American Society for Quality, “the goal of the Knowledge Revolution is to provide a new generation of real-time information systems that align more closely with overall organization objectives while making the best use of technology to help everyone manage real-time operations more effectively. Now, a new Knowledge Theory offers ways to integrate information sources with automated knowledge machines and a knowledge supply

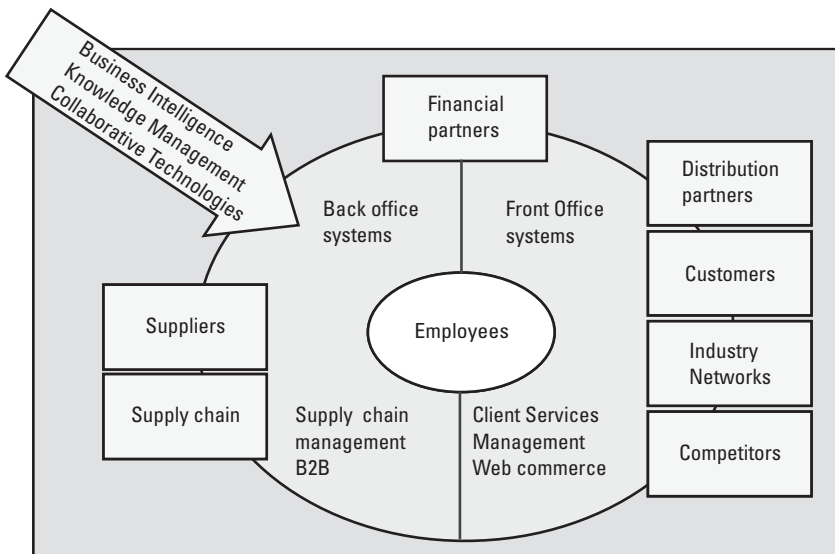


Figure 1.2 Ecollaboration enterprise model.



chain to get the right information to the right people at the right time, insuring that everyone is empowered and aligned to add value to any enterprise” [1].

The transition to the knowledge era, with the increase in speed and access to information, has much to offer yet changes the social and economic panorama in many ways. In the knowledge world, speed, innovation, and employee commitment are key factors for the success of the enterprise. Figure 1.3 presents the shift from the industrial to the knowledge culture using seven business elements.

The first element is the organizational structure. For most industrial organizations, the structure is hierarchical and involves a configuration in many layers and levels that distributes control over a large number of people or units. It is often formal and complex because of the large number of units and subunits, which are in turn segmented by products, markets, services, and geographical areas. This structure can limit communication, information sharing, accountability, and productivity and often generates frustration and a low level of trust and collaboration. On the other hand, in a network structure, the foundation of the knowledge organizations is typically flatter, with a small number of levels reducing the level of complexity. The level of formality of the network structure may vary depending on how well people reciprocate with each other. If people are able to directly reciprocate, then communication, shared responsibility, teamwork, and ultimately productivity can be improved. Such is the case of a large manufacturer in the wood industry, which has more than 10 facilities in North America yet operates with only three layers of management. The

	Industrial culture	Knowledge culture
Organizational structure	Hierarchical	Network
Focus	Financial	Marketing
Distribution of information	Limited	Extended
Management philosophy	Rules and procedures	Principles and guidelines
Orientation	Internal	External
Training	Occasional	Continue
Accountability	Unequal	Shared

**Figure 1.3** Shift from the industrial to the knowledge culture.

company is proud to relate its success to the spirit of teamwork it promotes and to the initiatives of the personnel it values.

The second element differentiating the two cultures is focus. The industrial culture targets the financial situation, while the knowledge culture integrates marketing in its philosophy. As a matter of fact, the knowledge culture gives very special attention to marketing products and services, using and sharing information and providing the framework for innovation. This approach increases business opportunities, ensures that productivity is sustained or even improved, and creates positive impacts on the financial position. Many examples of this element can be found in the software industry. Just think of the Internet search engines and products that keep offering more and more functionalities and the stock values of the proprietary software companies!

The third element is the distribution of information in terms of flow, content, and timing. In an industrial culture, the flow of information is usually controlled, with its content and timing carefully analyzed, monitored, and managed. On the other hand, the knowledge culture promotes a freer and more extended distribution of information, like the one offered through the Internet. However, this situation can create problems and abuses with privacy of information and ethics. Examples are junk mail and the massive posting of ads called spam, access and distribution of pornographic materials, hacking, harassment, misinformation, defamation, and even threats. To this day, legislative movements in many countries have been active with several bills, such as the Protection of Children from Sexual Predators Act, the Unlawful Internet Gambling Funding Prohibition Act, the Online Privacy Protection Act, the CAN-SPAM Act, and the Computer Owners Bill of Rights, amended by the U.S. Internet Industry Association (USIIA).

Management philosophy, the fourth element, is built on rules and procedures in the industrial culture and on principles and guidelines in the knowledge culture. Indeed, the rigor of the traditional management philosophy becomes a limitation to employee participation, commitment, and productivity in the knowledge era. As a matter of fact, people become less and less able to trust each other in circumstances where there are many rules and rulers, whether it is in the home, in the marketplace, or at work. On the other hand, when only principles and guidelines are offered, people tend to be more trustful, cooperative, and oriented toward solving problems instead of dwelling on personal and group confrontations. One example of this element can be associated with sales-oriented organizations where sales representatives have flexibility in setting prices. These organizations typically provide guidelines that allow the sales representatives to be creative in their pricing strategy so that they can win more business. In turn, the increase in the win ratio has a positive impact on the level of confidence of the sales team, the team spirit, and the commitment to the organizations.

Orientation constitutes the fifth element, being internal in the industrial culture and external in the knowledge culture. While industrial organizations are more concerned by the internal analysis of their strengths and weaknesses, the knowledge enterprises concentrate on a dual assessment by including the opportunities and threats they face. Therefore, in a knowledge spirit, the traditional notions of cost or expense, profitability, and enterprise-view must be complemented with other critical factors, such as added revenue and investment, sustained growth, and system-view. The pharmaceutical industry is one example where an external orientation has been integrated within the management philosophy. Pharmaceutical companies are typically skilled in assessing their strengths and weaknesses and looking for and addressing market opportunities. Not surprisingly, the investments in research and development keep increasing in this sector.

The next element deals with training. Training in the industrial culture is occasional and usually a planned activity to support new tasks. This can be explained by the limited distribution of information, management philosophy, and the focus of industrial organizations. In the mindset of the knowledge culture, training becomes an ongoing program and is even associated with the notion of continuous or lifelong learning. I guess some, if not many, of us have experienced being scheduled for formal training that is then canceled at the last minute because of business imperatives. However, in the past few years I have noticed that there is a growing commitment to ongoing training in many organizations, such as information technology firms. Coaching and mentoring are also gaining in popularity in many industries. Knowledge transfer is even becoming a contractual requirement with the clients in many consulting sectors.

Finally, accountability that has been unequal in the industrial culture is shared among the workers in the knowledge culture. The network or decentralized management structure, the management philosophy based on principles and guidelines, and the extended distribution of information are contributing factors to this shift. In this new cultural framework, the workers have more control and power over their environment and can build trusting relationships. They are not under the command of others and do not wait for orders and approval for actions. They consider themselves responsible for their actions, are willing to take risks together, and are accountable for the results. Along the same lines, they aim at achieving high standards of quality in products, services, and the manner in which they are generated and delivered. They perceive those high standards as essential and not just an optional extra, as is often the case in the industrial culture. For example, research and development teams in many industries can distinguish themselves with their accountability. Take the case of one of my friends, an oncologist who heads an important research project on blood cancer. She is proud to say that the team members are the best in the field and

are highly motivated and committed to the project. They invest their personal time and money toward the success of the research. Lately, they have accepted accountability for raising funds to pursue the project. In cases like this, accountability goes with dedication.

In conclusion, several adjustments will have to be made for the emergence of the knowledge culture in organizations, and down the road for Ecollaboration initiatives, to be successful. Knowing about the elements that make up the knowledge culture is not enough. Strategies must be elaborated, implemented, and carefully monitored so that the shift to the new economic resource—the knowledge worker—can really happen.

## 1.2 The Knowledge Worker—The New Economic Resource

This section describes the knowledge worker, the central part of the collaborative process. It reinforces the importance of taking special care of this organizational asset so that knowledge sharing and collaboration can occur.

Peter Druker introduced the term *knowledge worker* in his 1959 book, *Landmarks of Tomorrow*. It describes someone who adds value by using information to create new information, solve problems, and offer innovative solutions. Initially, the knowledge workers were known for their ability to generate ideas, conduct analysis, use judgment, provide synthesis, conduct design, and apply their specialist expertise. In contrast to the industrial worker who is a machine operator responsible for producing tangible goods, this new type of worker is using and manipulating information to produce more information and deliver knowledge. This transformation marks the birth of a new economic resource, *knowledge*, and a new leading class, the *knowledge workers*.

Knowledge is recognized as an intangible asset and is often called human or intellectual capital. While it is not yet recorded in financial reports, it has value based on its potential and must be directed to where it has the greatest potential. Knowledge is constantly in danger because it can become outdated, copied, and even stolen. Unlike a machine, knowledge workers can decide to limit their production, walk away, and go elsewhere with their knowledge at any time. So knowledge workers cannot be treated like a piece of machinery or any other physical assets. Neither can they be bought or sold, but only rented through work agreements.

There are seven types of knowledge that are useful to distinguish and integrate into knowledge management strategies:

- The know-what is associated with knowledge and facts.
- The know-why refers to knowledge about the natural world, society, culture, and human mind.

- The know-who targets the people who know what and who can do what.
- Know-where contains knowledge of where the knowledge resides.
- Know-when is concerned with the timing for getting and using knowledge.
- Know-how refers to skills and competencies and the ability to do things in a practical way.
- Know-how-to-be corresponds to social skills and the ability to interact and work with others.

While industrial workers mainly use their know-how, knowledge workers demonstrate know-what, know-who, know-why, know-where, know-when, and know-how-to-be. Consequently, the productivity or value of knowledge workers is not only a matter of the products delivered and the wages paid. It must take into consideration the knowledge capital derived from these knowledge types aggregated in the form of useful training and personal and organizational experience. Therefore, the value of the intellectual capital residing in the knowledge workers becomes more a matter of its use than its costs.

Imagine a transportation company writing off 10 heavy-load trucks from its equipment roster before they are completely depreciated. That would simply be recorded as a loss in their financial statements. Now imagine that the 10 top researchers of an international pharmaceutical company are to leave, each with an average of 10 years of service with the firm. This would probably not be reflected in the financial reports, yet it could have a significant, if not disastrous, impact on the organization's ability to compete and ultimately on its financial situation. On a smaller scale, imagine that a local car dealer loses its best sales representative to the nearby competition. It could hurt as much, could it not? Hence, no matter the size of the organization or the type of products and services, knowledge workers and their knowledge must be taken seriously and rightly secured.

So who are these knowledge workers, these important assets? In their early stage, knowledge workers included professionals such as lawyers, engineers, bankers, teachers, doctors, architects, and those from the information technology fields such as programmers, analysts, and technical writers. With the most recent technological evolution, knowledge workers with various roles have been added to the list. This includes knowledge officers, knowledge managers, information officers, and content analysts, as well as specialists in various fields such as sales representatives and customer relationship managers, nurses, automobile technicians, and laboratory technicians.

Also, other characteristics must complement their ability to create, solve problems, and innovate. First are their formal education and skills specialization, work experiences, and learning philosophy. Unlike many industrial

workers, knowledge workers have formal education, from industry or field certifications to university degrees. For my part, I notice this trend more and more. I recently attended a professionals' network meeting. I found many independent consultants listing more than four degrees and certifications on their business cards. One woman who specialized in business ethics recommended that a maximum of four be included. But, she emphasized, this does not mean that one should stop learning!

As a matter of fact, the combination of formal education with continuous learning and experiences makes the knowledge workers even more important as organizational contributors and corporate assets. Moreover, their understanding of the business, the industry, and the organizations they work for contributes to their capacity to question, unlearn, and relearn processes, as well as synchronize best practices with the external environment. For all of these reasons, organizations need to have clear human development strategies to attract and retain knowledge workers--even more so as knowledge workers can turn to the competitors and to independent consulting.

Other important characteristics of knowledge workers include self-confidence, responsibility, and accountability. They view themselves as responsible in driving their destiny, so they are typically persistent and autonomous. They have different concerns than their twentieth-century counterparts in terms of remuneration expectations, which range from a set salary basis to a package with stock options, flexibility in how and where they work, an intrinsic personal recognition, and a large social power base. In response to these characteristics, management must build accountability in the workers' objectives and provide broader, functionally based classifications and open salary ranges. Maintaining a competitive job and salary structure integrating pay-for-performance and combining these with opportunities for promotion and assignments to challenging projects are other strategies to recruit and retain a highly qualified and productive work force. Indeed, I have sometimes heard SAP consultants complain that they were always assigned to the same type of work. While they were well paid and trained, they were bored with their work and were therefore willing to listen to opportunities from recruiters and to consider new challenges elsewhere.

Along the same lines, knowledge workers consider themselves more as important business contributors and partners rather than as merely employees. In the context where knowledge is portable, knowledge workers are quite independent. This is why the leaders or knowledge workers in management positions must excel at dealing with human capital. They need to look at careers in different ways and not take for granted the loyalty of the employees. They must also acknowledge that knowledge workers are less responsive to formal authority and much more responsive to the authority of knowledge and skills. Consequently, they must be willing to change the command and control management styles to an approach of collaboration and teamwork so that

everyone's contribution is maximized. This is what a friend of mine is desperately wishing for but does not expect until he is eligible for retirement, in some 200 working days. He started working for an organization at age 18. Since then, he obtained a university degree and many certifications in his field. He has participated in many strategic projects during his career. He is well known and appreciated in the organization and in the industry as well. He has always been motivated by teamwork and the risk-taking philosophy promoted within his organization. Unfortunately, about 3 years ago the division he works for was sold to an international company with an industrial culture. From one day to another, the working situation completely changed. He now reports to a command and control type of manager. In fact, he asserts that his manager is quite representative of the new company's management. In addition, he does not find this new manager to be very competent. He does not vocalize his frustrations because he has a lot invested in his retirement fund. His loyalty, once based on mutual confidence and reciprocity, now is only tied to money. Business as usual, he continues to give 100% effort on this project that takes him to many locations worldwide. He intends to become an independent consultant when he retires next year at the age of 48. As he puts it, if he ever decides to take a consulting assignment with this organization, the conditions will be much different!

This brings up the next characteristic, that of leadership and the ability to include people. Organizations operating under the industrial culture have built barriers that prevent people from contributing all their skills, ideas, and energies. Knowledge workers understand these limitations and demonstrate particular skills in getting the contribution and commitment of others. This skill is based on the respect for diversity, willingness to comprehend cultural differences, and a commitment to teamwork and personal recognition. This allows knowledge workers to define their scope of intervention on a larger scale and to add meaning and value to alliances, partnerships, joint ventures, and other relationships. These characteristics reinforce the need for organizations to align their human resources management practices more specifically to the recognition for personal and team contribution, as well as diversity training and management. For example, the Quebec market is quite different from the rest of Canada and the United States because of the French Canadian culture and language. For multinationals, successful business requires that the knowledge and contribution of the locals be accepted and incorporated in the decision-making process. It also means welcoming and appreciating the locals for their cultural differences. As a matter of fact, the leaders from international consulting firms understand that it takes more than competencies to win important deals in Quebec. It requires an understanding of the client, the ability to speak the language, and the willingness to partner and form alliances with local firms.

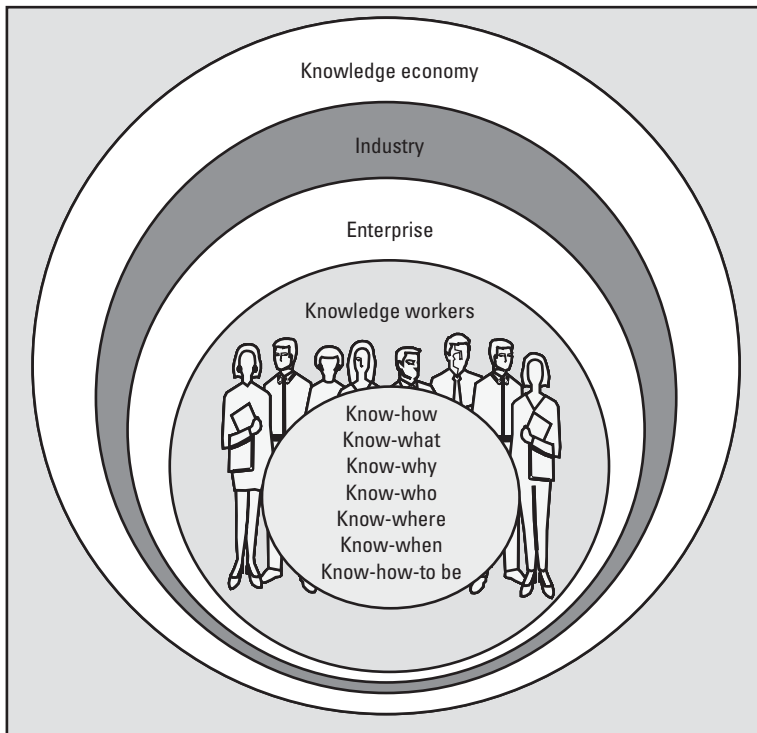
Another characteristic of the knowledge workers is their constant desire to make connections and partnerships and their commitment to collaboration. This also means that they are aware of and have a positive mindset to obtain an honest perception of their strengths and weaknesses as they interact with others. Knowledge workers feel rewarded by their contribution to a team, by being part of something larger than themselves, and by realizing their own goals within that team. They are often more inclined to share power evenly so that social expectations are met. All of these actions lead the knowledge workers to take risks, to learn from each other, and to learn from mistakes, all without blame or criticism. With this in mind, organizations must develop a set of strategies to facilitate, promote, and reward partnering and collaboration. This was the case in an ERP implementation project that I participated in. The project, led by a consortium of three consulting firms, involved more than 200 knowledge workers over a period of 30 months. It was realized within budget and on time and in a collaborative spirit. It also resulted in best lessons being learned without shame or blame. Recently, a cocktail party was organized to celebrate the 5 years that the system has been in production. Over 150 people attended the event, a number that speaks for itself!

Finally, in the twenty-first century, knowledge workers consider technologies an integral part of their work and an essential tool for the accomplishment of many of their tasks. As technologies continue to evolve, open-minded knowledge workers will constantly strive to try new technologies. This creates an imperative for organizations to integrate ongoing and up-to-date technology training into their human resource management practices and to ensure that employees have opportunities to use it.

In conclusion, knowledge and the knowledge workers must be considered essential valuable resources to the success, competitiveness, and survival of organizations. As pictured in Figure 1.4, they have taken the place of machinery and have become the center of the new economic system.

Consequently, organizations must not only acknowledge these phenomena, but also bring everything together for the full involvement and contribution of their employees, from breaking down day-to-day barriers and aligning human resources practices to developing knowledge management strategies. To do so, they must ensure the active participation of the leaders in the role of nurturing the process through which the workers use their knowledge. This implies getting them to pay special attention to people and the dynamics of knowledge, teamwork, and collaboration; in other words, caring as much for the people they employ as for the deliverables they produce. As illustrated in the examples above, leaders must not try to control or impose on the knowledge workers. They must concentrate on the environment where the knowledge is created and the knowledge workers evolve--taking care of the place so that the people are taken care of. Bottom line, the old expression that "everyone can be replaced" is





**Figure 1.4** The new economic system.

not appropriate and reasonable in organizations that want to participate in the knowledge economy.

### 1.3 Knowledge Management and Collaboration

This section looks more closely at knowledge and collaboration in reference to organizational capital. It discusses the influence of the level of maturity of an organization over knowledge and collaboration and from the perspective of the knowledge worker. It finally recommends actions to get into the collaborative mode.

Knowledge management has long been associated with information systems that are able to maintain corporate history, experience, and the expertise of the knowledge workers. The belief that those knowledge systems could become a stable organizational structure despite the mobility of knowledge workers is being questioned today. Indeed, many knowledge management initiatives have failed and continue to produce poor results, leading to the realization that it takes more than a technology to manage knowledge.

Indeed, successful knowledge management initiatives go beyond the implementation of a technology. In effect, these projects have emphasized the acceptance and utilization of the technology by bringing together a sense of motivation, commitment, and collaboration of everyone involved in the knowledge management process. On this basis, knowledge management is now being more and more associated with intellectual capital management. Intellectual capital is comprised of three elements: human, structural, and customer capital.

Human capital is typically defined as the competencies and capabilities of the workers. Consequently, the value of human capital in an organization can be increased when:

- Workers are continuously educated and trained.
- Workers are guided and valued.
- Opportunities for knowledge sharing among workers exist.
- Conditions of motivation and intellect are created to allow for innovation.
- Knowledge is captured for other workers who are not part of the initial learning process.

Structural capital consists of data and knowledge repositories, documents, models, and drawings resulting from intellectual activities. Structural capital offers the most benefit to an organization when knowledge is organized in such a way that it can be retrieved for reference, to establish expertise, and for networking and timely feedback.

For its part, customer capital involves the knowledge embedded in the business partners, as presented earlier in Figure 1.2, who are the customers, suppliers and supply chain partners, distribution partners, industry networks, and competitors. Customer capital involves many facets, including branding, business relationship, reputation for quality, name recognition, loyalty, distribution channels, contracts and agreements, technical superiority, and value chains.

Because intellectual capital is difficult to measure, it is not included as an asset in the corporate balance sheet. On the other hand, technologies and information systems have been capitalized for years and treated as assets. So, until there is a consensus on how to measure intellectual capital, it will be valued by its use and not in its costs. Nonetheless, there are now many efforts toward making intellectual capital management a valid approach in accounting for the value of an organization. It is simply a question of time and maturity.

The notions of maturity and timing are two elements of psychologist Robert Kegan's work on adult development. His theory on the possibility and necessity of ongoing psychological transformation in adulthood as it responds to the hidden demands of modern life can also be applied to organizations. "As an

organism grows, its culture of embeddedness becomes more complex, involves more people in ever more complex arrangements, and sets new tests and challenges for those persons and institutions which sponsor the evolution of the species” [2].

Kegan [3] identifies six stages or balances in the transitional process, where the dynamic pushes toward evolution and growth:

- Stage 0 corresponds to the incorporative balance, where the infant from birth to 2 years old is centered on his/her body and concentrates on his/her reflexes and perceptions.
- Stage 1 (age 2 to 7) marks the impulsive balance, where the child acts from his/her impulses and perceptions. He/she simply understands objects as they are perceived.
- Stage 2 (age 2 to 12) is associated with the imperial balance. This stage represents the shift from the infant concentrating on his/her body to the child developing his/her mind.
- Stage 3 (age 12 to 20) relates to the interpersonal balance. It involves mutuality and interpersonal concordance. Interestingly, it also integrates the notions of empathy and reciprocal obligations, an extension of the mind.
- Stage 4, or the institutional balance, typically occurs after 20 years old. It consists of finding self-identity and regulating relationships, bringing the importance of the mind to a higher level.
- Stage 5, the interindividual balance, also occurs in adulthood. It is at this stage that a person exists alongside the group and differentiates between relationships and one’s own identity. This stage grants an utmost importance to the mind.

Many adults operate at Stage 3 or below. Some reach Stage 4, and only a few Stage 5. Kegan asserts that Stage 4, or institutional balance, is now a requirement for a successful adult life. This assertion is worthwhile from a personal and professional perspective. Workers who have reached Stage 4 are independent employees who can act as effective leaders. They are able to combine the traditional management skills of planning, controlling, and decision-making with skills associated with institutional balance, that is, tolerance, compassion, and the ability to share knowledge and collaborate.

Along the same lines, many organizations today are operating in Stage 1, where they are centered on themselves and operating in a reactive mode. Those organizations are far from understanding the importance of knowledge and collaboration. Others, working under Stage 2, are more concerned with what can

happen if someone, such as stakeholders, discovers their lack of position in the matter rather than taking effective and meaningful actions.

Some organizations have reached Stage 3 by negotiating their need for knowledge management and collaboration with their workers. While agreements have been reached, they are based on empathetic and reciprocal obligations and were not reached in an intimate and bonding manner.

The organizations working at Stage 4 have created strong relationships with their knowledge workers, with some detachment from the traditional environment. They have taken a solid position in making knowledge and collaboration an important aspect of management.

Stage 5 organizations have created an interpenetration of systems. In other words, these organizations possess a multifaceted operating system, where knowledge and collaboration provide them with the ability to reinvent themselves and at the same time reward the workers for their contribution.

Entering the twenty-first century, more and more organizations are maturing and reaching Stages 4 and 5. They are recognizing the importance of knowledge workers and acknowledging the fact that they have become a new economic resource. These organizations have also come to realize that knowledge management systems are a means to an end, not an end in itself. They now better understand that they cannot manage knowledge nor the knowledge workers, but only the environment in which the knowledge is created. This phenomenon has contributed to a new definition of knowledge management, with a focus on collaboration and intellectual capital. Moreover, many organizations have started the shift to a new culture, where knowledge and collaboration have become a matter of renewal and survival.

For this shift to effectively occur in everyday life, organizations must reinvent the work environment. Barriers to inclusion must be removed and the focus must be placed on the commitment and contribution of all the workers. This change cannot occur by offering sporadic events or incentives, such as day workshops, ethic event weeks, or periodic promotions. Shifting to knowledge management and collaboration requires serious planning, including the development of strategy supported by tactical actions. These actions may include:

- Changing the organizational structures;
- Creating new roles to support knowledge management;
- Reviewing operating procedures;
- Reengineering human resources processes;
- Developing facilitation programs for teamwork;
- Promoting diversity;
- Adapting informal and formal rewards systems;
- Enhancing leadership practices;

- Investing in training and professional development programs;
- Implementing knowledge management and collaborative technologies.

The knowledge strategy and actions must also be combined with a change management strategy for the shift to occur and be sustained over time. This change management strategy must integrate several key elements, including the following.

First, the organizational imperative for change must be established, followed by the identification and empowerment of the leader or sponsor. Second, a core team of advocates should be assembled to communicate the imperative for change and to reinforce the need for a new culture. These committed individuals must be supported by top management and be able to engage in coaching, education, networking, and mentoring their coworkers. Third, quick hits should be given priority over long-term projects, as they constitute a good way to demonstrate the appropriateness of the shift to skeptical parties. This approach has the benefit of positively confronting the antagonist leaders and opening the door to further experimentation, coaching, and learning. Finally, organizations must be willing to offer their workers a new organizational and social contract—one that commits to making the work environment a place where the participants can most efficiently perform and is based on principles of trust tuned to core business processes—in other words, getting a commitment to the minds of their workers, not just their bodies.

In this new cultural context, organizations are switching their external controls to internal controls, such as trust, employee motivation, and the convergence of individual and organizational objectives and goals. They are taking advantage of the latest collaborative technologies to put together virtual teams to increase their performance. However, achieving performance through virtual teaming is based on a new paradigm, one where trust is of prime importance. This will be explored in more detail in Section 3.1.

## **1.4 The Virtual Team—A Promising Investment**

This section defines what is a virtual team. It explains the collaborative process, with the knowledge workers being at its center. It then examines how the virtual team can be a good investment for organizations wishing to increase knowledge and improve collaboration. Finally, it presents cases of successful Ecollaboration initiatives.

The term *virtual* is fairly new and is associated with concepts such as the virtual knowledge network, the virtual organization, the virtual team, the

virtual community of practice, and the virtual workplace, to name a few. These virtual concepts are all part of the Ecollaboration initiative. However, the virtual team makes the best use of collaborative technologies, as defined in Chapter 2.

Basically, the virtual team is defined as a group of knowledge workers who are geographically dispersed but not necessarily distributed across expansive geographic locations. They are working together toward a common purpose and goal and using electronic communication as their primary medium. The virtual team is interested in explicit and tacit knowledge management using integrated technologies from synchronous and asynchronous communication, knowledge management functionalities, discussion forums, and much more. The virtual team may have little or no face-to-face contact. Therefore, it must build a foundation of teamwork and trust for collaboration to truly happen and for performance to be achieved.

Among the characteristics of a virtual team is the type. Fisher and Fisher [4] define the type based on three criteria: time, space, and culture:

1. Time refers to *when* people work. Virtual team members may be assigned different hours, different shifts, and different days to work. They may also work at the same moment but in a different time zone.
2. Space refers to *where* people work. Virtual team workers may work in close proximity to one another or be quite remote. They may share the same office or a different one on the same floor or another floor in a given building. Or they may also be located in different buildings, in different cities, and even in different countries.
3. Culture refers to *how* people work together--the ways in which they deal with each other. Elements of culture include languages, races, nationalities, professions, and education, as well as religious, political, social, and economic factors. In a way, even gender can influence culture.

The six types of virtual teams from Fisher and Fisher [4] represent combinations of the three criteria:

1. Different time, same space, different culture;
2. Different time, different space, different culture;
3. Same time, different space, different culture;
4. Different time, same space, same culture;
5. Different time, different space, same culture;
6. Same time, different space, same culture.

For their part, Duarte and Snyder [5] present seven types of virtual teams based on boundaries and membership:

1. The virtual corporation lacks clear boundaries with the organization and has a fluid membership; that is, members come and go as needed.
2. The parallel team has clear boundaries and distinct membership and works in the short term to develop recommendations for an improvement in a process or system.
3. The project or product development team has a fluid membership with clear boundaries and a defined customer, technical requirement, and output.
4. The work or production team has a distinct membership and clear boundaries, where members perform regular and ongoing work, usually in one functional area.
5. The service team has a distinct membership and aids in ongoing customer and network activity.
6. The management team has a distinct membership and works on a regular basis to lead corporate activities.
7. The action team has a fluid or distinct membership. It deals with immediate action and emergency situations.

The type of virtual team can also be characterized by the purpose of sharing information and collaborating. Figure 1.5 presents the types of virtual teams and their entry point in the collaborative process.

The *virtual learning team* is driven by the acquisition of knowledge. The members of the learning team usually possess only a broad knowledge of the topic. Consequently, they begin the collaborative process by learning about the subject at hand: in other words, receiving explicit and tacit knowledge. Each member uses the learning by doing exercises or applying the learning on the job. Questions are typically raised at this stage that can be shared with the team members for insight and resolution. At that point, the communication of ideas provides a better understanding of the topic and its application. It usually creates incentives for further discussion. The discussion results in clarification that can in turn lead to knowledge base improvement and even innovation. One example of a learning team is a group of professionals coached by a virtual team designer on the methodology to implement virtual teams. Another example would be a group of nurses who are coached by a cardiologist in the leading-edge techniques required to care for postsurgical patients.

The *virtual focus team* is concerned with the delivery of a product, service, or project. The members of the focus team typically have a good knowledge of

the topic at the beginning of the collaborative process. However, the depth of expertise may vary from one member to another. In this context, they enter the collaborative process by communicating their knowledge. They usually shift easily to discussion and clarification. From there, they focus on improving their knowledge and may even be capable of innovation. An example of a focus team would be a group of high-technology sales directors trying to increase sales opportunities while improving the sales cycle and client satisfaction. Another example is a group of automobile workers looking to reduce the gas consumption of a car.

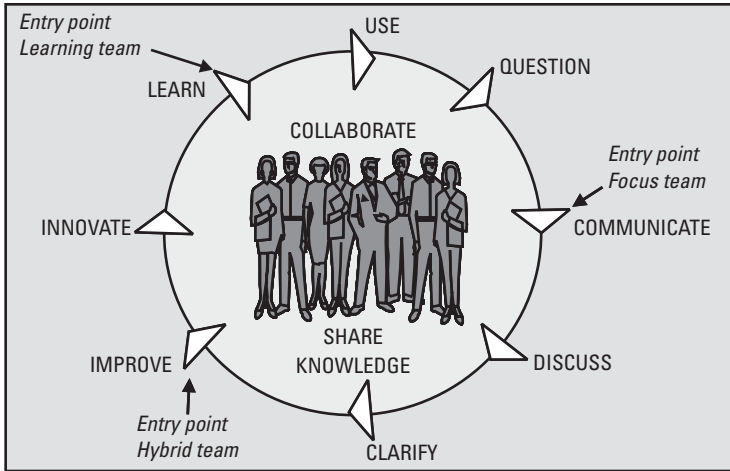
The *virtual hybrid team* is as much interested in delivering a product, service, or project as it is in innovating and generating new knowledge. The members of the hybrid have in-depth knowledge of the subject, thereby establishing them as experts. Based on this expertise, they begin the collaborative process with the goal to improve upon the knowledge of the task at hand, as well as hoping to innovate. An example of a hybrid team is a group of oncologists searching for a cure for cancer. While they may not discover a cure, they may improve upon current knowledge and treatment. Another example is a group of chemists interested in creating a new substance for painting metals. They may only improve the existing type of paint products or they may develop a new and innovative product.

Virtual teams with learning, focus, or hybrid objectives have a very promising future. Their benefits are not only financial, but also include opportunities to increase the knowledge base and the intellectual capital; in turn, the financial position can be improved.

In terms of human capital, virtual teams offer many opportunities, including:

- Increasing knowledge and expertise;
- Improving leadership skills based on team synergy, thereby decreasing the ratio of managers per knowledge workers;
- Improving just-in-time learning and knowledge sharing;
- Reducing cross-border and cross-organization information sharing, as well as the associated delays and frustrations;
- Increasing the proportion of challenging assignments;
- Improving the leverage of human capital and the ability to innovate;
- Bringing the best people together irrespective of geography and time;
- Increasing the satisfaction and motivation of knowledge workers;
- Improving communication across time, space, and culture;
- Attracting and retaining knowledge workers through flexible work arrangements and leadership style and improved quality of life through a reduction in commuting and traveling.





**Figure 1.5** Collaborative process.

The volume of explicit and tacit knowledge or structural capital generated in virtual teams is expected to be greater than in traditional teams based on the synergy and trust developed through the collaborative process. Because virtual teams are using collaborative technologies, the knowledge is also saved as it is generated. It can then be easily retrieved for reference and feedback to establish expertise and for networking. The opportunity for growth in structural capital can translate as follows:

- Reduction in product development and sales cycle time;
- Increased research and development activities;
- Increased number of multifunctional teams;
- Improved time to market;
- Increased number of product introductions;
- Improved quality of processes and products;
- Increased use of information systems.

Finally, virtual teams can develop customer capital or the knowledge embedded in the business partners by:

- Improving and tightening relationships with partners;
- Improving customer service;
- Decreasing customer complaints;
- Increasing market share and sales;

- Improving company image;
- Increasing customer satisfaction;
- Increasing customer loyalty;
- Increasing the number of alliances and partnerships;
- Reducing the numbers of intermediaries and delays in processes.

From a financial perspective, virtual teams can lead to:

- Reduction in traveling and livings expenses;
- Reduction of costs associated with searching and collecting information;
- Reduction of training and recruiting costs;
- Reduction of costs related to workspace;
- Reduction of coordination costs;
- Increased sales revenues.

Following are some early adapter cases of successful implementation of virtual teams from clients of collaborative technology suppliers as presented on Internet sites.

### **CBS Learning Lab at Copenhagen Business School**

The CBS Learning Lab [6] is a teaching and learning advisory unit at the Copenhagen Business School (CBS) offering services and products to the CBS study programs and to administrative staff and students. Its main objective is twofold: to improve the quality of study programs and to create and communicate new knowledge in higher education competencies development and learning processes. In order to achieve these objectives, in 2001 the Lab began using collaborative technologies to organize its learning activities while providing information on programs and courses and communicating with students and faculty members.

The CBS virtual learning team brings together over 15,000 students and teachers, independent of time and distance. Through the use of forums, they are able to engage in learning activities centered on sharing knowledge, discussion, and dialogue. Instant messaging or on-line chats is also being used for social activities and study groups.

### *The Fielding Institute*

The Fielding Institute [7], located in California, is renowned worldwide for its leadership and the quality of its graduate level programs for midcareer adults. Founded in 1974, the Fielding Institute was a pioneer in distance learning by

combining face-to-face meetings with telephone and postal mail communication. In 1996, this visionary institute traded its electronic mail network for collaborative technology. Its goal was to make graduate and certificate programs accessible anytime and anywhere, as well as supporting governance committee and project teams, including students, alumni, employees, and faculty members. It is one of the few graduate schools offering a virtual team design curriculum.

Through the use of collaborative technology, the Fielding Institute has been able to attract high-caliber students and faculty members from all over the world. Its virtual learning approach uses mostly asynchronous discussion forums and is centered on the learner. In other words, the learner takes the lead and establishes the flow and direction of the process. The instructor facilitates the learning process by providing the framework for the courses and guiding the students through active discussions and critical thinking.

This collaborative approach to learning contributes to increasing the skills and competencies of the virtual members in the chosen domains. It also provides them with the opportunity to develop virtual collaboration abilities through practical experiences and to improve their position in the knowledge-based economy. Some 2,200 users are currently using the collaborative environment known by the name of Felix.

### *GlaxoSmithKline*

GlaxoSmithKline (GSK) [8] is a leading-edge worldwide research-based pharmaceutical company. GSK is constantly seeking ways to reduce its development cycle time and time to market, as well as the cost and time it takes to connect with its many businesses. Those partners include biotech firms, university and research labs, law firms, outsourced manufacturers, and marketing and advertising agencies. As a visionary company, it is not surprising that it has already turned to collaborative technology to achieve its objectives.

GSK uses virtual teams for many activities, including research and development, coordination of legal documents, management of clinical tests, and many alliance projects. These teams use collaborative functionalities such as discussion forums, instant messaging, real-time file sharing, and meeting tools. Claims of \$400,000 in administrative and access costs have been avoided over a period of eight months in alliance projects using collaborative technology. These successful initiatives are confirming that virtual teams and collaborative technology are an integral part of the GSK strategy for growth and innovation.

### *Ford Motor Company*

Ford [9, 10] is one of the world's largest car and truck manufacturers. The company is committed to delivering and improving the quality of its products and

services. Its workforce includes employees, suppliers, dealers, and other partners located in more than 200 countries.

Ford uses virtual teams for many purposes, such as leadership programs, product development, and executive team applications. The collaborative technology in place involves functionalities such as workspaces and discussion forums, content management, whiteboards, instant messaging, and workflow. The number of users has grown to more than 20,000 since the introduction of collaborative technology in October 2000.

Reduction in information technology costs, traveling, and relocation costs; reduction in problem resolution cycle time; faster design iterations; timely and effective interactions; and facilitation in the innovation process are among the benefits achieved by collaborative initiatives at Ford.

### *Shell International Exploration and Production*

Shell International Exploration and Production (SIEP) [11] represents about 30% of the company global workforce. Its objective is to improve the efficiency and productivity of existing oil and gas and to find new reserves. Because employees migrate jobs every 3 to 4 years, Shell has turned to virtual teams and collaborative technology to address the challenge of managing knowledge.

Since 2000, Shell has deployed communities of practices increasing opportunities for connecting its employees, continuous learning, knowledge sharing, problem solving, and innovation. Among those communities, the Outpost global expatriate network provides information and support for families planning to move and for connecting expatriate families. There are currently over 15,000 employees in Shell involved in virtual communities and using discussion forums and other collaborative functionalities.

Shell claims annual savings of over \$200 million through the improvement of project management and communication and the enhancement of information gathering and sharing across the organization. In fact, those savings could amount to more when cost avoidance cases are considered, such as the case where a drilling tool was stuck in an oil well. Engineers found a solution to remove it using the discussion forum and the knowledge base of their collaborative environment. This single event prevented losses that could have amounted to millions of dollars.

### *Lowe Worldwide*

Lowe [12] is a global communications and marketing consultancy that produces advertising for multinational clients. It has offices in over 80 countries and employs more than 9,000 people. Its Asia Pacific (AP) division consists of offices in Hong Kong, mainland China, Singapore, Shanghai, Japan, India, Thailand, Philippines, Malaysia, Indonesia, and Vietnam.

Lowe AP is constantly looking to produce and sustain creative ideas by assembling the best team of professionals, who may come from several of its offices worldwide. In 2002, it decided to implement collaborative technology and deploy virtual teams focusing on pitch development, new business development, client account management, and interoffice training. Workspaces, discussion forums, file tools, meeting facilities, and image sharing are some of the collaborative functionalities used.

This initiative resulted in the reduction of costs for couriers, faxing, phone calls, and traveling while increasing productivity, enhancing creativity, improving competitive advantage, and allowing for on-demand client service.

### *Canam Manac*

The Canam Manac Group [13] is a Canadian corporation and a leading manufacturer of structural steel components, including steel joists and decks, to be used in the construction of skyscrapers and in the fabrication of semitrailers and forestry equipment. The group has divisions in Canada, Romania, India, the United States, and Mexico and manages projects worldwide.

In the past, the company has relied heavily on phone, fax, and on-site meetings combined with some electronic documents exchange to manage its construction projects. To maintain its competitive edge and attract large national accounts, the company decided to build a powerful communication and collaborative infrastructure for its structural steel and joist fabrication divisions in 2000. There are now some 2,000 employees using the collaborative environment and features that involve workspaces and discussion forums, workflow, instant messaging, document management, and real-time collaboration.

Benefits generated from virtual teaming and collaborative technology include reduction in courier services, communication, and travel expenses; increased revenues; and improved project execution time. Bottom line, Canam Manac has realized the return on its investment within the first year.

### *Compaq Financial Markets Group*

The original Compaq Financial Markets Group [14] provided solutions to global financial services firms to support the sales of its technology solutions worldwide. Since September 2001, the Group has been integrated within the organization of Hewlett Packard, the technology solutions provider, as part of its acquisition strategy.

The account managers were responsible for coordinating campaigns that required the participation of multiple sales agents within Compaq before engaging with customers and partners. These coordination efforts relied primarily on faxes, e-mail, telephone, and face-to-face meetings.

The Group turned toward collaborative technology and virtual teams to improve its sales operations. Through the use of collaborative features such as

workspaces, discussion forums, real-time communication, and instant messaging, the Group improved communication among its sales teams. This improved communication led to more benefits including reduction in sales cycle time, increased customer satisfaction and sales productivity, reduction in travel costs, and continuous and timely sales training and coaching.

### *Sharp Microelectronics of the Americas*

Sharp Microelectronics of the Americas [15] is the world's leader in devices and solutions that reduce parts count, board size, and costs. In 2003, Sharp Microelectronics, known for its innovative initiatives, turned to collaborative technology as part of its marketing and sales strategy, with the objectives of increasing sales productivity and saving money.

Equipped with collaborative features, the virtual sales and marketing teams can identify and respond faster to business opportunities as well as be in a better position to develop a total solution for its customers. It can prepare more competitive quotes by involving the distributors, representatives, and technical experts in a timely fashion.

Sharp is one of the seven companies that earned honorable mentions in the NetworkWorldFusion User Excellence Award competition in 2003.

### *Barclays Global Investors*

Barclays Global Investors [16] is a worldwide investment management firm managing \$746 billion in assets for institutional and individual investors. Barclays has deployed collaborative software for its 2,000 employees to speed everything from contract management to deal flow.

The users are working in a virtual environment equipped with many collaborative functionalities and features such as document and content management, workspaces, forums, and workflows. Through collaboration and sharing of best business practices, they have been able to improve the response time for answering queries and proposals and developing contracts.

### *Sentara Healthcare*

Sentara Healthcare [17] is a not-for-profit family hospital and healthcare facility servicing North Carolina and Virginia. It is one of the largest healthcare systems in the United States.

In 1999, the organization turned to collaborative technology to streamline processes, manage documents, and share information more productively. Some 15,000 users distributed in 80 facilities and various medical and administrative divisions are now working virtually. Over 2,000 virtual teams are using workspaces and workflow on a daily basis for accomplishing their tasks. Some of these tasks are the settlement on policies and procedures, the development of hospital

plans, the management of conditions for hospital accreditation, and the maintenance of budgeting information updates.

Through this innovative initiative, Sentara has improved information-sharing within departments, across business divisions and with business partners, and provided a secure area for physicians and clinicians to share and store confidential information.

## **1.5 Building the Business Case**

Intellectual capital management is a very interesting avenue for providing a justification for the investment in virtual teams and collaborative technology. However, it may not be enough to persuade some of our traditional managers. Consequently, the business case must be built on financial elements and rely on some creativity and the development of a hypothesis for the integration of intellectual capital.

In this section, the case of a sales and marketing team in a high-technology organization is used to illustrate how the business justification can be put together. The traditional and virtual scenarios are analyzed and then compared. The case is hypothetical but uses a factual basis for costs and revenues. The evaluation concentrates on the following costs:

- Knowledge management;
- Coordination;
- Traveling and per diem expenses;
- Resignation and Recruiting;
- Salaries and sales commissions;
- Collaborative software and consulting services.

Based on the concepts and methodology presented in this book, the organization targets a pilot project. The scope involves three regions in North America composed of eighteen sales directors (six per region), three regional managers, and the district manager based at the corporate head office. The main objectives of the project are to increase sales revenues and to reduce operational costs.

Following are the hypotheses that are common in both scenarios:

- Total working hours per week per employee: 40;
- Average number of working weeks per year: 50;
- Average number of working days per employee per year: 220;

- Average annual base salary including fringe benefits: \$100,000;
- Annual sales quota per sales director: \$1,500,000;
- Average traveling and living expenses per employee for a district meeting (airfare \$750, hotel and meals \$580, car rental and parking or taxi \$200): \$1,530;
- Rental fees for hotel meeting room and costs of catering services per district meeting: \$2,000.

### *The Traditional Scenario*

In the traditional scenario, face-to-face coordination meetings are held every week in each region. The typical meeting lasts for about 3 hours so that everyone is informed and up to date with the activities of the others.

District face-to-face meetings are held quarterly in one of the regions. The host region changes every quarter, yet fifteen people are required to travel each time (i.e., twelve sales directors, two regional managers, and the district manager). The quarterly meetings are spread over 3 days.

Traveling to the district meeting is usually done on the company's time. There is a kick-off session the evening that the employees arrive. Sales and marketing review and planning sessions are held the other two days. Because the kick-off session is partly considered a social activity, employees are not compensated for their attendance. Typically, the employees travel back home on the last day. Traveling back can sometimes be on the company's time or outside the working hours. Because it is considered to balance out somehow for the first night's session, there is no compensation. For those traveling, the district meeting corresponds to two nights at the hotel and three days of living expenses. The meetings take place at the hotel where the employees stay and a meeting room is reserved with food being catered for lunch.

The total annual coordination costs for the regional weekly meetings are estimated at \$178,977.

The total annual coordination costs of the quarterly district meetings are estimated at \$80,000.

The total annual costs for traveling and livings including the meeting room and the catering services are estimated at \$99,800.

To simplify the example, all of the sales directors meet their quotas. In the same line, an average commission rate is attributed to each employee category independent of the products. Sales directors receive 5% commissions on their total sales, or \$75,000 once their individual quota is met. Regional managers receive 1.25% commission, or \$112,500 on the total regional sales once the



regional quotas are met. The district manager likely will get 0.5% commission, or \$135,000 on the overall district sales once the quotas are met.

The salary for the 22 employees averages \$2,200,000 annually.

Assuming the quotas are met:

Total annual sales revenues are estimated at \$27,000,000 and total commissions at \$1,822,500.

Annual commissions paid to:

Director: \$75,000,

Regional manager: \$112,500

District manager: \$135,000

So far so good for the hard benefits. Now let us be creative in integrating intellectual capital components. In terms of structural capital, the tacit and explicit information is not always documented and maintained. While explicit information and knowledge are often in better shape, the tacit one is often lost because it is primarily exchanged verbally.

In this context, it is legitimate to assume that an employee can take 1 hour per day searching for explicit and tacit information. A collaborative employee can also take as much time, that is another hour, providing explicit and tacit information to coworkers.

As examples, our sales employees may spend time looking for the latest sales contract form or the one for credit checking. They may not know or may not remember that the procedures for credit checking have changed lately or that another person is now responsible for it. They may not know how to correctly complete the form, nor who to ask for help. They may have forgotten to consider a winning proposal that could be reused. They may contact several persons for information, unaware that they have asked the wrong person. They may be asking the right person who is constantly providing the same information to one person after another; not surprising that the associated costs can be high!

Annual costs associated with the time spent on searching and sharing tacit and explicit knowledge are estimated at \$550,000.

On the customer capital side of the equation, one sales employee may not know about the new context in a customer account because he/she missed the first part of a meeting or did not happen to be in the hallway when two of his/her colleagues discussed it. Not only is he/she not searching for the information, he/she does not even realize that it exists. Once he/she learns about it, it may be too late for action, and a sale, or even a client, may be lost. Again being conservative, it is not unrealistic to believe that some sales, approximately 0.5% of the total sales revenues, are lost in this fashion.

Loss of sales resulting from lack of knowledge-sharing and collaboration is estimated at \$135,000 annually.

Some employees may also feel they are losing sales or wasting time in coordination meetings each week. Some may not appreciate traveling every quarter for regional meetings that are consuming some personal time and not necessarily leading to more sales and commissions. In short, these situations and others you are familiar with can lead to frustration, loss of motivation, and resigning from your position in hopes of greener grass at the competition.

Being conservative, let us assume that one sales employee resigns each year and that it takes 3 to 4 months to recruit and bring aboard a new employee—hopefully with no recruiter fees incurred. While there is a cost savings in salary of approximately \$30,000, there can be a loss in total sales, say 0.5% of total sales. This scenario is somehow conservative because it does not involve any loss in the client base nor the departure of other employees.

Annual costs associated with employee resignation and recruiting are estimated at \$105,000.

### *The Virtual Scenario*

The virtual scenario connects the sales employees through collaborative technology. This scenario also shifts the traditional command and control management style to one of collaboration optimizing management of explicit and tacit information. In this respect and based on the ongoing creation and flow of information and knowledge in the collaborative environment the cost of managing information can be reduced by half, to \$275,000 without lost in sale opportunity. The form of coordination changes so that the number and the time to be invested in face-to-face regional and district meetings can be reduced.

In the virtual scenario, regional meetings are reduced from 3 to 2 hours and are scheduled on a bimonthly basis. The district meetings are still held over 3 days or 1 evening and 2 days but only every 6 months.

The total annual coordination costs for the regional bimonthly meetings are estimated at \$57,273.

The total annual coordination costs of the biannual district meetings are estimated at \$40,000.

The total annual costs for traveling and living expenses including the meeting room and the catering services are estimated at \$49,900.

To encourage collaboration among the sales team, the commission plan is redesigned. Two options will be analyzed here. Option 1 constitutes a complete shift in philosophy, with the commission for the directors and managers

becoming a function of the district sales revenues, as was already the case for the district manager. Option 1 commission rates are:

- Director: 0.30%;
- Regional manager: 0.45%;
- District manager: 0.55%.

Option 2 stands in the middle, with the directors' commissions being a function of individual performance and both district performance and the manager's commission based on the district performance. Both options correspond to an increase in commissions, assuming the quotas are realized. The commission rates under this option are:

- Director: 2.50% on individual sales revenues and 0.20% on district revenues;
- Regional manager: 0.45%;
- District manager: 0.55%.

The salaries for the 22 employees average \$2,200,000 annually.

Assuming that quotas are met, total annual sales revenues are estimated at \$27,000,000 and commissions are estimated as shown in Table 1.1.

These direct financial benefits of the options are expected to increase the synergy among individuals. A stronger synergy would greatly stimulate tacit and explicit knowledge-sharing and management. Moreover, the collaborative features of the technology such as discussion forums, content management, and search engines would even help to eliminate costs associated with unproductive tacit and explicit knowledge, management, and lost sales opportunities.

Frustration attributed to time wasted searching for information, loss in sales and commissions, required participation to coordination meetings, and imposed traveling could be lessened, if not eliminated. As a result, employee satisfaction and motivation could be greatly improved. In turn, this new situation would fuel the dynamism of the individuals and the team, allow for the creation of new knowledge, and generate learning opportunities on a continuous basis. In terms of retention, the number of employees leaving could conservatively be reduced from one each year to one every 2 years. The impact on sales could be reduced from 0.5% lost to 0.3%, since the others could take over the accounts based on the knowledge shared and documented.

Annual costs associated with employee resignation and recruiting are estimated at \$25,500.

**Table 1.1**  
Virtual Scenario—Commissions

	<b>Option 1</b>	<b>Option 2</b>
Director (18)	\$81,000	\$91,500
Regional manager (3)	\$121,500	\$121,500
District manager (1)	\$148,500	\$148,500
Total	\$1,971,000	\$2,160,000

This new collaborative spirit could even generate a chain effect, such as improving customer or partner relations and satisfaction as well as company image, reducing the sales cycle, attracting new clients, and creating new sales opportunities. In this context, it is not unrealistic to believe that it would have a positive impact on sales revenues or a 5% increase over the traditional scenario.

Assuming a 5% increase in sales revenues, annual sales revenues are estimated at \$28,350,000 and commissions are estimated as shown in Table 1.2.

To be coherent, the costs associated with employee resignation are revised as follows.

Annual costs associated with employee resignation and recruiting are estimated at \$27,525.

As mentioned previously, this initiative is considered a pilot project intended to demonstrate the benefits of collaborative technology and virtual teaming. In this context, the collaborative software has been leased, and not purchased, in order to minimize the financial risks. Under the \$10,000 annual lease agreement, the supplier hosts the collaborative environment on its technology infrastructure for a maximum of 25 participants. This alternative to

**Table 1.2**  
Virtual Scenario—Revenue Increase—Commissions

	<b>Option 1</b>	<b>Option 2</b>
Director (18)	\$85,050	\$94,200
Regional manager (3)	\$127,575	\$127,575
District manager (1)	\$155,925	\$155,925
Total	\$2,069,550	\$2,234,250

purchasing means that many costs, such as software administration and those associated with maintaining a technology infrastructure, are avoided.

However, efforts and costs for analyzing, designing, implementing, and managing the collaborative environment and the virtual team must still be invested. Indeed, there are several tasks that must be done prior to going live--that is, starting to work virtually. Those are presented in detail in Chapter 4.

To ensure the success of the project, the enterprise has decided to contract a team of consulting experts. For a lump sum of \$60,000, the group is responsible for coordinating the project activities, conducting the analysis and design, configuring the software, preparing and animating the launching session including training, providing facilitation and coaching during the year, and finally supporting the evaluation of the virtual teaming experience.

Annual costs of collaborative software is estimated at \$10,000 and consulting fees at \$60,000.

### *Comparing the Scenarios*

Table 1.3 presents a consolidation of the costs and revenues.

In the traditional scenario, total costs are estimated to \$5,171,277 and total revenues to \$27,000,000 for a benefit of \$21,828,723.

In the virtual scenario with no increase in sales, the costs under the commission plan Option 1 are estimated to \$4,688,673, representing a \$482,604 or 9.3% reduction over the costs of the traditional scenario. The benefit increases by 2.2% to \$22,311,237. Under option 2, the costs are estimated to \$4,877,673, representing a \$293,604 or 5.7% reduction over the traditional scenario. The benefit in this case increases by 1.3% to \$22,122,237.

In the virtual scenario where there is a 5% increase in sales, the costs under Option 1 are estimated to \$4,789,248, representing a \$382,029 or 7.4% reduction over the costs of the traditional scenario. The benefit increases by 7.9% or \$1,732,029 to \$23,560,752. Under Option 2, the costs are estimated to \$4,953,948, representing a \$217,329 or 4.2% reduction over the costs of the traditional scenario. In this case, the benefit increases by \$1,567,329 or 7.2% to \$23,396,052.

In the virtual scenario where there is no increase in sales, the ROI period is 1.7 month for Option 1 and 2.9 months for option 2. It drops to about half a month in both options when there is a 5% increase in sales.

From the employee's perspective, there is an incentive for endorsing the collaborative philosophy and for participating actively in virtual teaming. Tables 1.4 to 1.7 compare the scenarios and present the positive impact on the total compensation for each type of employee. There is no need to comment further as the numbers speak for themselves!

**Table 1.3**  
Costs and Revenues of the Scenarios

	Traditional Scenario	Virtual Scenario		Virtual Scenario	
	Scenario	No Increase in Sales		5% Increase in Sales	
		Commission Plan		Commission Plan	
	Option 1	Option 2	Option 1	Option 2	Option 2
	Estimated Costs	Estimated Revenues	Estimated Costs	Estimated Revenues	Estimated Revenues
Sales	\$27,000,000	\$27,000,000	\$27,000,000	\$28,350,000	\$28,350,000
Explicit and tacit knowledge management	\$685,000	\$275,000	\$275,000	\$275,000	\$275,000
Regional meetings coordination	\$178,977	\$57,273	\$57,273	\$57,273	\$57,273
District meetings coordination	\$80,000	\$40,000	\$40,000	\$40,000	\$40,000
Traveling and living–district meetings	\$99,800	\$49,900	\$49,900	\$49,900	\$49,900
Employee resignation and recruiting	\$105,000	\$25,500	\$25,500	\$27,525	\$27,525
Salary	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000
Commission on sales	\$1,822,500	\$1,971,000	\$2,160,000	\$2,069,550	\$2,234,250
Collaborative software rental and consulting services	\$70,000	\$70,000	\$70,000	\$70,000	\$70,000
<b>Total</b>	<b>\$5,171,277</b>	<b>\$27,000,000</b>	<b>\$4,688,673</b>	<b>\$27,000,000</b>	<b>\$4,953,948</b>
				<b>\$28,350,000</b>	<b>\$28,350,000</b>

**Table 1.4**

Traditional to Virtual Scenario with No Increase in Sales–Commission Plan Option 1

	Traditional			Virtual			
	Commission Rate	Commission	Total Compensation	Commission Rate	Commission	Total Compensation	% Increase in Compensation
Director	5.00%	\$75,000	\$175,000	0.30%	\$81,000	\$181,000	3.4%
Regional manager	1.25%	\$112,500	\$212,500	0.45%	\$121,500	\$221,500	4.2%
District manager	0.50%	\$135,000	\$235,000	0.55%	\$148,500	\$248,500	5.7%

**Table 1.5**

Traditional to Virtual Scenario with No Increase in Sales–Commission Plan Option 2

	Traditional			Virtual			
	Commission Rate	Commission	Total Compensation	Commission Rate	Commission	Total Compensation	% Increase in Compensation
Director	5.00%	\$75,000	\$175,000	2.5% and 0.2%	\$91,500	\$191,500	9.4%
Regional manager	1.25%	\$112,500	\$212,500	0.45%	\$121,500	\$221,500	4.2%
District manager	0.50%	\$135,000	\$235,000	0.55%	\$148,500	\$248,500	5.7%

**Table 1.6**

Traditional to Virtual Scenario with 5% Increase in Sales–Commission Plan Option 1

	Traditional			Virtual			
	Commission Rate	Commission	Total Compensation	Commission Rate	Commission	Total Compensation	% Increase in Compensation
Director	5.00%	\$75,000	\$175,000	0.30%	\$85,050	\$185,050	5.7%
Regional manager	1.25%	\$112,500	\$212,500	0.45%	\$127,575	\$227,575	7.1%
District manager	0.50%	\$135,000	\$235,000	0.55%	\$155,925	\$255,925	8.9%

**Table 1.7**

Traditional to Virtual Scenario with 5% Increase in Sales–Commission Plan Option 2

	Traditional			Virtual			
	Commission Rate	Commission	Total Compensation	Commission Rate	Commission	Total Compensation	% Increase in Compensation
Director	5.00%	\$75,000	\$175,000	2.5% and 0.2%	\$94,200	\$194,200	11.0%
Regional manager	1.25%	\$112,500	\$212,500	0.45%	\$127,575	\$227,575	7.1%
District manager	0.50%	\$135,000	\$235,000	0.55%	\$155,925	\$255,925	8.9%

## References

- [1] Pearson, T. A., “Measurements and the Knowledge Revolution,” American Society for Quality, available at <http://www.google.ca/search?q=cache:TWG148K5GFAC:www.measurementquality.org/papers/Pearson.doc+knowledge+revolution&hl=en&ie=UTF8>, June 11, 2002.
- [2] Kegan, R., *The Evolving Self*, Cambridge: Harvard University Press, 1982, p. 142.
- [3] Kegan, R., *In Over Our Heads: The Mental Demands of Modern Life*, Cambridge: Harvard University Press, 1994.
- [4] Fisher, K., and M. Fisher, “The Distance Manager: a Hands-on Guide to Managing Off-Site Employees and Virtual Teams,” New York: McGraw-Hill, 2000.
- [5] Duarte, D., and N. Snyder, “Mastering Virtual Teams: Strategies, Tools, and Techniques That Succeed,” San Francisco: Jossey-Bass, 2001.
- [6] Sitescape, “University of Copenhagen,” available at [http://www.sitescape.com/next/test\\_cbs.html](http://www.sitescape.com/next/test_cbs.html), Feb. 19, 2004.
- [7] Sitescape, “Fielding Institute,” available at [http://www.sitescape.com/next/test\\_fielding.html](http://www.sitescape.com/next/test_fielding.html), Feb. 19, 2004.
- [8] Groove Networks, “GlaxoSmithKline,” available at [http://www.groove.net/default.cfm?pagename=CaseStudy\\_GSK](http://www.groove.net/default.cfm?pagename=CaseStudy_GSK), Feb. 19, 2004.
- [9] Riff, R., “Collaboration at Ford,” available at [http://www.e-designcenter.info/p\\_events/papers/dec\\_pdfs/Collaboration%20at%20Ford%20-%20Richard%20Riff%20-%20KP%20-%20Dec%202002.pdf](http://www.e-designcenter.info/p_events/papers/dec_pdfs/Collaboration%20at%20Ford%20-%20Richard%20Riff%20-%20KP%20-%20Dec%202002.pdf), Feb. 22, 2004.
- [10] Documentum, “Ford Motor Company,” available at [http://www.documentum.com/customer\\_success/success/ford\\_eroom.htm#6](http://www.documentum.com/customer_success/success/ford_eroom.htm#6), Feb. 22, 2004.
- [11] SiteScape, “Shell International Exploration & Production: Huge Savings Through Knowledge-Sharing,” available at [http://www.sitescape.com/next/test\\_shell.html](http://www.sitescape.com/next/test_shell.html), Feb. 21, 2004.



- [12] Groove Networks. "Lowe," available at [http://www.groove.net/default.cfm?page-name=CaseStudy\\_lowe](http://www.groove.net/default.cfm?page-name=CaseStudy_lowe), Feb. 21, 2004.
- [13] IBM, "Canam Manac Group Builds Quick ROI and Competitive Advantage," available at <http://www.lotus.com/news/news.nsf/a47b-f6d43eeaa55e85256659005cfe50/083db4a2b5c7143585256c00005cfc52?OpenDocument>, Feb. 22, 2004.
- [14] Flypaper. "Case Study—Compaq Application—Sales Collaboration," available at <http://www.flypaper.com/exec.asp?Page=0.62&display=3507/1077464921974228>, Feb. 22, 2004.
- [15] IBM, "Sharp Microelectronics Puts a New Spin on Marketing," available at <http://www.306.ibm.com/software/swnews/swnews.nsf/n/jmae5msp3n?OpenDocument&Site=default>, Feb. 22, 2004.
- [16] Vignette, "Barclays Banks on Vignette," available at <http://www.vignette.com/content-management/0,2097,1-1-30-72-407-3476,00.html>, Feb. 19, 2004.
- [17] Sitescape, "Sentara Healthcare Stays Fit with SiteScape Collaboration Software," available at [http://www.sitescape.com/next/test\\_sentara.html](http://www.sitescape.com/next/test_sentara.html), Feb. 21, 2004.

# 2

## Collaborative Technologies

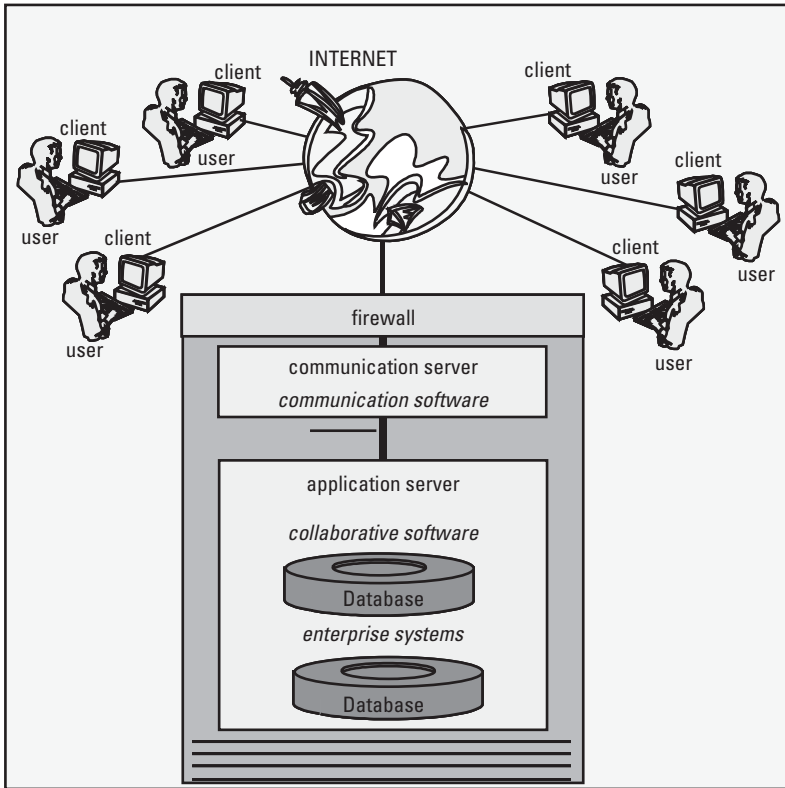
### 2.1 Technologies Overview

This section presents an overview of collaborative technologies. It discusses the global context of the technology in terms of technological infrastructure. It also provides a description of collaborative software characteristics, functionalities, and features.

Collaborative technology was earlier defined as a product resulting from the convergence of telecommunication and information technology. In other words, collaborative technology offers teams the facility to work in a private and secure virtual environment. This virtual environment, much like an office building, can be built on different types of landscape, have different architectures, and be equipped with different facilities.

Figure 2.1 presents one example of a collaborative technology landscape. First, the virtual participants or users are typically distributed geographically and are using microcomputers, also known as clients (in reference to distributed or client-server architecture, as discussed in Section 1.3). These computers can be equipped with Web cameras and speakers to support video and audio conferencing features. They can also have a wireless device for communication purposes.

In practice, the clients are hooked to a high-speed line to connect to the Internet. They pass through a firewall, get to a communication server, and then reach the application server where the collaborative software and the enterprise systems reside along with their associated database. The landscape may take other shapes, such as having the communication and collaborative software on the same server and the enterprise systems on another. In another case, the users may have to access a portal installed on one server before reaching the application server where the collaborative software and enterprise systems are installed.



**Figure 2.1** Technology landscape.

The technology landscape depends on many elements such as the number of users, the type of processes and transactions performed, the volume of data, the frequency of use, and much more. All of these elements must be analyzed carefully to ensure the robustness of the global technological architecture as well as its performance.

The functionalities of collaborative software can be broken into four categories:

1. General characteristics;
2. Technological characteristics;
3. User functionalities and features;
4. Administrative functionalities and features.

Essentially, the general characteristics relate to supplier information, maintenance and services offered, and other elements, such as languages and

documentation. Technological characteristics refer to the software framework and the technological landscape components. User functionalities and features are concerned with the facilities available and accessible to a typical user. Administrative functionalities and features are the ones restricted in use to the knowledgeable user responsible for customizing and maintaining the collaborative environment. The best-of-breed products integrate many, if not all, of those characteristics, functionalities, and features.

Collaborative manufacturers also often propose preconfigured modules. The preconfigured modules are built on the characteristics, functionalities, and features. They are essentially out-of-the-box solutions to support and improve collaboration for specific processes and tasks.

Today, the collaborative software market offers a wide range of solutions. However, the word *collaborative* is often used very loosely. Some products are labeled collaborative, but they are very limited in terms of functionalities and features. Take the case of some so-called collaborative manufacturing applications. They do not have any of the collaborative features. They only offer an exchange of data files between business partners using a dedicated communication line, an intranet or the Internet. This is similar in nature to the electronic data interchange of the 1980s.

Some other applications labeled collaborative simply grant access to their partners to look up information. Take the case of B2B applications that claim to be collaborative, when in fact the suppliers simply provide user passwords to the clients to check the product lists and prices.

Another case of a misused label is an application that provides static information, what some refer to as a *portal*. While these applications are providing information and data to many business partners, they are essentially managing content. They should be rightly named *informational portals*. Along the same lines, Web conferencing applications are often called collaborative, yet they only offer synchronous features. So beware of the label.

Following is a list of characteristics, functionalities, and features, as well as examples of preconfigured modules for collaborative software.

### *General Characteristics*

*Supplier information* This information provides a general picture of the strengths of the supplier in terms of length of time in business, location and size of operations, number of licenses sold, and list of customers, partners, and alliances.

*Support and services* These characteristics refer to the elements offered by the supplier to help the customers install, maintain, and use collaborative software. These elements include help-desks, consulting services, user groups, training, hosting, and Internet sites.

*Documentation* Documentation covers all the information for using, managing, enhancing, and maintaining collaborative software. It typically includes the preconfigured module documentation, user and administrator manuals, and the developer guide, as well as the documentation relative to the technology, processes, treatments (also called *programs*), and data architecture.

*Language* Collaborative software may support many languages for use, administrative, development, and maintenance purposes. This implies that the user can choose the language in which the application will be displayed and the character sets it will allow. This also applies to the administrator in relation to administrative functionalities. This language characteristic extends to the documentation offered on-line and in hard copies, as well as to training, consulting, and help-desk services.

#### *Technological Characteristics*

*Portal* Collaborative software may offer an interface to specific portals, including client-developed or off-the-shelf portals such as Plumtree, Citrix, Viador, SAP, and Oracle, to name a few.

*Computer-aided design* Collaborative software can support two-dimensional (2-D) and three-dimensional (3-D) computer-aided design (CAD).

*Web conferencing* Web conferencing provides an effective way for an audience of remote participants to exchange data, voice, video, and multimedia in real time. It can support electronic presentation with the display and annotation of slides, whiteboard ideas, and software applications. Web conferencing also involves on-line telephone meetings with many participants.

*Wireless* Wireless refers to the ability to support mobile workers using those communication devices.

*Accessibility* This characteristic refers to user interface support, including text, color, frames, and keyboard shortcuts. Accessibility also relates to many initiatives such as Section 508 of the U.S. Rehabilitation Act and the international standards of the World Wide Web Consortium's (W3C) Web Accessibility.

*Security* This characteristic refers to the facilities offered to manage the access rights of users and administrators. Bulk-load facilities are particularly interesting when a large number of user accounts need to be created or changed. The

security characteristic also involves the level to which security is established, such as a zone, workspace, forum, team, type of users, and user role.

*Operating systems, servers, and database* This makes reference to what is required to install and operate collaborative software in terms of computer and operating systems, Hypertext Transfer Protocol (HTTP) or World Wide Web (WWW) servers, databases, and browsers.

*Open Database Connectivity and Lightweight Directory Access Protocol support*

These characteristics are very interesting for integrating collaborative software with the enterprise system architecture. Open Database Connectivity (ODBC) is an application programming interface (API) that allows a programmer to abstract a program from a database. The Lightweight Directory Access Protocol (LDAP) offers a support for synchronizing e-mail directories between applications.

*User Functionalities and Features*

*Site map* The site map displays what is available to the user in terms of forums, workspaces, calendars, chat rooms, and bulletin boards.

*Summary page* The summary page represents an overview of the users' favorite elements of the collaborative environment, such as forums, calendars, and tasks.

*Workspaces* Workspaces are created for general and team purposes. They may include discussion forums, chat rooms, calendars, and bulletin boards.

*Discussion forums* Discussion forums consist of threaded discussions with topics and replies. They can include folders and links to Internet sites or file locations, and have text, drawing, and even audio and video file attachments.

Other features that can be integrated to forums are:

- Reminders, or the feature where an e-mail is sent to the user address as a reminder for tasks;
- E-mail notification used to inform the user of new replies;
- Tracking facility for identifying changes and additions;
- Rich text editor for formatting documents;
- Spell checker that provides alternative spelling for words that are not recognized;
- Facility to search and filter information;

- Workflows involving steps and conditions and the resulting states and decisions;
- Pooling, where survey, responses, and results can be managed.

*Search engine* The search engine offers the ability to search across workspaces, entries, and attachments using elements such as author name, date, key word, and text.

*File content and document management* This feature refers to the creation, organization, access, and management of information and documents in the form of text, images, video, sound, and animation. Elements include:

- Bookmarks or flags for frequently used documents;
- Web file systems for storing and organizing documents;
- Versioning control to ease the review, modification, and coauthoring of documents;
- Integration and links to electronic libraries and catalogs.

*Calendars* Calendar management helps users to manage and synchronize their personal and group calendars. Calendars can help manage events, seminars, meetings, and activities. There may be many calendars, such as a general calendar, a team calendar, and a personal one.

*Electronic Chat* Chats are real-time text conversations, with discourse scrolling up the screen and disappearing as new utterances appear at the bottom. In an active session, new text at the bottom of the screen may be appearing almost as fast as one can read and type. Electronic chat implies that discourse remains available on the screen for only a matter of seconds.

*Quick messages* This feature lists the users who are currently on-line. It allows one to send and receive quick messages when connected.

*Bulletin boards and Web pages* Bulletin boards and Web pages are similar to electronic mail, except that the information and documents are managed by one member, kept in a central repository, and made available to many users.

### *Administrative Functionalities and Features*

*Zone* A zone can be described as the highest level in the collaborative environment. In other words, there can be many zones to separate groups of users such as employees or business partners.

*Workflow management* Workflow management is concerned with enforcing the policies, procedures, and best practices in a specific area. It deals with processes, information, and documents through creation, collaboration, approval, publishing, audit, training, and viewing. Workflow management can integrate

flowcharts, e-mail notifications, versioning, history tracking, and approbation using electronic signatures.

*Basic customization toolkit* A basic toolkit provides menus and templates to ease the configuration of a collaborative environment. The toolkit gives flexibility and autonomy to customers wishing to set up their own collaborative environment, including user setup and security access rights. The menus and templates included in the toolkit support the customization of the look and feel of the pages and the management of zones, workspaces, forums, teams, and users. The toolkit may even offer the possibility of developing workflows and reports.

*Developer toolkit* This toolkit proposes advanced commands to customize the collaborative environment, including access commands to ODBC databases and LDAP support.

*Backup and archiving* Backup and archiving features allow for the automation of the processes by specifying date, time, and file locations.

*Activity log* This feature provides information on the log-in, creation, entry, deletion, and modification of files. Logs can be produced at different levels, such as zone, forum, or user.

*Disk usage* This feature provides information on disk usage. Usage can be reported at different levels, such as zone, forum, or user.

### *Examples of Preconfigured Modules*

*Group decision support* A group decision support module involves many functions, such as survey, pooling, and voting options, as well as analysis and problem-solving software with intuitive and advanced graphics facilities. Some have a built-in analytic framework to build and deploy a complete business intelligence solution. This module can be used for many processes in many industries. It can reduce delays associated with problem resolution, improve team member participation and synergy, and strengthen team commitment.

*Project management* A project management module typically includes project estimating, scheduling, resource planning, time and attendance, project accounting with billing and expense reporting, and project reporting. Depending on their level of sophistication, this collaborative solution can address specific projects and industries, such as consulting, construction, architecture, and engineering. A project management module can reduce delays, increase the understanding of risks, enforce roles and responsibilities in a timely manner, and contribute to delivering in time and on budget.

*Proposal coordination* A proposal module organizes, facilitates, and tracks the steps for responding to a request for proposals (RFP), request for information (RFI), request for quotes (RFQ), or other kinds of proposals. It can reduce delays in producing a proposal, improve its quality, and increase the win ratio.



*Clinical study management* This module is designed to manage the setup, capture, and review of all trial-related information involved in a clinical study. It also supports knowledge sharing in a timely fashion and can result in innovative scientific outcomes.

*Contract management* This module assists in managing the full lifecycle of contracts, from creation through negotiation to maintenance. The collaborative contract module, similar to the proposal module, can reduce delays every step of the way and improve the win ratio.

*Recruiting management* This module helps manage resumes, interviews, hiring policies, and information. It can automate the full-cycle hiring process from the receipt of a resume, phone screening, and the first and second interviews, to the reference check, the offer, and final hiring. Again, this module reduces delays in the process while tracking valuable information and knowledge on candidates.

*Help-desk management* This module addresses the need of help-desks, call centers, information technology (IT) departments, and technical support personnel in reporting and solving problems. It can track a request from the time it is received, prioritized, assigned to an expert, resolved, and closed. This module can keep track of problems and solutions, improve the delay in responding to customers' requests, and ultimately reduce the number of calls.

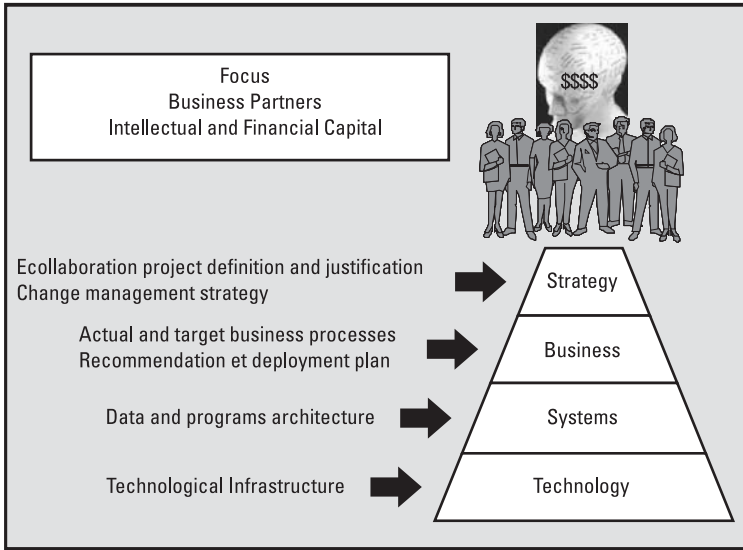
*Sales account management* This module focuses on the needs of the sales teams in managing their accounts and servicing clients. It can provide information such as customers' and prospects' profiles, inquiries, inventory, delivery status, and sales leads. This information can be shared among the team members to improve sales productivity and customer satisfaction.

## **2.2 Selecting the Right Technology**

Selecting the collaborative technology is one important step for the success of Ecollaboration initiatives in an enterprise. Collaborative technology refers to the collaborative software with its features, functionalities, programs, and database.

Figure 2.2 presents the Partner Capital approach for the selection and planning of collaborative technology. This approach focuses on business partners and capital management, the drivers for a successful project. Its main objective is to ensure that the technology selected will improve collaboration between business partners and increase intellectual and financial capital. There are four levels in the approach:

1. The strategic level;
2. The business level;



**Figure 2.2** Partner Capital approach.

3. The system level;
4. The technology level.

Selecting collaborative software should be part of the enterprise strategic plan as an initiative for organizational change and renewal. In some ways, this project can be compared to the one for selecting an integrated ERP system. It can involve a very large team of specialists and key users from across the organization. It can also last for a very long time with no consensus being met among the participants. Yet it is much different from an ERP project because of the profound cultural shift it requires.

An organization wishing to conduct an enterprisewide selection project for a collaborative technology must understand the need to shift to a knowledge philosophy. This shift cannot occur by word of mouth, a disclosure in a management communiqué, or sporadic initiatives. As learned in the ERP wave, change of this magnitude must be carefully planned and orchestrated with the commitment of top management and the active participation of managers at all levels.

Implementing such a cultural change at all levels of the organization can be a very demanding and ambitious undertaking. People must comprehend the new orientation, accept, and support it, as well as be willing to realign their tactical plan and day-to-day operations accordingly. This exceeds what is involved in an ERP project that targets changes in processes. Indeed, it means changing the way organizations have thought and operated for more than a century.

In this context, the project must be clearly defined and accepted as part of the strategy for improving overall organizational productivity. In the case of an ERP, it meant accepting the streamlining of processes and the integration of systems and data to reduce costs and increase benefits. However, selecting an ERP system did not challenge the traditional organizational philosophy built on command and control, rules, procedures, and a hierarchical structure. Selecting a collaborative software does. This is why the strategic level in a collaborative project becomes so important.

It is not surprising at this point in time that conducting an enterprisewide selection project for a collaborative technology might be difficult, if not risky, for many organizations. This is especially true for large corporations with many divisions that may have different cultures, market demands, and business priorities. The level of readiness of these business units might be so different that it would make an enterprisewide project simply inappropriate.

This is why many organizations narrow down the scope of the project to a limited number of collaborative initiatives. However, these initiatives should be representative in terms of collaborative functionalities and features required enterprisewide. They should also involve a limited number of divisions or business units and partners. In any case, the divisions, business units, and partners should have a spirit of collaboration or a natural tendency toward it so that the cultural shift can occur. The project should also target critical business processes that can transition into a virtual environment over a reasonable time period. The processes should also involve a limited number of participants who demonstrate collaborative skills and competencies and, even better, already work together.

The project should have a scope that puts the odds in one's favor, that is, one that minimizes the risks and increases the chances for success. On the other hand, limiting the scope to only one or two collaborative initiatives is not recommended, because the collaborative requirements gathered may not be representative of the enterprise needs. Over time, this may result in the selection of many collaborative software platforms. Such a multiplicity increases the overall costs for an enterprise in terms of licenses, maintenance, and training.

Once the project scope is defined, the project manager and the key stakeholders, including the project sponsor and the business unit managers, lay out the collaborative scenarios for each initiative. The collaborative scenarios should provide enough information for estimating the costs and benefits. Finally, the business cases are consolidated into a justification for the project.

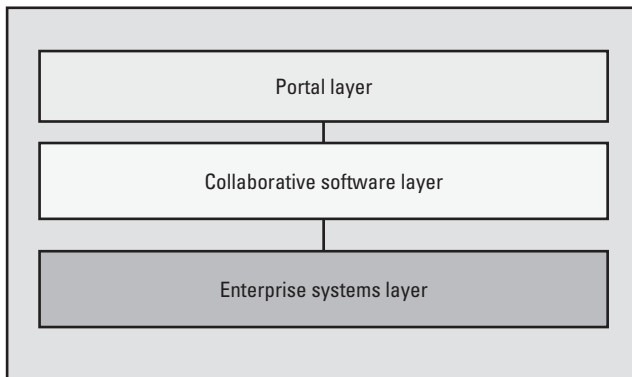
At the same time, a change management strategy is elaborated with the participation of a change management specialist and a representative of the human resources group. Its objectives are to support the shift to a knowledge culture and to encourage the implementation of other virtual teams through the use of the selected collaborative software. Consequently, this

change management strategy must include a plan to communicate the benefits of virtual teams and collaborative technology outside the project team. It should leverage on the initiatives' success to create a quick-hit impact on the organization as a whole. This change management strategy will be further detailed in the implementation phase.

The business level follows the strategic level. It involves the project manager and the business unit managers. It consists of an overview of the work, tasks, and people involved in the business processes. The business level should provide an estimate of the total numbers of users, including the administrators responsible for managing the collaborative software environments. This information is required to establish the number of software licenses to be purchased or the hosting arrangement to be negotiated. This evaluation is revised at the time of implementation.

The impacts on the users and their ability to transition to a collaborative mode must be subsequently assessed. Finally, a plan to migrate into a virtual environment is developed based on the costs and benefits evaluated at the strategic level and the information gathered on the tasks and the people involved.

The third level concerns the systems architecture. It is assessed with the participation of an enterprise systems architect. This level can be associated with the concept of enterprise architecture integration (EAI). The system architecture or EAI may involve up to three layers, as pictured in Figure 2.3. The first layer constitutes the highest entry point for a collaborative application and relates to a portal application. The next layer refers to the collaborative software with the user and administration functionalities and features. The third layer, the lower one, consists of the enterprise systems with their business functions and data. At this point there is no need to specify the name of the programs or data files involved in the lower level. This is done later at the time of implementation. However, the interfaces and the data conversion requirements can be



**Figure 2.3** Enterprise architecture integration.

estimated. Once the layers are defined, the target systems architecture is completed and the elements required at each level are consolidated into a functional requirements list.

The fourth level addresses the technological components. Its definition requires the participation of a technological architect. This level is often referred to as enterprise infrastructure integration (EII). More specifically, it includes the technological characteristics of the collaborative software and the specifications for the technological infrastructure. The establishment of those components are based on the business and systems architecture needs established earlier. This fourth level is also detailed at the time of implementation.

The requirements gathered at each level are finally consolidated and a list of supplier characteristics is developed. The requirements are categorized (e.g., essential, necessary, nice to have) and each category is assigned a ponderation factor (e.g., high 10, medium 5, low 1). This information is subsequently assembled into a request for proposal or for a quote. The RFP or RFQ document is then sent to suppliers who are preselected based on a survey of the current market offering.

The proposals or quotes received are analyzed and scored. The finalists are identified and invited to demonstrate their software. Customers used as references may also be contacted and visited. These steps allow the substantiation of the evaluation of the suppliers and software and the review of scores. Finally, the collaborative software is selected and the target systems architecture and technological infrastructure are confirmed.

Let us now give a brief illustration of the application of the Partner Capital approach using the high-technology organization from Section 1.5. The organization established internationally decides to launch a project for selecting collaborative software. However, an enterprisewide scope is not appropriate or feasible for many reasons. Some of these reasons include:

- The enterprise is distributed in many countries, with divisions having different organizational structures, objectives, and priorities.
- Not all the divisions have the maturity to transition to a knowledge culture.
- Some divisions have not implemented or are currently implementing an ERP, B2B, or CRM system. This means that the processes and data are not integrated. In other words, they could be distributed and duplicated across many systems, even technological architecture. In this context, process reengineering, data cleanup, and conversions could become an intensive, demanding, and complex task in the collaborative project. It could also be disruptive for the ongoing ERP, B2B, and CRM projects.

The organization targets its North American divisions and business functions to narrow down the scope of the project. It considers the sales and marketing operation in one district (the one used for the business case in Section 1.5), a good candidate based on many aspects. The level of maturity in the three regions of the district is adequate for a shift to a knowledge culture. The employees have been working together for many years. The spirit of collaboration is present and the employee turnover is relatively low. The district manager also possesses the main characteristics to be a good project sponsor. In recent years, the level of integration of the systems and technology architectures has been improved with the implementation of ERP, B2B, and CRM systems. The sales and marketing team is familiar and understands the benefits of change management, since they have been involved in those previous enterprise projects. Moreover, there is an interest and willingness to embark in such an innovative project. So the choice of district sales and marketing group is confirmed. It will drive the collaborative technology selection project and become the pilot site for implementation.

Four collaborative initiatives are defined as part of the project. These initiatives are representative of the enterprise collaborative needs and include most of the functionalities and features offered by the best-of-breed collaborative software. These initiatives and associated critical business processes are listed below:

- The first one is a focus virtual team for the process of *Sales and marketing coordination*, the one used in the business case example. It involves a total of 22 sales directors and managers.
- The second initiative is a learning virtual team for ongoing *Training* on various topics, such as products, customer relationship management, sales management, ethics, and legal requirements. The participation would be on a rotation basis and limited to a maximum of 20 people each quarter.
- The third team is a hybrid team composed of some 15 salespeople dedicated to *Market research* and the identification of new product opportunities.
- The fourth team is a focus team responsible for the *Management of requests for information, proposals, and quotes* for the district. This team is composed of 10 to 15 participants, depending on the clients and volume of requests.

The business case is developed for each initiative and consolidated into a final justification for the collaborative project. The change management strategy defined at this stage involves an impact analysis, a communication plan, and a training plan in intellectual capital and collaboration.

Now that the strategic aspects are being covered, the work and team aspects of each critical business process can be looked at. For example, the tasks associated with the business process *Sales and marketing coordination* are:

- Review of current opportunities;
- Definition of new opportunities;
- Review of lost opportunities and sales;
- Sharing of customer information;
- Organization of sales and marketing events.

In terms of users, there would be an overlap between the teams dedicated to each process. In other words, some users will be involved in more than one team at a time. Consequently, the total of number of users is estimated at 60, including 58 users and 2 system administrators. All of the users have an excellent comprehension of the tasks and data involved in the processes. They are also computer literate and could transition quite easily into a collaborative environment.

Based on the costs, benefits, and evaluation of the tasks and participants for each initiative, the recommended deployment plan consists of two phases: (1) *Sales and marketing coordination* and *Customer requests*, and (2) *Training and Research and development*.

The next step is the systems level or EAI. It has been decided that the collaborative environment would not be integrated into the organization portal at the time of implementation. Nonetheless, the collaborative software selected would need to be compatible with the portal technology in place.

The second layer consists of the collaborative requirements to support business processes and tasks. As an example, the collaborative functionalities and features for the task *Sharing of customer information* include the following:

- Inclusion of the task in a summary page;
- Group and personal calendars for organizing meetings on customer information;
- Chats to discuss customer information;
- Dedicated workspace for the work;
- Discussion forums to share tacit customer knowledge;
- E-mail notifications for important notices;
- File systems for explicit information such as customer contacts, actual products, licenses, and renewal dates;
- Search engine to find tacit and explicit customer information;
- Availability of the collaborative environment 24 hours a day, 7 days a weeks;

- Collaborative environment secured and backed up;
- Activity logs to monitor who accesses the information;
- Archiving on demand;
- Teleconferencing to discuss special or critical customer situations.

The enterprise systems are identified at the third layer. The needs for interfaces and data conversions required are drafted. Finally, the target systems architecture is completed. For example, the systems architecture for the task *Sharing customer information* would involve the collaborative application itself, the sales module in the ERP system, the CRM system, and some legacy systems. In other words, generating and managing tacit information would take place in the collaborative environment. Generating and managing explicit information would remain in the enterprise systems and interfaced to the collaborative environment. There would be no data converted.

The fourth level, or EII, includes technological characteristics, namely, Web conferencing, wireless access, accessibility options, security features, and ODBC and LDAP support. It also involves a technological landscape corresponding to the one presented in Figure 2.1, where the collaborative application resides on the same server as the enterprise systems.

The requirements are finally consolidated into grids and the request for quotation is assembled. Figure 2.4 presents an example of the table of contents for the RFQ that would be sent to the preselected suppliers.

## 2.3 Integration Issues

This section presents an overview of the concept integration and the associated issues that may be faced when selecting and planning a collaboration technology. There are four types of integration based on the level Partner Capital approach:

1. Strategic integration;
2. Business integration;
3. Systems integration;
4. Technological integration.

Situations or points corresponding to each type must be considered to ensure the robustness of the collaborative structure.

The first point of integration in a collaborative project occurs at the strategic level. As mentioned earlier, it is very important that the project be integrated



1.	INTRODUCTION
1.1	Objective of the document
1.2	Project definition, scope and deployment plan
1.3	Response format, deadline and contact person
2.	COMPANY INFORMATION
2.1	Organizational structure and divisions involved
2.2	Current systems architecture
2.3	Current technological infrastructure
3.	COLLABORATIVE REQUIREMENTS
3.1	Supplier characteristics
3.2	Technological characteristics
3.3	User functionalities and features
3.4	Administrative functionalities and features
3.5	Target systems architecture
3.6	Target technological infrastructure
APPENDIX 1 – REQUIREMENTS – RESPONSE GRIDS	

**Figure 2.4** Sample RFQ table of contents.

into the strategic plan of the organization. Moreover, it must be endorsed by senior management and supported by a well-defined change strategy plan. One other strategic integration issue concerns keeping senior management focused and committed to the project from the beginning to the end. Failure to do so jeopardizes the project and the anticipated benefits for the organization.

Another strategy point of integration relates to the stage of evolution of the organization. Ideally, the project should respect the technology evolution map pictured in figure 1.1 of section 1.1. It should come after the ERP, B2B, CRM, business intelligence, and knowledge management projects are completed and the best lessons learned are assimilated. Ultimately, following the evolution map ensures that the organization is mature enough to get into a project that calls for a shift in culture. It also offers a more integrated system architecture and technological infrastructure from the start. There are situations that do not meet these criteria, however, a selection of a collaborative software could be justified. In this context, risks analysis becomes very important and should be integrated as part of the strategic planning activities.

Take the case of two organizations merging together, one having an ERP system in place and the other in the process of implementing one. The project of selecting and implementing a collaborative software fits into the strategic plan as a means to create and sustain the synergy of the two organizations. In other words, the objective of selecting and implementing a collaborative technology is to ease the acquisition and not to integrate the business, systems, and technological architectures. Integration issues are bound to occur at the other levels.

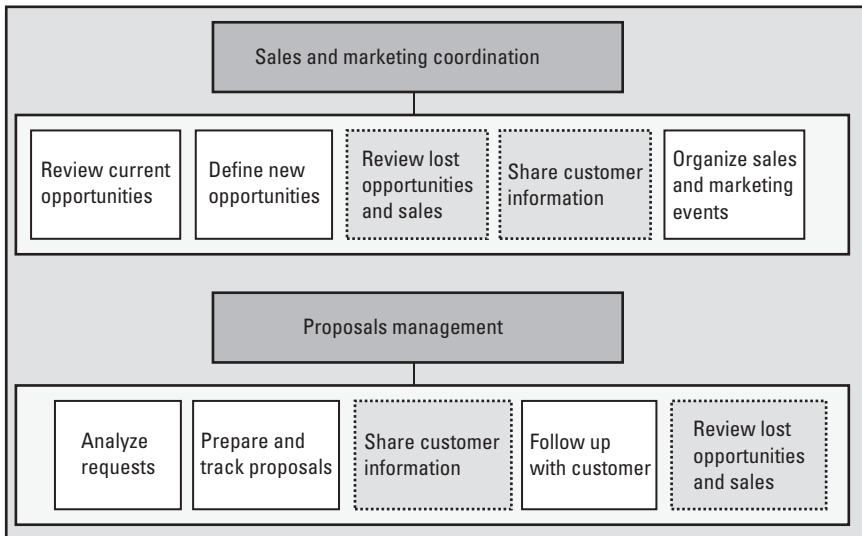
Let us explore these issues using practical examples from the organization and collaborative project scope of Section 2.2.

Business integration issues arise when a business process or a task is duplicated or distributed in many collaborative environments, such as those in Figure 2.5. In this case, the tasks *Share customer information* and *Review lost opportunities and sales* exist in the collaborative process *Sales and marketing coordination* as well as in *Proposals management*.

In the collaborative process *Sales and marketing coordination*, the task *Share customer information* involves every customer independently of requests for proposals, information, or quotes. On the other hand, the collaborative process *Proposals management* restricts the task *Share customer information* to customer information associated with requests for proposals, information, and quotes. This means that some customer information can be duplicated and distributed in the two collaborative environments. This is also the case for the task *Review lost opportunities and sales*. These situations can impact the quality of the information, generate misinformation, and create confusion for the participants in the collaborative processes.

Figure 2.6 proposes an integrated view of the collaborative business processes. In this case, the tasks *Share customer information* and *Review lost opportunities and sales* are removed from the *Proposals management* process and performed solely within the *Sales and marketing coordination* process.

While the processes and tasks may be integrated at the business level, there may be integration issues at the enterprise systems (EAI) and technological



**Figure 2.5** Collaborative business integration issues.

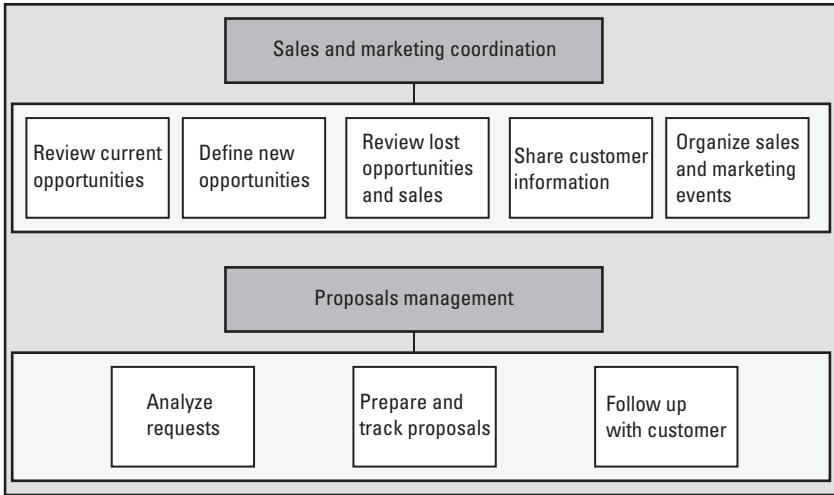


Figure 2.6 Integrated collaborative business processes.

infrastructure (EII) levels. Figure 2.7 presents an example in relation to the *Proposals management* process. In this case, the system functions associated with the *Prepare and track proposals* task are distributed among many systems and technological platforms, depending on the type of accounts.

For the medium accounts, the system functions associated with the proposal is achieved in the ERP system using a specific set of rules and master data.

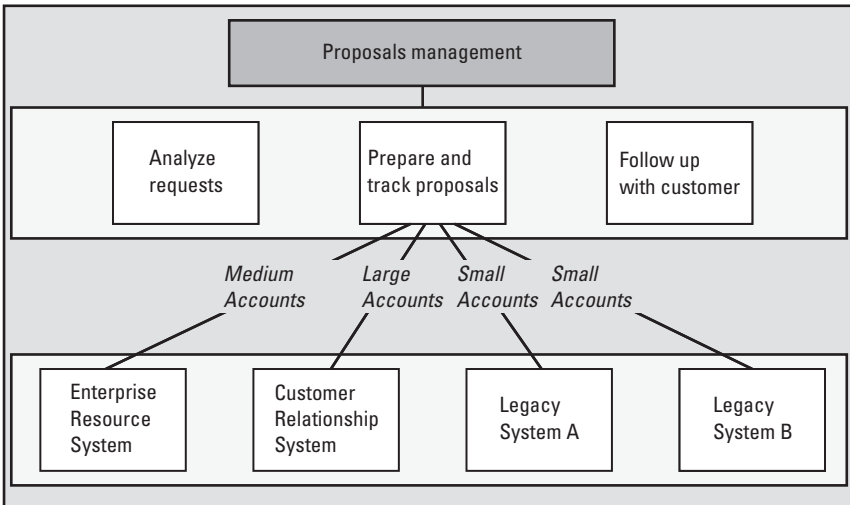


Figure 2.7 Systems and technology integration issues.

For the large accounts, the functions take place in the CRM system. Each system has its own technological characteristics and technological platform. To resolve these integration issues, the collaborative technology can be linked to the integrated enterprise systems using an API or Web services.

An API is defined as a set of instructions or rules that enable two operating systems or software applications to communicate or interface together. It is a one-to-one service. On the other hand, Web services offer the possibility of openly working with other businesses, systems, and programs through publicly available open APIs.

A Web service is an alternative to standards such as Corba, DCOM, and RMI. It uses standard protocols such as HTTP, SMTP, and XML. Web services are more open and can store, access, organize, manage, and share files and documents from any location. Some collaborative software manufacturers are using Web services to link their collaborative environment with popular ERP and CRM applications.

For small accounts, the functions can occur in either or both legacy systems. This situation impairs the quality of information. As mentioned earlier, integrating systems and data can be an intensive and complex task. It can be a project in itself and can sometimes justify postponing the collaborative initiative until the issue is resolved. One alternative is to make the best of the situation and decide which enterprise systems, functions, and data to use every time there is an integration issue. This can be achieved manually, that is, case-by-case.

Another solution is to use an API or a Web service based on predefined rules to interface the collaborative software with the legacy systems. This does not make the integration problems disappear, but it does not stop the collaborative initiative. In any case, the enterprise functions and data should not be duplicated in the collaborative environment, because it would worsen the integration issue. For the same reasons, the data should not be converted in the collaborative environment.

Managing calendars can constitute another integration issue. In the task *Sharing customer information*, the personal calendars in the collaborative environment are used to organize meetings. Each participant also has a calendar in the Microsoft Outlook environment. Fortunately, many collaborative software applications have accounted for this integration issue and offer an interface that synchronizes calendars between applications and technological platforms.

The integration issue for e-mail directories is similar to the one for calendars. Many collaborative software programs have taken care of this issue by using LDAP for synchronizing e-mail directories' information between applications and technological platforms.

Along the same lines, many collaborative manufacturers have adapted their software to be compatible with popular portal technologies. The same is true for the collaborative software linking to 2-D, 3-D, and CAD technologies.

They have also integrated on-line meeting and teleconferencing facilities into their collaborative solution.

The project manager, systems architect, and technology architect are responsible for documenting the integration points and issues. This documentation will support the final evaluation of the collaborative technologies. It will also be used at the time of implementation to develop a detailed plan and conduct the analysis and design of the organization, the work, the team, and the technology components.

# 3

## From the Traditional to the Virtual Team

### 3.1 The Virtual Challenge—Building Trust

One of the best lessons learned in enterprise technology projects is that technology is not an end in itself. Focusing only on technology has proven to be just not enough for achieving success. The ERP, B2B, CRM, and knowledge management waves have testified to this. The lessons learned definitely apply to virtual teams and collaborative technology. Moreover, Ecollaboration requires a transition from an industrial to a knowledge mindset. This section explains the Ecollaboration paradigm and the underlying ecosystem required for knowledge sharing, collaboration, and trust to emerge.

Organizations are using many strategies to shift to the knowledge culture. They involve the employees at the start of projects. They promote cooperation and teamwork. They provide training and development. They develop and publish policies and procedures in concert with the parties impacted. They offer incentive programs for participating in technologies and business program implementations. They plan and deploy change management activities. They integrate knowledge transfer and sharing in performance management and rewards programs. They introduce the concepts of key performance indicators, balanced scorecard, and intellectual capital in strategic planning. They even create new positions such as knowledge champions and chief knowledge officer.

All those strategies are founded on good intentions, but they are not always producing the expected results. As a matter of fact, the feeling “knowledge is power” and the thinking “every man for himself” are still strong in organizations today. The financial focus is omnipresent and remains a top priority in day-to-day operations. Knowledge sharing, business partnering, and

collaboration are great words to use in speeches, but they basically remain on the lips of the speakers. In this context, employees have not changed their behavior very much. They remain preoccupied by their personal status. They are screening, keeping, and protecting information as a way to remain valuable and to protect their employment and position within the organization. They might be referred to as knowledge workers, yet they and their organizations have not really made the transition to the knowledge culture. By definition, they are not collaborating, that is, working jointly toward common goals and rewards. They are simply cooperating, that is, doing concurrent effort in the pursuit of congruent goals for a personal compensation.

One important condition for shifting to the knowledge culture is to break down the barriers to collaboration. Collaboration can only happen over time because it requires that the participants have developed trusting relationships. Indeed, collaborating that includes creating and sharing knowledge to attain a common goal are intangible activities that can neither be supervised nor forced out of people. Building trusting relationships can be difficult in traditional face-to-face teams. Needless to say, it represents a greater challenge in the virtual context.

But what is trust? The definition of trust from Zand, as quoted by W. G. Hugli [1], makes a clear statement on the collaborative aspect as “a willingness to increase your vulnerability to another person whose behavior you cannot control, in a situation in which your potential benefit is much less than your potential loss if the other person abuses your vulnerability.” In other words, trust can exist when the people involved in a relationship are working in good faith, and with respect to their explicit and implicit commitments are being honest and do not take advantage of others.

How familiar are you with collaborative teamwork? To answer this question, let us take the key words on trust out of the previous statements and reflect on them: *control, good faith, respect, honest, abuse, vulnerability, commitment, and take advantage*. Which words would you associate with each of your team experiences? How many of those experiences have you attached positive key words to? How many include all the positive key words? Finally, would it be simpler to ask how many team experiences you truly enjoyed and would be willing to live again? If it would be simpler to ask the last question, then probably most of your team experiences have been based on cooperation and not collaboration. Trust might have been existent but not predominant.

You might be thinking now that it takes more than trust for successful teamwork. You are right, because trust is built on many constructs, including the positive key words from above: *good faith, respect, honesty and commitment*, as well as *competence, expertness, dynamism, encouragement, acceptance, integrity, predictability, transparency, goodwill, benevolence, responsiveness, morality, credibility, reliability, dependability, reciprocity, openness, generosity, carefulness,*

*trustworthiness*, and *attraction*. The same constructs apply to virtual teams, with the technology dimension adding to the challenge.

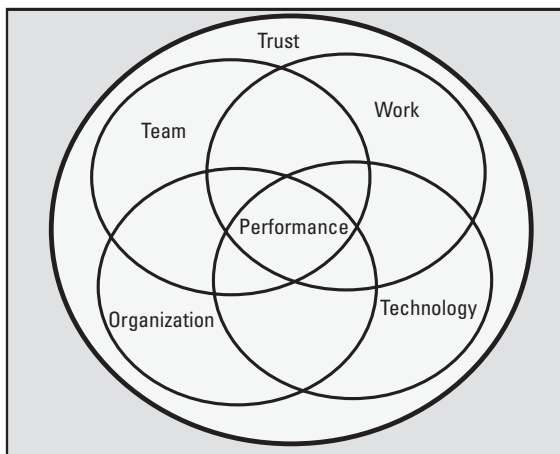
The Ecollaboration paradigm derived from my experience addresses trust in the context of virtual teams. There are four domains in the Ecollaboration paradigm as pictured in Figure 3.1. They are (1) Work, (2) Team, (3) Organization, and (4) Technology. The domains are surrounded by trust, and performance is located at their intersection.

The *Work* domain refers to:

- The dimensions of the work in terms of complexity, difficulty, and level of uncertainty;
- The content of the tasks;
- The roles and responsibilities involved in doing the work;
- The processes, workflow, and deliverables;
- The templates and tools used to do the work;
- The work plan.

The *Team* domain includes:

- The values;
- The participants with their skills and competencies;
- The training and development of the participants;
- The templates and tools to facilitate the team efforts;
- The facilitation plan.



**Figure 3.1** Ecollaboration paradigm.



The *Organization* domain involves:

- The organizational context;
- The culture and leadership style;
- The critical success factors;
- The performance indicators;
- The reporting process;
- The evaluation program;
- The reward and compensation program.

The *Technology* domain is comprised of:

- The functional and technological characteristics of the collaborative technology;
- The technological design, including the collaborative software configuration and technological infrastructure.

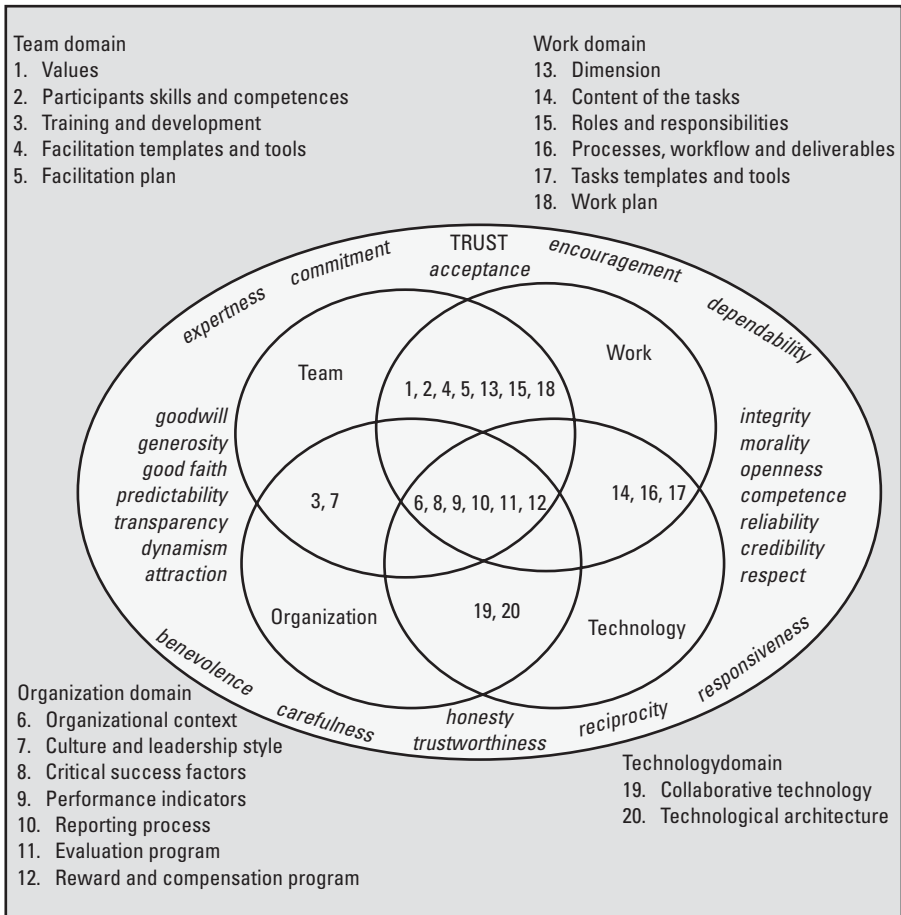
The many virtual teams I have participated in have led me to compare the Ecollaboration paradigm to an ecosystem. In this ecosystem, trust affects the domains and the domains influence trust. The synergy between the constructs of trust and the elements of the domains acts as a catalyst for collaboration that in turn fuels virtual team performance. However, this synergy does not happen by magic. First, the elements of the domains must all be accounted for and well positioned to solidify the trust structure. Secondly, the team members must understand and believe in the value of the virtual ecosystem and the robustness of the trust structure. To do so, efficient and effective communication must be planned and integrated into the change management strategy. This communication will become the foundation of trust in the virtual team.

Figure 3.2 shows a detailed view of the Ecollaboration ecosystem. It specifies the elements at the domain intersections and presents the trust constructs in the background.

The intersection between the Team and Organization domains includes:

- Culture and leadership style of the organization;
- Training and development of the participants.

This intersection solidifies the trust structure by transferring the new culture to the virtual team based on knowledge and a leadership style grounded on principles and guidelines. It also recognizes the commitment of the organization to providing training and development to the virtual team participants. The



**Figure 3.2** Ecollaboration paradigm—ecosystem view.

objective of the training and development program is to complement the participant skills and competencies required to do the work with a comprehension of the virtual challenges. It should include the concepts of intellectual capital, knowledge culture, Ecollaboration paradigm, and ecosystem. It must also integrate hands-on training on the collaborative technology. Training and development activities should start at the launching session and be ongoing.

The intersection of the Team and Work domains embodies the following elements:

- Team values;
- Work dimensions;
- Skills and competencies;

- Roles and competencies;
- Facilitation templates and tools;
- Facilitation plan;
- Work plan.

This intersection solidifies the trust structure by ensuring that the team and the work are aligned. It maps the team values with the work dimensions in relation to the level of complexity, the difficulty, and uncertainty. It matches the skills and competencies of the participants with the roles and responsibilities of the work. The intersection also ties the plan, templates, and tools to facilitate the team with the work plan.

At the intersection of the Work and Technology domains, the elements are:

- Content of the tasks;
- Processes, workflow, and deliverables;
- Task templates and tools.

The trust structure is strengthened at this intersection with those three elements being tied together. In other words, the collaborative technology is configured to support the work processes, workflow, and deliverables. It also integrates the templates and tools to achieve the tasks with respect to the content. Finally, the technology infrastructure is designed to support the collaborative environment.

The Technology and Organization domains' intersection involves the following elements:

- Collaboration technology;
- Technology infrastructure.

This intersection constitutes one important pillar of the trust structure. As a matter of fact, the organization must ensure the adequacy of the collaborative technology and the technological infrastructure supporting it.

Finally, at the intersection of the four domains are the elements related to the virtual performance:

- Organizational context;
- Critical success factors;
- Performance indicators;
- Reporting process;
- Evaluation program;

- Reward and compensation program.

These elements are coupled and form the backbone of the trust structure. They help in monitoring and measuring the virtual team performance. First, the organizational context, the critical success factors and the performance indicators are interrelated and specifically defined with respect to the particularities of the virtual teaming initiative. Finally, the reporting process, the evaluation program, and the reward and compensation plan are aligned to ensure performance management efficiency and effectiveness.

The many constructs of trust can develop once the trust structure is stable and secure, with all of the elements in the right place. In other words, the team members can behave “constructively” when they will feel that the environment is safe. In turn, the safer the environment gets, the more constructively they will behave. However, the notions of ecosystem and trust constructs can be perceived as philosophical concepts and received with skepticism and resistance. This is why training and development are so important.

As mentioned earlier, the change management strategy must address those concepts and articulate them in a communication plan. The communication plan should be developed based on the analysis of the participant skills and competencies in relation to the virtual teaming concepts and the capacity to change. It is imperative to recognize that people may not be ready to receive a talk about Ecollaboration ecosystem, trust constructs, and structure in those terms. Therefore, the language and the messages should be adapted to the target populations and the situation.

Building trust takes time. Overnight change must not be anticipated. Expectations must be realistically managed and patience exercised. While communication on task is essential for establishing trust in a virtual team, social communication complements it. Therefore, combining communication on task with social communication into a training and development strategy becomes a powerful avenue. Section 3.4 discusses in more detail the strategies for facilitating virtual teams, building trust, and achieving performance.

## **3.2 Group Dynamics**

Another element coming into play in building and sustaining trust in virtual teams is group dynamics. This chapter looks at some theories and models of group development for traditional and virtual teams. It also proposes a model, the Virtual Star Team Model, derived from my experience.

Back in the 1950s, Wilfred Bion conducted many studies on group processes inspired by his psychoanalytic work in a military psychiatric hospital. His efforts were directed at developing a group-as-a-whole model. Bion [2]

claimed that the behavior in a group is the product of more than the contribution of the individual members. His observations were that the members tend to act as if the group is an entity in itself and that they are responsible for its survival. He concluded that the work group emerges over time in a rational and cohesive way and that it contains the authentic interaction and positive direction needed to accomplish its task.

He defined three patterns or methods for ensuring the survival of the group: (1) dependency, (2) pairing, and (3) fight or flight. These patterns are also referred to as basic assumption behaviors. The basic assumption behaviors can be perceived as dysfunctional because they are based on the belief that everything the members do is to stay alive. These behaviors happen as a way to deal with stress and conflict, to respond to perceived threats, and to avoid the task at hand.

Dependency is characterized by an emotional state close to despair, where the members seek the safety and security of the leaders. Under this behavior, the leader is treated as omnipotent and omniscient and is responsible for taking care of the team members. The pairing behavior corresponds to an emotional state where the members believe that the development of creative relationships will solve all the problems. On the other hand, a fight or flight behavior creates anger and panic, with the members attempting to protect themselves by fighting or fleeing from authority figures. Bion suggested that most groups have a tendency to fall into one of the basic assumptions more readily than others, but can finally accomplish the task for which they are gathered together.

In 1965, Bruce Tuckman [3] proposed a model in four sequential stages to which he added a fifth one in 1975. To this day, his theory remains a popular reference for explaining team development and behavior. The five stages of his model are (1) forming, (2) storming, (3) norming, (4) performing, and (5) adjourning.

Stage 1, *forming*, deals with why the members are in the group, who they are and what the group will be like. At this stage, the team members have a high dependence on the leader's guidance and direction, yet they test the leader's tolerance and that of the system. The leader must then be ready to explain and answer many questions on the purpose, processes, and objectives of the team. The leader must also provide information on the external relationships and try to clarify the roles and responsibilities. In Stage 1, the leader directs.

Stage 2, *storming*, starts when conflicts arise as team members resist the influence of the others. It is characterized by power struggles, discussions on rules, leadership, and the ability to complete the task. At this point, the group has difficulty making decisions. The members must focus on the goals of the team, avoid emotional issues, and look for compromises. At this stage, the leader acts as a coach.

Stage 3, *norming*, concerns the establishment of codes, rules, roles, and responsibilities. At this point, the members can agree and reach consensus. Commitment and unity get stronger and the team can engage more easily in social activities. The team as a whole responds better and demonstrates greater respect for the leader. The leader can more effectively facilitate and enable the team.

Stage 4, *performing*, focuses on getting the work done as a group. During this period, the team is concentrated on doing the work. The members share a vision and clearly know what they should be and are doing. They are autonomous and progress without the interference and participation of the leader. Moreover, they can look toward overachieving the goals and can make decisions against the criteria previously agreed on with the leader. Disagreements can arise, yet the members positively resolve them. The leader needs only to delegate and oversee the work.

The last stage, *adjourning*, corresponds to saying goodbye and reassessing the experience in terms of lessons learned. It constitutes the break-up of the team. Adjourning comes with recognition for all the members.

Edgar Schein [4], a social psychologist, discussed the four stages of group dynamics. Those stages correspond to specific issues taking priority in groups at particular times. The four issues are (1) dependency and authority; (2) intimacy; (3) confrontation, creativity, and stability; and (4) survival and growth.

The *dependency and authority* issues deal with who will lead, who has power, who will follow, and what are the rules. The *intimacy* issues concern role definitions and peer relationships. This stage is marked by a distorted perception of harmony and friendships in the group based on an unrealistic assessment about how good the members are and how much they like each other. The *confrontation, creativity, and stability* issues correspond to the need to be creative and to succeed. It also deals with a difficulty in letting go of old solutions. Finally, the *survival and growth* issues focus on purpose and achievement as a team.

Connie Gersick [5], a social scientist, introduced a punctuated equilibrium model of group development. This model postulates that groups develop and change in a discontinuous stepwise manner, with periods of inertia punctuated by periods of change. Her studies suggest that groups work in the same temporal pattern independently of the structure, tasks, or deadline. She claims that internal group processes focus primarily on project time frame with segments and transition points.

The first transition point occurs when the first meeting is held. One long period follows with a discussion on the strategies and approaches to accomplish the work. Next is the midpoint, where the group sets the direction for the second long work period. This midpoint transition consists in reviewing the strategies and approaches. The second long period of work is concerned with achieving the tasks. The last point of transition refers to the completion period, where the work is completed and the team adjourns.

As for traditional teams, virtual teams require members to have adaptive and creative behaviors. Because they interact through collaborative technologies, virtual teams need a group dynamics model that takes into account the complexities of the work environment.

Duarte and Snyder [6] have developed a model in four stages to describe virtual team dynamics: (1) inception, (2) problem solving, (3) conflict resolution, and (4) execution. The model takes into account the task and the social aspects of group dynamics and integrates factors of influence.

The first stage, *inception*, coincides with the development of preliminary plans and the definition of objectives, initial roles, and responsibilities. It involves encouraging the inclusion of all members and the generation of ideas and brainstorming. The next stage, *problem solving*, deals with the clarification of members' expertise and the revision and clarification of the roles and responsibilities. At this stage, the status and positioning of the members in the team are defined. Problems also get identified and resolved. The third stage, *conflict resolution*, involves discussions of divergent points of view, interests, and interpersonal relationship issues. It is characterized by power struggles over the allocation of resources, differences between members, and discussions of potential solutions. Finally, the *execution* stage focuses on achieving the tasks with an equitable and effective participation of the members. Organizational and other barriers to performance are addressed. Interaction and communication processes are driven positively to ensure work completion.

Duarte and Snyder identify three factors that affect the virtual team dynamics: (1) time, (2) environmental influences, and (3) team composition. In relation to the time factor, they refer to the work of Gersick and, more specifically, to the concept of transition points. They have identified four transition points or events in virtual teams. The first event corresponds to the abandonment of plans and agendas. The second coincides with the feeling of urgency to finish on time. The third one relates to the renewal of the contract between the team members, the organizational environment, the sponsor, and the senior management. The final transition point is specific to the new agreements on the direction agreed on for finishing the work.

They also define the influences of the environment from three angles: (1) the level of organizational embeddedness, that is, how rooted the team is in the organizational setting, (2) the nature of the work, and (3) the impact of the technology.

They find that the organizational structure, processes, communication, and reward and compensation system support and nurture the activities when the virtual team is highly embedded in the organization. On the other hand, when the team is not highly embedded, it may have difficulty getting information, acquiring resources, and gaining the support of management. In relation to the nature of the work, their findings are not surprising; that is, complex tasks

typically generate more situations of conflicts and disagreement than simple and repeatable ones. The impacts of technology depend on how complex the technology is, how the technology fits the tasks, how comfortable the members are in using it, and how they are using it.

Finally, the team composition can influence the dynamics in terms of culture differences, functional background, and team size. Indeed, the dynamics of the team are influenced by the culture of each one of the members, their experience in cross-cultural teams, and understanding and perceptions of the culture of their peers. The functional background is much like a culture. People with different backgrounds may act and think differently. An engineer will look at an issue differently than a marketing or human resource specialist. Cultures will be explored in more detail in Section 3.3.

The size of the team is the other component that may affect group dynamics. A large team may typically involve many cultures and functional backgrounds, so it may be more difficult to orchestrate the work. On the other hand, a small team may be limited in terms of skills and competencies.

Sahay et al. [7] are the proponents of another model of virtual team dynamics. They also include the notion of team structure in their studies and, more specifically, the production structure and the social structure. Their model has four stages: (1) initiation, (2) exploration, (3) collaboration, and (4) culmination and dissolution or completion.

The *initiation* stage involves ambiguity about roles and responsibilities, shared goals, procedures, and rules. The next stage, *exploration*, is characterized by the absence of team identity. The members do not feel united, yet they are aware of the existence of the others and they can communicate. At the third stage, *collaboration*, the members share a scheme of reference and communicate more effectively. The last stage, *culmination and dissolution*, is characterized by the completion of the deliverables, the end of the work, and team closure.

One other interesting model is the one from the business psychologist Harvey Robbins [8], inspired by Tuckman's model. This model applies well to virtual teams, as it integrates many important aspects, namely:

- The external conditions imposed on the group---particularly the collaborative technology, distance, time differences, and lack of face-to-face interactions;
- The structure of the group and the individual member's profile;
- The group's size and its composition in term of diversity;
- The culture of the individual and the emerging culture of the group;
- The relationship between the organization and the group, that is, a fluid or distinct membership, depending on the type of project or tasks.



The Robbins model includes five stages:

1. Forming and norming;
2. Low performing;
3. Storming;
4. High performing;
5. Adjourning.

Table 3.1 summarizes the main characteristics of each stage.

These models and theories are excellent complements for understanding virtual team dynamics. Based on my own experience, I suggest another model that combines the Robbins model, the points of transition from Gersick, Duarte and Snyder, the Ecollaboration ecosystem presented in Section 3.1, and the virtual process cycle discussed in Section 1.4. Figure 3.3 presents this integrated model called the Virtual Star Team model.

The successful or star virtual team is at the center of the collaboration and knowledge sharing process. It is attached to the domains that constitute the pillars of building trust in the team, that is, the task, the work, the organization, and the technology represented by the rings. The star team members are then glued together by the trust constructs.

This solid structure provides the virtual team with the strength and determination to go through the five stages of development borrowed from Robbins. The first stage corresponds to *forming and norming* and the second one to *low performing*. As in Gersick's model and the one from Duarte and Snyder, this integrated model has transition points. The first transition point occurs after the end of the low-performing stage as the members realize that they are not progressing in a way to complete the work on time. At this point, the team gets a sense of urgency and feels pressured and stressed. These feelings lead into the next stage, *storming*, where the plan, tasks, roles and responsibilities, and earlier agreements are reviewed. The next transition point occurs when new agreements are reached and the team is confident it can meet the target end date. Then the team accesses the stage of *high performing*. The last stage coincides with the completion of the work and the team *adjourning*.

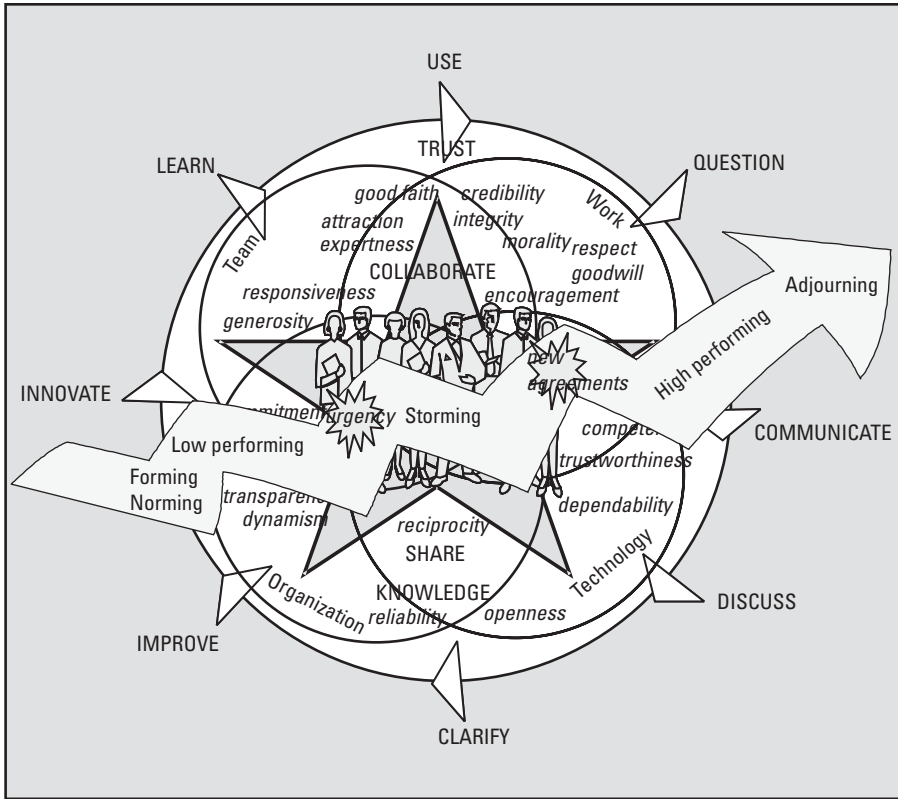
In conclusion, successful virtual teams integrate the knowledge sharing process and the Ecollaboration ecosystem with the trust constructs within their group dynamics. In turn, the dynamics allow for the development of a safe and productive work environment, where smart people can get even smarter.

**Table 3.1**  
Robbins Model

<b>Stage</b>	<b>Characteristics</b>
Forming and norming	<ul style="list-style-type: none"> <li>Informal and conceptual setting</li> <li>Cautious introduction of participants</li> <li>Low-risk involvement with avoidance of conflict</li> <li>Uncertainty about task and process with an attempt to clarify goals and objectives</li> <li>Establishment of ground rules</li> <li>Search for direction and guide for actions</li> </ul>
Low performing	<ul style="list-style-type: none"> <li>Informal and socio-emotional setting</li> <li>Difficulty in getting the process and task done</li> <li>Expression of uneasiness about the context</li> <li>Acknowledgement that the work is not progressing as expected</li> </ul>
Storming	<ul style="list-style-type: none"> <li>Mix of formal, task-oriented, and socio-emotional setting</li> <li>Conflict mixed with criticisms and power struggle</li> <li>Expression of feelings and negative feedback about process or progress as task is temporarily interrupted</li> <li>Doubt about ability to complete the task as a team</li> <li>Leadership negotiation with leadership shifting from member to member</li> <li>Ground rules previously established being questioned</li> <li>Reorientation of the group toward goals</li> </ul>
High performing	<ul style="list-style-type: none"> <li>Formal and task-oriented setting</li> <li>Full involvement of members with acceptance of other views</li> <li>Voluntary effort and warm relationships</li> <li>Creativity and innovation opportunities</li> </ul>
Adjourning	<ul style="list-style-type: none"> <li>Informal and socio-emotional setting</li> <li>Acknowledgement of the results and the contribution of the team members</li> <li>Reassessment of experience in terms of lessons learned</li> </ul>

### 3.3 Smart People Getting Smarter

This section discusses the requirements for the creation, conversion, and sharing of knowledge, as well as learning in teams. It looks at the aspects of motivation and creativity in the collaboration process. It then relates the common definition of intelligence, that is, the intellectual quotient (IQ), with emotional intelligence (EI). It differentiates tacit and explicit knowledge and their roles in the



**Figure 3.3** Virtual Star Team Model.

knowledge process. Finally, it brings into perspective the characteristics of smart people and explains their special capability to get smarter as they interact with others.

Two elements at the intersection of the Team and Work domains (from Section 3.1) are the participant *skills and competencies* and the *roles and responsibilities*. These elements support the development of trust constructs within the Ecollaboration ecosystem. They also represent one important requirement for creating, converting, and sharing knowledge. They can also influence the level of motivation and creativity in the group.

Skills and competencies refer to the professional background, the hands-on experience, and the expertise required to achieve specific tasks. In the context of teams, they also involve social attributes including interpersonal abilities, a sense of community, and mentoring or coaching capabilities, necessary for learning to occur. Roles and responsibilities typically concern the work that

should be done, who should do it, and what it involves. The notions of roles and responsibilities also have a social dimension in teams. Every member has a participatory role with responsibilities to facilitate the team in de-livering the work, to support and coach the others, and to create a safe and pleasant environment where all can grow and learn. Moreover, each member has an active part in motivating and encouraging collaboration within the group.

Skills and competencies can be related to IQ and EI. IQ is perceived as a genetic gift and something that cannot be changed much by experience or education. Many people believe that it is the condition for success, yet it would only contribute to about 20% to the factors involved in a successful life. This can explain the growing importance of EI. EI includes self-control, persistence, and the ability to self-motivate, control impulses, and empathize. Contrary to IQ, EI can develop with time and through life experiences. Finally, smartness can be defined as the joint product of IQ and EI. Being smart involves understanding oneself and our peers in terms of professional and personal abilities, motives, emotions, and habits. It also means being able to put all this knowledge together to get along with others, improve relationships, and conduct life and work activities in the most satisfying way.

IQ and EI influence our ability to learn and to share knowledge, as well as to motivate others and ourselves. Going back to the seven types of knowledge presented in Section 1.2, IQ basically deals with:

- The know-what, associated with knowledge and facts;
- The know-why, referring to knowledge about the natural world, society, culture, and human mind;
- The know-who, concerned about the people who know what and who can do what;
- The know-where, involving the information of where the knowledge resides;
- The know-when, concerned with the timing for getting and using knowledge;
- The know-how, related to skills and competencies and the ability to do things in a practical way.

EI is more concerned with the know-how-to-be or social skills, including the abilities to interact, motivate, and work with others.

Along the same line of thought, IQ can also be associated with explicit knowledge and EI with tacit knowledge. By definition, explicit knowledge is easily expressed and can be formalized and shared in simple ways, through, for example, experience, facts, observation, and learning. On the other hand, tacit knowledge is not easily expressed and is highly personal. It can be difficult to

formalize, express, and share. It is often associated with subjective knowledge, such as insights, intuitions, and emotions. Tacit knowledge can be acquired through experience without words or language. It has two dimensions: (1) a technical dimension referring to skills and know-how and (2) a cognitive dimension represented by mental models and perceptions.

Based on the notions of tacit and explicit knowledge, Ikujiro Nonaka and Hirotaka Takeuchi [9] describe four types of interactions for knowledge creation: (1) socialization, (2) externalization, (3) combination, and (4) internalization.

*Socialization* refers to the interaction from tacit to tacit knowledge. It involves more than transfer knowledge. It relies on social activities where experiences, technical skills, mental models acquired through apprentice-master relationships, on-the-job training, imitation, observation, and practice are shared and result in more knowledge being created.

*Externalization* deals with tacit to explicit knowledge. It is described as a process where tacit concepts are expressed through the use of metaphors, hypothesis, analogies, and models. In other words, externalization translates the tacit knowledge into tangible words so that they are more easily accessible and reusable.

*Combination*, or explicit to explicit knowledge, is straightforward in the sense that it consolidates concepts into a knowledge system. The explicit knowledge is combined, exchanged, sorted, published, documented, classified, and categorized. This type of interaction is very useful for training and education.

Finally, *internalization* is associated with explicit to tacit knowledge. It can be described as the action of learning by doing. This is supported by knowledge being exchanged, published, documented, and discussed. Internalization is particularly helpful in providing quick answers and solutions to problems.

The studies of William Glasser [10], an educational psychologist, are also interesting in understanding how knowledge, both explicit and tacit, is shared and assimilated. The percentages in Table 3.2 represent the average amount of retention or learning that adults maintain from a given activity.

**Table 3.2**  
Average Retention of Knowledge in Adults

Reading	10%
Hearing	20%
Seeing	30%
Hearing and seeing	50%
Discussing	70%
Experiencing	80%
Teaching	95%

For his part, Chris Argyris [11] goes beyond the tacit and explicit interpretation of knowledge creation. He proposes three types of learning: (1) single loop learning, (2) double loop learning, and (3) transformational learning.

*Single loop*, also called incremental learning, occurs when new skills and capabilities are acquired through incremental improvement without examining or questioning underlying beliefs and assumptions. In single loop learning, the behaviors are defensive. The focus is to remain in unilateral control, to win, and to suppress one's own and others' negative feelings. Single loop learning also emphasizes the intellectual and deemphasizes the emotional aspects of the problem.

*Double loop*, or reframing learning, deals with the underlying patterns and behaviors that are questioned and the frame of reference that is challenged. People involved in double loop learning avoid making assumptions. They define the purpose or problem with valid information and support free and informed choice. They share the ownership of the task or problem. They seek to grow and learn through experience rather than by protecting themselves or others. They can also take risks in discussing what was previously not discussable.

*Triple loop*, or transformational learning, implies that the undiscussed can be discussed. This type of learning leads to new possibilities and to possible transformations. Triple loop learning requires a very special environment to occur, one where there is trust and security. This may explain why single and double loop learning are more likely to occur in our traditional Western organizations. Triple loop learning offers greater opportunities, as it is not masking reality with defensive actions but confronts reality to allow for greater and profound change in behaviors.

Peter Senge [12], inspired by the work of Argyris, proposes five components or disciplines that influence learning, creativity, and innovation: (1) personal mastery, (2) mental models, (3) shared vision, (4) team learning, and (5) system thinking.

*Personal mastery* refers to continually clarifying and deepening one's personal vision. It focuses on energies, personal interests and spirit, patience, and objectively seeing reality. *Personal mastery* makes one aware of where one is and where one wants to be. In turn, it creates a tension that drives changes. Personal mastery, with its "creative tension," means more than simply putting time into one's work; its goal is to try to achieve what really matters to what one truly enjoys.

*Mental models* are associated with assumptions, generalizations, and pictures or images that influence our understanding of the world and how we take action. They dictate what we decide to accomplish and how. We must first be ready to examine and question our mental models to improve how we are dealing with others and how we share knowledge and learn.

The *shared vision* involves the picture of the future that fosters commitment rather than compliance. It relates to a genuine vision where people excel and learn because they want to and because they are instructed to. Sharing a vision means being connected, bound, and tied together by a common aspiration. It gives power and encourages people to care for each other so that the vision can be realized.

*Team learning* is based on dialogue and the capacity of team members to suspend assumptions and enter into genuine thinking together. It integrates individuals, interrelationships, teams, skills, knowledge, wisdom, theory, and application to create more learning. Team learning sets the stage for group creativity and innovation.

Finally, *systems thinking* combines all the disciplines to help people make a mind shift from seeing themselves separate from the world to being part of it, from seeing problems as caused by someone or something else to seeing how their actions create their problems. It focuses on making people discover how they create their reality.

So with all this in mind, how do smart people get smarter?

- They are willing to discover and try new things. They are curious and enthusiastic to learn. They take an active role in the world and their work. They ask questions and seek answers.
- They look toward achieving their goals. They can shift to and add new goals. They are willing to adjust their efforts. They use constraints to their advantage.
- They are not defensive and do not act upon fear. They do not have personal agendas and do not get involved in politics. They engage not in rumor but humor.
- They can look at subparts while maintaining a collective view. They demonstrate they can be trusted, that they are loyal and can adapt.
- They make the best of learning opportunities. They do not get angry with themselves or others. They do not look for people to blame. They make the best of the worst and do not see themselves as victims. They accept mistakes as a natural path for learning.
- They use tact. They provide open, frank, and honest feedback for the benefit of all.
- They demonstrate a good nature, an ability to reconcile people, and to forgive. They connect to others, think more deeply about different aspects and perspectives and engage in self-reflection.
- They encourage risk-taking through reflection. They are open and able to question their behaviors. They can exercise critical self-reflection in a positive fashion.

- They have a hold on themselves and can manage their stress and anxiety in a positive way. They look forward, not backward. They do not ruminate.
- They encourage their peers to question their behaviors in a positive way. They are humble and are capable of admitting their mistakes and changing their opinions and behaviors.
- They are not judgmental. They demonstrate patience and understanding of themselves and others. They accept others and their opinions by embracing and welcoming differences. They look for extending and expanding the relationship boundaries.
- They let go of the desire to drive the learning process. They are generous in sharing their knowledge. They give without any expectations.
- They practice good listening and try to read between the lines, that is, what is not being said. They are aware and sensitive to the nonverbal reactions of others and themselves.
- They discourage negative discussions and remain focused on positive issues. They look for solutions, not problems. They are mood lifters. They bring hope and optimism to others.
- They endorse a win-win strategy and favor the consensus approach. They identify barriers to communication and provide interventions to remove them. They focus on the situation and issue of behavior, not on the person.

### 3.4 Dealing with Cultures

Smart people come into teams with different cultures. Professional and corporate background, experiences, family, languages, nationalities, and religions are rooted in cultures and can affect the collaboration process. Indeed, cultures impact how people see the world, work together, solve problems, and reconcile dilemmas. Following is an overview of different cultures and underlying behaviors.

Trompenaars and Hampden-Turner [13] have identified five cultural dimensions of how we relate to other people: (1) universalism versus particularism, (2) individualism versus communitarism, (3) neutral versus emotional, (4) diffuse versus specific, and (5) achievement versus ascription.

The *universalists* are more concerned with rules than relationships. They can readily draw a contract. They look for consistency and uniformity, with all cases being treated the same way. They are formal in the way they do business and deal with others. For them, a deal is a deal and there is only one truth, the one agreed upon in the first place. On the other hand, *particularists* focus on



relationships more than on rules. They can build informal networks. They treat cases on an individual basis and can create private understanding and agreements. For them, relationships evolve and so do perspectives. In their context, contracts can be changed. These changes will not cause doubt in the trustworthiness of the persons involved.

The *individualists* most frequently use “I” instead of “we.” They can make decisions fast. They consider that people can work alone and be responsible for their actions and decisions. They look for high performers and give them freedom to act and to take initiatives. They believe in individual incentives and are not surprised by, and even expect, high job turnover. The *communitarians* are the “we” people who look for common goals, group achievements, and joint responsibilities. They look for integrating personality with authority and building morale and cohesion within a group. They seek low job turnover and mobility.

The *neutrals* are typically introverted or private people who do not willingly share what they think and feel; yet their body language may be revealing. They want to avoid warm, expressive, and enthusiastic behaviors because they associate them with lack of control and inconsistent with high status. They are the ones sticking to agendas and asking for time-outs in meetings so they can put themselves together. On the other side, the *emotionals*, can be extroverted and reveal a lot of their thoughts, emotions, and feelings, both verbally and non-verbally. They can be dramatic and very fluent in their communications. They dislike social distance and prefer warm and enthusiastic settings.

The *specifics* are direct to the point, precise, blunt, and definitive. They act and work on principles, independently of the people they deal with. They prefer detailed instructions, clear guidelines, and set procedures to ensure compliance. They consider management as the realization of objectives and standards with rewards in return. For them, private and business agendas are two separate things. The *diffuses* are more evasive and tactful, even opaque individuals. They perceive management as a process that is continuously improving. They can attach and deal with private and business issues all together. In that sense, they look at the overall situation when dealing with peers.

The *achievement-oriented* individuals like and use titles only when they are relevant. They respect their superiors in hierarchy based on their performance and knowledge. They do not consider age or gender as determinants for a job position. They favor management by objectives (MBO) and pay for performance. They discuss and challenge decisions with technical and functional references. The *ascription-oriented* people make extensive use of titles, especially to clarify status. They respect superiors to demonstrate their organizational commitment. For them, age and gender are attached to specific job positions. For them, direct rewards from managers are more effective than MBO and pay-for-performance programs. They consider that people with higher authority can discuss and challenge decisions.

Trompenaars and Hampden-Turner comment on two other cultural components that might influence teamwork and collaboration: (1) time and (2) internal versus external control.

People have different behaviors with regard to time horizons and orientation. Some are looking at the past, some others like to focus on the present, and others are more concerned with the future. Along the same lines, some people like sequences and others synchronic patterns.

The *past-oriented* individuals like to talk about history and origins and usually remember dates of events. They show respect to ancestors and predecessors whom they often mention and refer to. They have a view based on tradition and history. The *present-oriented* individuals prefer activities and enjoyments of the moment. They deal with the here and now and are not the type to postpone to tomorrow or dwell on the past. They do not object to planning but they do not enjoy it either. They live the present with intensity. They usually have a contemporary view on things. The *future-oriented* people enjoy talking about opportunities, potentials, and prospects. They plan, strategize, and make commitments for the future. They have an interest and belief in young newcomers and look at the past and present to get advantage in the future.

The *sequential* people do one thing at the time. They can size and measure time. They also use it to pace themselves. They respect schedules and are known to be on time. They like to follow plans. They can even manage their relationships and the time they allow for connecting with others based on their established schedule. On the other hand, the *synchronic* individuals can do many activities and tasks at a time. They go by approximation and manage schedules and agendas with flexibility. They do not regulate the time they spend with people according to a predefined schedule. They tend to go with the flow of things.

The *internally oriented* individuals can have attitudes that are dominating, and even aggressive. They typically interpret conflicts and resistance as signs of convictions and determination. They tend to be focused on themselves, their groups, and organizations. They do not appreciate when the environment is changeable, as they feel things can get out of control. The *externally oriented* people are more flexible and focus on others. They look for harmony and are sensitive. They can compromise more easily. They do not resent shifts, cycles, and changes.

Schein [14] talks about three other types of culture: (1) operator culture, (2) engineering culture, and (3) executive culture.

The *operator* culture is based on human interaction. It promotes communication, trust, and teamwork as essential elements for achieving work. Furthermore, it acknowledges that events can be unpredictable. Rules and hierarchy can also become unproductive, and even limiting. In those conditions, the operators or team members must be prepared to change the rules and work together to solve problems.

The *engineering* culture relates to the groups responsible for the basic design elements of technology being used in an organization. Depending on the industries, the groups may include engineers, architects, information technology specialists, biologists, or chemists. This culture is oriented more toward abstract and impersonal concepts than on human interaction. Indeed, the engineering culture tends to think of people as impersonal resources and sources of problems rather than contributors of solutions.

The *executive culture* focuses on corporate tacit assumptions. It is concerned with control, financial results, stockholders, and market position. It concentrates on survival and growth with little time left for interpersonal relationships. The executive culture looks at people as human resources, as a cost more than a capital investment.

Duarte and Snyder [6] propose five other cultural dimensions: (1) power distance, (2) uncertainty avoidance, (3) masculinity versus femininity, (4) long versus short term, and (5) high versus low context.

The *power distance* dimension refers to how the distribution of power is expected and accepted by the members. The high-power-distance members will want to make decisions and take charge, while the low-power-distance members will seek and encourage consultation.

The *uncertainty avoidance* dimension relates to the degree of structure to achieve the work. Members looking to avoid uncertainty will tend to spend more time building structure and planning the work.

The *masculinity and femininity* dimension concerns the gender that can be associated with values and behaviors. Members with the masculinity dimension can be perceived as direct and tough. Members with the femininity dimension demonstrate nurturing and caring behaviors.

The *long versus short term* dimension concerns the opportunities over time. This dimension resembles the time dimension. The short-term members will focus on the current opportunities and advantages. The long-term members will consider actions and decisions in light of the future opportunities.

Finally, the *high versus low context* dimension deals with the amount of information needed to make a decision. The low-context members will be satisfied with the facts, while the high-context members will want to spend more time searching and collecting information.

One other form of cultural differences may reside in the generation gap. Men born from 1930 to 1945, or the postwar generation, were working, while most of the women were staying home—taking care of the household and the children. This generation also considered marriage a lifetime commitment. Employees were mostly looking for stable employment, even to work for the same employer until retirement between the ages of 55 and 65 years old. While some of them are still active today, there are few who are computer literate.

The baby boomer generation was born between 1946 and 1964. More women of this generation had access to and were encouraged to get an education. Many are active in the workforce. The baby boomers do share the family values of their parents but consider divorce a choice and a possibility. The baby boomers do not necessarily expect to work all of their lives for the same employers, but many look to retire by the age of 55. The baby boomers were not raised with computer technology; however, many are computer literate.

Generation X was born between 1965 and the beginning of 1980. Many members of GenX have an educated and professional mother as part of the workforce. Many of them have divorced parents and have grown up in a reconstituted family. GenX expects to work for several employers and remain active over the age of 55. GenX were raised at the beginning of the computer wave. Many, if not most, are computer literate.

Generation Y was born between 1980 and 1995. They typically have a mother who is part of the work force, often educated and professional. Divorce and reconstituted families are just a common reality. They expect to work only 3 to 5 years for any given employer. Their goal is to slow down or work part-time at an early age. Gen Y is the computer generation. They could be considered masters in the field. Indeed, they have much experience with software, video games, and the Internet, including chat rooms, virtual games, music, and movies.

All these cultural influences must be considered when putting together a virtual team. Dealing with cultures implies education, training, and development initiatives. This is why the launching session of the virtual team must include time to discuss cultural differences. The participants must understand their own mental models before attempting to comprehend the culture of the others in the group. Once they have defined their cultural style, they are ready to engage in a discussion on how their cultural behaviors and beliefs can impact and influence the group.

This discussion should lead to respecting and welcoming the diversity. It should help in establishing cultural differences as an added value, an opportunity, and an advantage for learning, creating, and innovating. Furthermore, the members must integrate how they will deal with cultural issues into the team charter. They must agree to make every effort to reconcile differences using humor, frames of reference, examples, or metaphors. In other words, they should use all their smartness to create and maintain a safe environment where everyone can contribute, learn, and grow.

I will conclude with a personal cultural experience in a virtual environment. First, let us mention that my mother tongue is French. I learned English while attending university, so it is more of a business language to me. This can sometimes create confusion or misunderstanding.

Now the context: I was part of a virtual team where all of the members had extensive experience with virtual teaming. Since we were all familiar with the collaborative technology as well, we did not meet face to face for the team launching. It was done virtually in an asynchronous discussion forum. There was only one man in the group. He had a good sense of humor and the other female participants liked to tease him. At one point, they mentioned that he had virtual cooties. I thought it was a typo and they meant virtual cookies. But there was not a typo, since they kept referring to virtual cooties.

I looked in the dictionary but did not find the word. I did not join in the conversation, since I did not understand what they were talking about. I searched the Internet and found a site where there were animated bugs. I was really puzzled. Reading through the conversation thread again, I thought they were talking about some sort of disease. I am usually very involved in discussions. I was shy to comment then and I remained silent through the duration of this topic—through five long days of it!

It was summer and my neighbor was outside cutting her lawn. This neighbor's ethnic origin is Polish, but her mother tongue is English. So I asked her about cooties. She said they were fleas. Ah hah, fleas! I went back to the discussion forum and noticed that they said only men had cooties. So it had to be more than fleas. I was puzzled even more. I did not know about any bug infestation that affected only men! This conversation was really embarrassing me. I decided then to phone my trusted American sister-in-law. She repeated the word cooties out loud. I was surprised to hear my 10-year-old niece in the background saying that only boys had them!

Finally, I learned that having cooties is an expression kids use to say that boys are silly. It has nothing to do with men having a bug affliction. I came to the virtual discussion and told my peers about the anecdote. They laughed for a good while. In fact, they were still laughing when I met them face to face at the adjournment meeting. Talk about cultures and humor!

### **3.5 Facilitating the Team**

The objectives of facilitation are to develop trust and encourage collaboration, to ease the efforts of the team in achieving the work and, ultimately to build successful virtual teams. Facilitating virtual teams requires a new mindset driven by a new management style. This section presents suggestions and tips for the virtual team facilitator.

But what is a virtual team facilitator? Why does the virtual team need one? A virtual team facilitator is a professional who specializes in organizational development, more specifically, in team learning, motivation, and collaboration in a virtual work environment. Productive and rewarding virtual experiences do not

happen by chance. So it requires the active and timely participation of a facilitator to support the efforts of the virtual team manager and the participants from the creation to the adjournment of the team.

The facilitator is especially important because the virtual environment, the team process, and the dynamics are different from the traditional face-to-face setting. It represents a fundamental change that needs to be carefully attended to and managed. Indeed, the technology adds complexity to communication, collaboration, and work. The virtual team can also have a diversity of cultures to account for and be dealt with. Finally, the virtual team is more challenged in creating and sustaining trust with little or no face-to-face meetings and physical cues.

While these are valid reasons for having a facilitator, there are still people who could be tempted to go ahead with virtual teaming without a facilitator or with the facilitator role assigned to the project manager and the members. These situations can be compared to some ERP, CRM, and business intelligence projects that did not involve change management specialists or only included trainers. These projects were driven on the assumptions that everything would fall into place and that people would adapt and easily follow once the technology was implemented. Most of these projects did not produce these expected results. It is very important to remember the best lessons learned, that is, technology is not an end, but a means. For the people who are still skeptical of the importance of a virtual facilitator, here are some questions that should change your mind.

In an audio conference, have you ever used the mute button to comment without the other party hearing? Did you ever get the feeling that the other party used the mute button and commented among themselves? How can you account for who is present and truly listening and participating?

In videoconferencing, are people sometimes distracted by the live images? Can people be uncomfortable with the medium? How can it affect the participation? Can it prevent them from participating fully? How do you account for presence? How do you deal with people getting in and out of the room?

With e-mails and in discussion forums, have you ever wondered if the others are reading the notes and looking at the documents? Do you send a read acknowledgement when asked or do you deactivate it? Have you ever been impatient or even frustrated by the delay or lack of response? How do you support conversations when people access them at different times? How do you account for presence and how people feel about something? How do you deal with people who are not contributing?

These issues, combined with the team dynamics, the diversity of cultures, and the complexity of the work create many traps the team may fall into. Here are some of these traps:

- False consensus occurs because of delays in responses, long discussions, discouragement, lack of interest, and lack of real buy-in.
- Closure cannot be reached because of frustrations, interferences, and difficulty in solving problems and making decisions.
- A rigid hierarchy is built because some participants are more present, using power, and exercising control.
- Routine patterns of behaviors are resulting from a lack of interactions and motivation. They are lowering the capabilities for creation and innovation.
- Things get misinterpreted even more when there are no or few physical cues. Assumptions are not validated. They cause misunderstanding, delays, frustration, and even conflicts.
- Covert conflicts over personality and others factors occur. They are not discussed or resolved and are jeopardizing the well-being of the group and the delivery of work.

For all those reasons, it is important to develop a plan and to design tools and templates that take into consideration the work and the profile, skills, and competencies of the virtual team members. The virtual team designer and the facilitator are responsible for this design, with the participation of the team manager. Finally, the facilitator is responsible for driving the facilitation activities with the support of the virtual team manager.

The facilitation process starts at the first team interaction, that is, at the launching session. This session should preferably be held face to face and planned over 1 to 3 days, depending on the complexity of the work, profile, and virtual experience of the participants and their familiarity with the collaborative technology. This session must be carefully planned and organized. It should absolutely not be rushed, as it is the first get-together of the team. It must be considered a key period for setting the conditions for trust and the tone for future communication and collaboration. Social activities should also be organized to allow for informal interactions throughout the launching period.

The project sponsor and the project manager start the session with a presentation of the organizational context of the virtual team, its objectives, and the leadership style praised. The participants subsequently introduce themselves; more specifically, they discuss their backgrounds, skills and competencies, personal and professional values, and experience with virtual teaming. The virtual team project manager then details and discusses with the participants the work in terms of project plan, deliverables, roles and responsibilities, processes, tasks, workflow, tools, and templates. It is possible that these elements may be included in a formal project charter.

The facilitator and team manager continue with a joint presentation of the organizational components: the organizational culture, the critical success factors, the performance indicators, the reporting process, the evaluation, and the reward and compensation programs.

The team members then discuss their expectations and apprehension with regard to virtual work and teaming. They must also talk about how conflict will be addressed and resolved. They develop a virtual team charter including the purpose of the team and their operating guidelines. They also agree on a schedule to review and discuss their expectations and the application of the team charter. Finally, the facilitator drives the hands-on training on the collaborative technology.

Other face-to-face meetings should be organized during the life of the virtual team. They should include communication on tasks and integrate social activities. They must contribute to the development of the participants and ultimately reinforce trust and collaboration.

A list of tips for working virtually that can be used by the facilitator to generate the discussion for the development of the team charter is as follows:

- Assume good intent and remind others of it when there is misunderstanding, confusion, or the discussion gets heated.
- Manage expectations in asynchronous communication by agreeing on a delay for posting replies, for example, within 24 hours.
- Practice and encourage good listening.
- Use open questions.
- Behave as you would like the others to; avoid negative words, such as “weak” and “incompetent”; do not be judgmental; do not use global terms (e.g., everyone, all the time) or stereotypes (e.g., women do not get this); do not point fingers or criticize.
- Use positive language and tone; be encouraging.
- Show interest and concern; be flexible.
- Be as explicit as possible.
- Do not assume or interpret; rephrase what you understand; ask for clarification.
- Use humor with care.
- Express your emotions and feelings with emoticons, that is, signs for describing body language.
- Acknowledge the participation, contribution, and creativity of others.
- Always keep in mind that not everybody thinks, feels, perceives, and understands the way you do.



- Do not put flames in the environment; watch what you say and how you say it; when upset, wait to reply.
- In posting, state the topic and identify who is concerned.
- Advise when you will be absent for a long period and specify the dates.
- Respect privacy and confidentiality.
- Keep the conversations in a logical place and do not duplicate conversation threads.
- When there is a new topic, start a new conversation thread.
- Try not to include too many topics in one posting; keep it short and simple; use attachments for support information.
- Use the social discussion forum for group synergy; do socialize with respect (e.g., beware of bad jokes).
- Do not get obsessed with typos and formatting.
- In audio conferencing, call from a quiet location; avoid cell phones and speakerphones; avoid paper rustling and using computer keyboards; start with the presentation of everyone attending; avoid conversation or going in and out of the room; mention when you leave and reenter; always say your name before speaking; speak slowly and clearly; use words for body language; do not use the mute button for private talk with colleagues.
- In teleconferencing, start with the presentation of everyone attending; avoid going in and out of the room; mention when you leave and reenter; avoid moving too much; speak slowly and clearly.

When the launching session is finished, the team members reunite in the virtual environment. The facilitator posts the team charter in a discussion forum. A list of emoticons and the virtual teaming tips can also be posted. The facilitator then asks the members to confirm their commitment and to reiterate their expectations with a reply in this particular forum. It is also in that forum where the teams will periodically review and discuss how the charter is being respected and what expectations have been met. Discussions on team issues and conflicts should also be held in this specific place.

Finally, the facilitator creates another discussion forum for social and informal conversations. This forum should have an inviting name, such as The Social Club, The Karaoke Lounge, The Café Corner, Time for Tea, or The Cocktail Room. The facilitator also proposes that the members attach a resume, a personal presentation, and a photo to their user profiles.

Once the work begins, the facilitator must work closely with the team manager to ensure effective and efficient interventions. It is recommended that a private forum be created for the team manager and the facilitator to coordinate

their efforts in facilitating the team and the work. The team manager and the facilitator should always consult before taking any action with regard to the member participation and performance. They should always deal off-line with the members concerned, such as using e-mails, phone calls, or face-to-face meetings.

There are many techniques and behaviors that can be used for avoiding and getting out of the traps presented earlier. William Isaacs [15] suggests that conversations are inspired by the nature of the situation as well as the inbred characteristics, unspoken needs, and feelings of the participants. He believes that people take a stance because the conversation needs someone to fill a role and not because they intend to. The roles he refers to are from the Four Player System of David Kantor [16]. This theory and this system are interesting in the context where the team members are all contributors to the facilitation process. The four roles are: (1) the mover, (2) the follower, (3) the opposer, and (4) the bystander.

The *mover* prefers direction, discipline, commitment, perfection, and clarity. He/she is committed and wants to deliver a quality product on time and on budget. He/she sometimes comes across as omnipotent, impatient, indecisive, and controlling, even dictatorial.

The *follower* wants completion, compassion, loyalty, service, and continuity. He/she can sometimes be perceived as placating, indecisive, plaint, wishy-washy, and overaccommodating.

The *opposer* embodies courage, integrity, correction, and survival. His/her temperament can sometimes be described as critical, complaining, blaming, attacking, and contrary.

The *bystander* is interested in perspective, patience, moderation, preservation, and self-reflection. He/she sometimes comes across as disengaged, judgmental, withdrawn, or deserting and silent.

A team member may take on more than one role during the life of the virtual team, depending on the situation. The facilitator must make the best use of the roles in each situation. In other words, the facilitator might ask the bystanders to voice their opinions, the opposers to clarify their comments, the movers to explain their assumptions, and the followers to provide a thought or opinion.

On the other hand, the facilitator must always allow the team to make decisions and resolve issues. He/she must never dominate. When the situation is heated, he/she can suggest air time limits, that is, ask the members not to reply for a period of time. After the given time period, he/she asks if the members feel better about the situation and are now capable of going back to the main stream, that is, address the initial topic or issue. He/she might summarize the situation with a focus on the positive aspects. He/she can demand politely that the people who were disruptive have to first hear the others.

At any time, the facilitation must be accessible and predictable. The facilitator must treat people fairly and get everyone involved. He/she must give credit and praise and look for reinforcing changes for the better.

I conclude this section with a virtual teaming experience where the facilitator, based in Indonesia, invited the team members for a “happy hour” every Friday night. In reality, the asynchronous conversations would last for the whole weekend. His famous greeting, “Aloha Friday,” was welcomed and we looked forward to this weekly informal get-together. The social forum was a place to clear the air from work and pressure, to learn about each other’s lives and where we lived, and to virtually laugh. I still remember freezing on a Montreal winter weekend when the facilitator, with his Indonesian neighbors, went camping. They were having termites exterminated from their houses. Apparently, this was no big deal. Termites were not unusual, just another cultural difference!

### 3.6 Measuring Results

Measuring the results of virtual teams refers to the assessment of the performance achieved in relation to the predefined goals and objectives. In the knowledge era, getting results means more than the realization of a financial performance. It involves sharing and creating knowledge as well as increasing the intellectual capital in order to improve organizational agility and competitiveness. This section proposes definitions of virtual team performance and discusses results in the context of financial and intellectual capital.

Leimeister et al. [17] make a distinction between effectiveness and efficiency of virtual teams. They define efficiency as a valued ratio between input and output. They associate effectiveness with the success of political programs or the degree of achieving objectives. They claim that a conclusion for virtual team performance based on a pure focus on efficiency would not be objective. They are proposing a framework called IT-Enabled New Organizational Forms (ITENOF) which integrates three theories: (1) the resource dependence, (2) the core competencies, and (3) the transaction cost in a political economical perspective.

The *resource dependence* theory does not assume that profitability is the ultimate goal of organizations. Instead, it proposes that it is the reduction in the complexity resulting from being dependent on resources. The *core competence* theory states that the success and failure of an organization are determined by its uniqueness and specific characteristics visible to the customers, such as potentials, assets, and resources. The *transaction cost* theory has its foundation in the economic evaluation of a transaction.

Similarly, Brown [18] proposes five components to measure virtual team performance:

1. Task accomplishment: the ability to meet the objectives given both time and resource constraints;
2. Efficiency: the achievement of the task with minimal inputs in terms of time and resources;
3. Quality: the degree to which the outcomes approximate or exceed industry standards;
4. Adaptability: the responsiveness to external influences and pressures;
5. Fulfillment of the member's developmental and resource needs: the opportunities for individual growth and learning and the fundamentals in terms of human resource management.

Piccoli [19] and Lurey [20] use the definition of team effectiveness proposed by prominent field researchers Cohen and Bailey [21] and Hackman [22]. They define it in terms of:

1. The group-produced outputs (output acceptability);
2. The consequences a group has for its members (individual psychological outcomes);
3. The improvement of the members' abilities to perform effectively in the future (team viability).

Duarte and Snyder [6] also refer to Hackman's model but present it under different labels:

1. Signs of problems or unexploited opportunities;
2. Criteria of intermediate effectiveness;
3. Final criteria for effectiveness.

Signs of unexploited opportunities refer to the degree to which the team is collaborating. These signs can include low utilization of the virtual environment, group pressure, and incomplete use of information. Intermediate effectiveness deals with the time and effort dedicated to complete the task. Final criteria for effectiveness look at both the task and social dynamics. In other words, it considers the work output as well as the satisfaction of the team members.

Along the same lines, Wang [23] uses the term *task-effectiveness* to discuss the degree to which the desired outcomes are produced as the team's task gets completed. He looks at two dimensions of effectiveness: (1) task performance and (2) member satisfaction. Under task performance, he identifies three criteria: (1) quality, (2) quantity, and (3) costs. After a review of many studies, he concludes that criteria to evaluate performance are usually context and task specific.

These approaches are all similar in nature. As mentioned earlier, organizations that are using virtual teams to transition to the knowledge era must look at financial and intellectual capital criteria to justify the investment and build the business case (as discussed in Sections 1.3, 1.4, and 1.5), as well as measure performance. In this respect, the measures must refer to the quantitative and qualitative output and the outcome or the assessment of the results compared to the intended purpose.

One approach gaining in popularity is the Knowledge Balanced Scorecard adapted by De Gooijer [24] from the Balanced Scorecard of Kaplan and Norton [25]. This method focuses on the strategic objectives of the organization and integrates four major perspectives that can be linked to the capital components: (1) financial aspects, (2) stakeholders' perspective, (3) internal business processes perspective, and (4) people perspective.

The *financial* perspective or financial capital perspective refers to the targets established in terms of tangibles costs and revenues. It also involves the capital invested in information systems and technology.

The *stakeholders'* perspective captures the ability to satisfy the stakeholders. It involves measuring the contribution to many indicators such as the business relationships, the organizational reputation, the technical superiority, and the value chains. This perspective relates to the customer and other business partners capital.

The internal business processes perspective deals with the internal business results leading to financial success and satisfied customers and stakeholders. These processes are keys to ensure that outcomes will be satisfactory. They can be considered the mechanisms through which performance expectations are achieved. This perspective also relates to the structural capital, and more specifically to the management information systems and the knowledge repositories of processes, procedures, and best business practices.

The people perspective focuses on the abilities of employees, the quality of information systems, and the effects of organizational alignment to support the accomplishment of the goals of the organization. This perspective is very important in order to meet the changing requirements and the customers' and stakeholders' expectations. It refers to the human capital defined as the competencies and capabilities, as well as the satisfaction of the workers. It also involves the structural capital embedded in information systems, that is, the information that can be retrieved for reference, building expertise, networking, and timely feedback.

Table 3.3 shows how the business case in Section 1.5 can be mapped to the Knowledge Balanced Scorecard perspectives and the capital components.

Measuring the financial performance of virtual teams is quite simple and involves comparing the anticipated costs and benefits to the actual ones and calculating financial ratios such as the return on investment. Table 3.4 presents

**Table 3.3**  
Mapping the Business Case to the Balanced Scorecard  
and the Organizational Capital

<b>Elements of Business Case</b>	<b>Knowledge Balanced Scorecard Perspective</b>	<b>Capital Components</b>
Knowledge management	Stakeholders	Customer/business partners
	Business processes	Structural
	People	Human
Coordination	Financial	Financial
Traveling and per diem	Financial	Financial
Resignation and recruiting	Financial	Financial
	People	Human
Salaries and sales commissions	Financial	Financial
Collaborative software and consulting services	Financial	Financial
	People	Structural Human

**Table 3.4**  
Intellectual Capital Performance Indicators

<b>Capital Components</b>	<b>Indicators</b>
Customer/business partners	Management credibility
	Execution of corporate strategy
	Number of customers--number of new and lost customers
	Market share
	Customer and stakeholder satisfaction index
	Customer and business partner ratings
	Number of customer complaints
	Number of new leads
	Number of contracts
	Ratio of sales contacts to sales closed
	Average time from customer/business partner contact to response
	Average length of relationships
	Ratio of customers or business partners to employees
Annual sales per customer	

**Table 3.4** (continued)

Capital Components	Indicators	
Structural	Quality of processes	
	Number of new patents	
	Number of new reusable templates, lessons learned, and best practices documented	
	Number of new business processes documented	
	Number of accesses to knowledge databases	
	Reuse rate of accessed documents	
	Contracts filed without error	
	Human	Employee satisfaction index
		Leadership index
		Motivation index
Empowerment index		
New suggestions/solutions/processes suggested		
Ability to attract employees		
Employee turnover rate		
Average duration of employment		
Hours spent in debriefing and searching information		
Hours spent by manager to explain strategy and actions		

some of the intellectual capital indicators that can be used for measuring the performance of virtual teams.

In conclusion, measuring virtual team performance is not based on scientific measures but is estimated by financial and intellectual capital indicators. As a matter of fact, the evaluation does provide reliable numbers in the context of the knowledge economy, as it accounts for all the criteria that make up the value of the virtual team output and outcomes.

## References

- [1] Hugli, W. G., "Teams, Training and Trust in the Virtual Environment," University of West Virginia, 2000.
- [2] Bion, W. R., *Experiences with Groups*, New York: Basic Books, 1961.
- [3] Tuckman, B. W., "Developmental Sequence in Small Groups," *Psychological Bulletin*, No. 63, 1965, pp. 384–389.

- [4] Schein, E. H., "Organizational culture and leadership," San Francisco: Jossey Bass Publishers, 1985.
- [5] Gersick, C. J. K., "Time and transition in work teams: Towards a new model of group development," *Academy of Management Journal*, Vol. 31, 1988, pp. 9-41.
- [6] Duarte, D., and N. Snyder, "*Mastering Virtual Teams: Strategies, Tools, and Techniques That Succeed*," San Francisco: Jossey-Bass, 2001.
- [7] Sahay, S., S. Sarker, and F. Lau, "Understanding Virtual Team Development Process: An Empirical Analysis and a Theoretical Model," 2000, available at <http://www.ifi.uio.no/in364/docs/MISQVTfinalsubmission.htm>, June 11, 2002.
- [8] Robbins, S. P. "Organizational Behavior," NJ: Prentice Hall, 1993.
- [9] Nonaka, I., and H. Takeuchi, "*The Knowledge Creating Company: How Japanese Companies Create the Dynasties of Innovation*," New York: Oxford University Press, 1995.
- [10] Ferris State University. "Retention Rates of Information Based on Learning and Teaching Approaches," available at [http://www.ferris.edu/HTMLS/academics/center/Teaching\\_and\\_Learning\\_Tips/Learning%20How%20to%20Learn%20Skills%20and%20Strategies/RetentionRates.htm](http://www.ferris.edu/HTMLS/academics/center/Teaching_and_Learning_Tips/Learning%20How%20to%20Learn%20Skills%20and%20Strategies/RetentionRates.htm), August, 2004.
- [11] Argyris, C., "Teaching Smart People How to Learn," *Harvard Business Review*, May-June, 1991.
- [12] Senge, P., "*The Fifth Discipline: The Art and Practice of The Learning Organization*," New York: Currency Doubleday, 1990.
- [13] Trompenaars, A., and C. Hampden-Turner, "*Riding the Waves of Culture: Understanding Cultural Diversity in Global Business*," New York: McGraw Hill, 1998.
- [14] Schein, E. H., "Three Cultures of Management: The Key to Organization Learning," *Sloan Management Review*, Vol. 38, 1996, pp. 9-20.
- [15] Isaacs, W., "*Dialogue and the Art of Thinking Together: A Pioneering Approach to Communicating in Business and in Life*," New York: Currency, 1999.
- [16] Kantor, D., and W. Lehr. "*Inside the family*," San Francisco: Jossey Bass Publishers, 1975.
- [17] Leimeister, J. M., J. Weigle, and H. Krcmar, "Efficiency of Virtual Organizations. The Case of AGI," *Electronic Journal of Organization Virtualness*, Vol. 3, No. 3, 2001.
- [18] Brown, B. K., "A Model of Virtual Organization Effectiveness: Optimizing the Outcomes of Interorganizational Project Teams," *Columbian School of Arts and Sciences*, George Washington University, 1999.
- [19] Piccoli, G., "Virtual Teams: An Investigation of the Determinants of Team Effectiveness and the Contribution of Managerial Behavior Control," *Louisiana State University and Agricultural & Mechanical College*, 2000.
- [20] Lurey, J. S., "A Study of Best Practices in Designing and Supporting Effective Virtual Teams," *California School of Professional Psychology*, Los Angeles, 1998.
- [21] Cohen, S. G., and D. E. Bailey, "What Makes Teams Work: Group Effectiveness Research from the Shop Floor to Executive Suite," *Journal of Management*, No. 23, 1997, pp. 239-290.



- [22] Hackman, J. R., "*The Design of Work Teams. Handbook of Organizational Behavior*," Englewood Cliffs, NJ: J. W. Lorsch, edition, Prentice Hall, 1987.
- [23] Wang, P. R., "*Media Choice in Virtual Teams. Linking Task Requirement and Communication Technology to Enhance Task Effectiveness*," Florida State University, College of Education, 2001.
- [24] De Gooijer, J., "*Designing a knowledge management performance framework*," Journal of Knowledge Management, Vol. 4, 2000, pp. 303-310.
- [25] Kaplan, R. S., and D. P. Norton, "*The balanced scorecard—Measures that drives performance*," Harvard Business Review, 1992. pp. 71–79.

# 4

## Ecollaboration Methodology

The following methodology for implementing successful virtual teams using collaborative technology integrates the best business practices in project management, change management, and virtual teams design. It also draws on the elements discussed in the previous chapters, including the concepts of knowledge worker, collaboration and knowledge management, the business justification or the business case, financial and intellectual measures, technology integration issues, group dynamics theories and facilitation techniques, the Ecollaboration paradigm, and the Virtual Star Team Model.

### 4.1 A Methodology—A Basic Recipe

A methodology is like a recipe. It is intended to provide assistance and guidance in preparing a dish. As in cooking, the Ecollaboration methodology involves:

- Cooks and helpers, or the people responsible for delivering the outcome;
- The ingredients, or the components involved in the preparation of the outcome;
- The techniques and instruments, or the methodology, templates, and tools to deliver.

#### People

*Ecollaboration steering committee members* The steering committee is especially important in large cross-functional or enterprisewide Ecollaboration projects.

It is made up of the project sponsor and the senior managers. It provides Ecollaboration leadership in line with corporate objectives. It approves investment and resources for the project, major changes to the project scope, and key deliverables and milestones. It also resolves corporate issues. This steering committee may be different from the one involved with the deliverables of the work achieved virtually.

*Ecollaboration project team members* This team is made up of the people responsible for delivering and managing the Ecollaboration project. These members are essentially responsible for the Ecollaboration components. They are not responsible for the work being achieved virtually. They include the project sponsor, the project manager, the human resources representative, the Ecollaboration designer, the technology architect, the programmers, and other technology specialists.

*Virtual team members* This team involves the people responsible for delivering and managing the work to be accomplished virtually and for which they are accountable. Basically, these are the team manager, the team facilitator, and the immediate participants, who can have different business titles, roles, and functions depending on the type of work to be accomplished virtually. These members can be scientists, technicians, laboratory experts, sales representatives, engineers, or other types of knowledge workers. Depending on the virtual team objectives, the virtual team can also include the members of the steering committee or the managers responsible for the virtual deliverables.

### Ingredients

*Organizational components* The organizational components refer to the entity or entities that have authority over the Ecollaboration project and the virtual team initiative and to which the people are reporting. These components can be positioned at the corporate level, a division level, or a business unit level. Organizational components also include cultural and leadership aspects and critical factors that can influence the success of the virtual team initiative. Other important elements are (1) the indicators for measuring the performance, (2) the process for reporting progress and issues, (3) the program to evaluate the virtual team participants and the virtual initiative itself, and, finally, (4) the reward and compensation for the virtual team members.

*Virtual work components* These components make reference to the work to be realized virtually. They include the dimensions or nature of the work, its content, the roles and responsibilities necessary for its accomplishment, the processes, flows and deliverables, the templates and tools to be used, and, finally, the delivery plan.

*Virtual team components* These components target the elements for the constitution of the team: the values supporting it, the members' profiles, the member

selection process, the training program, the facilitation plan, templates, and tools.

*Technology components* The technology components involve the overall Ecollaboration environment, from the technology infrastructure supporting it, the collaborative software itself, and the elements required for the integration, to the enterprise systems including interfaces and conversion programs.

### Techniques and Instruments

*Ecollaboration project management* These techniques and instruments are used to manage the implementation of the Ecollaboration initiative. They include a project plan and the documentation for the approval of the design, the reporting of issues, the progress, and the overall evaluation.

*Virtual team design and management* These techniques and instruments are used to conduct the analysis and to produce the final design of the virtual team, including the design of the work, the team, and the organizational components, as well as the design of the program to facilitate and manage the virtual experience.

*Technology design and management* These techniques and instruments facilitate the analysis of the functional and technology requirements. In other words, they help document the Ecollaboration functionalities and the technology infrastructure that will support them. These techniques and instruments are also used in the selection, delivery, and maintenance of the collaborative software and for its integration within the enterprise technology architecture.

*Organizational change management* These techniques and instruments aim at facilitating the change within the organization undertaking the Ecollaboration initiative including the teams that will now transition to a new mode of functioning that is working in a virtual environment.

Typically, beginner cooks use a recipe to ensure that they include all the necessary ingredients and follow the correct techniques respecting the quantity, time, and temperature to produce a decent product. On the other hand, great chefs often use recipes simply as a reference. It is not unusual for them to introduce variations in ingredients and techniques based on their knowledge and experience and depending upon the event. Along the same lines, the proposed Ecollaboration methodology must be considered a basic recipe that can vary depending on the type and size of Ecollaboration projects and virtual team initiatives.

Baking a cake for an afternoon tea party of 8 or for a wedding of 200 guests can be based on the same recipe. However, the cakes will be different sizes and can have different shapes and flavors. Amazingly, beginner cooks can do as well as great chefs when they have a good recipe, techniques, and instruments. They can even bake memorable dishes. Yet it does make sense to start on a small

scale and try a simple recipe that can be appreciated by most people. Grand events should be avoided at first unless supervised and helped by a master.

The same holds true for implementing a virtual team. The success is a matter of judgment in choosing the project scope and size, determination in putting together the best working crew and selecting the right ingredients, patience in learning the techniques, rigor in using the instruments, and, finally, effective and efficient use of expert advice.

In other words, a pilot project is recommended that does not call for important investments but that can generate interesting benefits in a short period of time--what is often referred to as a quick-hit project. Ideally, the virtual team size should be relatively small, with a maximum of 25 people. In terms of scope, the pilot project should involve virtual team participants already known for their ability to collaborate and deliver. The level of complexity of the virtual tasks and deliverables should also be kept to a minimum or not much different from the traditional ones. Ecollaboration experts should be involved in the pilot project so that the best business practices or techniques and instruments are used properly and knowledge is transferred for future projects. Chapter 5 provides additional information on key success factors for implementing Ecollaboration projects.

## **4.2 Resources, Roles, and Responsibilities**

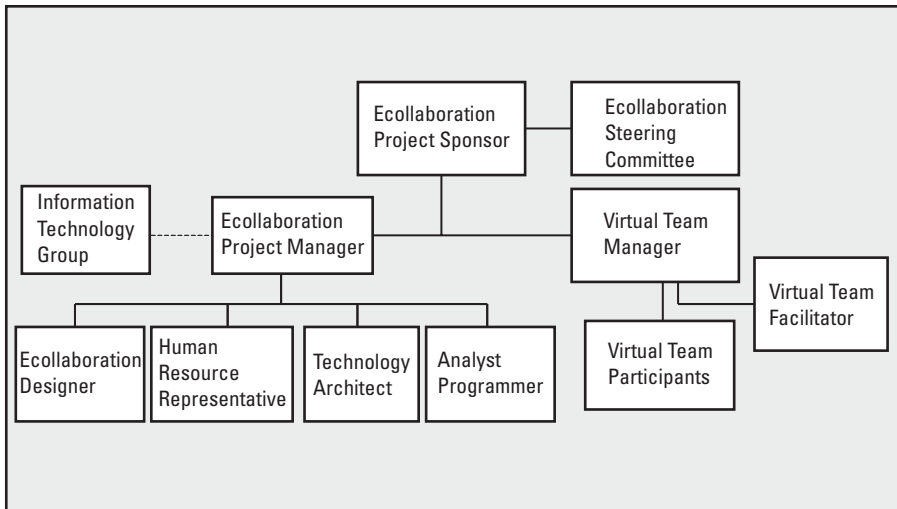
There can be different organizational structures for an Ecollaboration project depending on the type of virtual teams being implemented. Typically, the Ecollaboration structure is two sided; that is, there is a structure for the project of implementing the virtual team and one for supporting the work achieved virtually. The structure proposed in Figure 4.1 presents the case where the Ecollaboration steering committee is responsible for the Ecollaboration project as well as the virtual team initiative or work.

### **Ecollaboration Project Steering Committee**

The steering committee typically includes the project sponsor and the senior managers from human resources and information technology. It may also include managers from the business units responsible for the virtual work.

The responsibilities of the steering committee involve:

- Ensuring that the Ecollaboration project respects corporate directions;
- Allocating all necessary resources (e.g., financial, human, technical);
- Approving the charter and plan for the Ecollaboration project;
- Approving the charter and plan for the virtual work;



**Figure 4.1** Ecollaboration organizational structure.

- Resolving issues submitted by the Ecollaboration project sponsor and the virtual team manager;
- Approving any major changes to the Ecollaboration project budget, plan, or content, as well as the virtual work;
- Participating actively in communication activities to facilitate Ecollaboration comprehension in the organization.

The members of the steering committee should have the following profile:

- Several years of service in the enterprise;
- Good comprehension of the culture and leadership style of the organization;
- Understanding of change management and the human factor;
- Experience in technology projects with organizational impacts;
- Familiar with collaborative technologies;
- Familiar with the concepts of collaboration and virtual teams.

### Ecollaboration Project Sponsor

The project sponsor is the person supporting and promoting the Ecollaboration project within the organization. He/she acts as the liaison person with the Ecollaboration steering committee. He/she is also the reporting manager of the

Ecollaboration project manager and the virtual team manager. Typically, he/she is one of the senior managers of the business units delivering the work virtually.

More specifically, the project sponsor is responsible for:

- Approving the Ecollaboration project charter, plan, and deliverables;
- Approving the virtual work charter, plan, and deliverables;
- Reviewing and approving project amendments and changes submitted by the Ecollaboration project manager;
- Reviewing and approving work amendments and changes submitted by the virtual team manager;
- Resolving the Ecollaboration project issues submitted by the project manager;
- Resolving the work issues submitted by the virtual team manager;
- Reviewing the Ecollaboration project and virtual work progress;
- Reviewing the virtual initiative evaluation;
- Participating actively in communication activities to facilitate Ecollaboration comprehension in the organization (including the launching session).

The project sponsor should have the following profile:

- Has several years of service in the enterprise;
- Has good comprehension of the culture and leadership style of the organization;
- Has an understanding of change management and the human factor;
- Is involved as leader in technology projects with organizational impacts;
- Is a disciplined and proactive decision-maker;
- Is familiar with the work of the virtual team;
- Is familiar with collaborative technologies;
- Is familiar with the concepts of collaboration and virtual teams.

### Ecollaboration Project Manager

The project manager is responsible for the management activities related to the Ecollaboration project, and in this respect directly reports to the Ecollaboration project sponsor.

More specifically, the Ecollaboration project manager is responsible for:

- Developing the Ecollaboration project charter and plan;

- Assisting in the validation and approval of the design components and other deliverables for the implementation of the virtual team and related work;
- Participating in the evaluation and selection of the collaborative software;
- Managing issues for the Ecollaboration project;
- Measuring and reporting progress of the Ecollaboration project;
- Reviewing and approving Ecollaboration project amendments and changes in accordance with the project sponsor;
- Participating in the virtual team launching session;
- Participating in the definition of the lessons learned from the virtual initiative;
- Conducting the evaluation of the Ecollaboration project;
- Closing the project;
- Coordinating and supervising the Ecollaboration project team members;
- Participating in the Ecollaboration steering committee meetings upon demand;
- Participating actively in communication activities to facilitate Ecollaboration comprehension in the organization.

The Ecollaboration project manager should have the following profile:

- Experience in project management, and more specifically in technology projects with organizational impacts;
- Experience in collaborative technologies;
- Experience in virtual team analysis, design, and implementation;
- Good comprehension of the culture and leadership style of the organization;
- Understanding of change management and the human factor;
- Ability to control priorities and scope, give assignments to the team, and set limits;
- Facility to communicate and work with coworkers or others involved in the Ecollaboration project.

### **Ecollaboration Designer**

The designer is responsible for the activities related to the analysis, design, and implementation of the virtual team and the collaborative software. The designer



reports directly to the Ecollaboration project manager and works closely with the technology architect, the human resources representative, the analyst/programmer, and the virtual team facilitator.

More specifically, the Ecollaboration designer is responsible for:

- Analyzing and designing the work, team, and organizational components;
- Participating in the elaboration of the functional and technological requirements;
- Participating in the evaluation and selection of the collaborative software;
- Participating in the evaluation of the performance of the virtual initiative and the consolidation of the lessons learned;
- Participating actively in communication activities to facilitate Ecollaboration comprehension in the organization.

The Ecollaboration designer should have the following profile:

- Experience in Ecollaboration projects, and more specifically in analysis, design, and implementation of virtual teams and collaborative technologies;
- Experience in collaborative software configuration;
- Understanding of change management and the human factor;
- Facility to communicate and work with coworkers or others involved in the Ecollaboration project.

#### **Human Resources Representative/Change Management Specialist**

The human resources representative is responsible for managing organizational changes resulting from Ecollaboration projects, is involved in the analysis and design of the organizational and team components, directly reports to the Ecollaboration project manager, and works closely with the Ecollaboration designer and the virtual team manager.

More specifically, the human resources representative is responsible for:

- Managing organizational changes within the scope of the Ecollaboration project;
- Participating in defining the virtual team values and boundaries for productivity;
- Developing the profile of the virtual team participants;
- Elaborating the selection process and procedures;

- Coordinating the selection of the participants;
- Participating in the development of the training program;
- Participating in the analysis and design of the reward and compensation program;
- Participating in the evaluation of the virtual initiative and the consolidation of the lessons learned;
- Participating actively in communication activities to facilitate Ecollaboration comprehension in the organization.

The human resources representative/change management specialist should have the following profile:

- Experience in human resources management, including recruiting, training, and compensation planning;
- Good comprehension of the culture and leadership style of the organization;
- Understanding of change management and the human factor;
- Facility to communicate and work with coworkers or others involved in the Ecollaboration project;
- Experience in technology projects with organizational impacts;
- Familiar with collaborative technologies;
- Familiar with the concepts of collaboration and virtual teams.

### Technology Architect

The technology architect is responsible for the analysis and design of the technology, reports directly to the Ecollaboration project manager, and works closely with the Ecollaboration designer, the analyst/programmer, and the IT group.

More specifically, the technology architect is responsible for:

- Defining the functional and technological requirements;
- Participating in the evaluation, selection, and implementation of the collaborative software;
- Developing the final technology design and ensuring integration within the enterprise architecture for the virtual initiatives;
- Participating in the preparation of the technology infrastructure and the configuration of the collaborative software;
- Setting user security;
- Participating in the consolidation of the lessons learned.

The technology architect should have the following profile:

- Experience in Ecollaboration projects, and more specifically in the analysis, design, and implementation of collaborative technologies;
- Experience in technology infrastructure analysis, design, implementation, and maintenance;
- Familiarity with the technology infrastructure of the organization;
- Ability to communicate and work with coworkers or others involved in the Ecollaboration project.

### Analyst/Programmer

The analyst/programmer is responsible for the analysis and design of the interfaces and conversion programs, reports directly to the Ecollaboration project manager, and works closely with the Ecollaboration designer, the technology architect, and the IT group.

More specifically, the analyst/programmer is responsible for:

- Documenting interfaces and data conversion requirements;
- Developing and testing interfaces and conversion programs;
- Implementing interface programs and converting data.

The analyst/programmer should have the following profile:

- Experience in analysis and development of interfaces and data conversions;
- Familiarity with the systems architecture and the data of the organization;
- Comprehension of the current state of the business processes and the vision;
- Ability to communicate and work with coworkers or others involved in the Ecollaboration project.

### Virtual Team Manager

The team manager is responsible for managing the work realized virtually and, depending on the type and nature of the team, may report to the Ecollaboration project sponsor, another sponsor, or simply a senior manager. The team manager is an active participant in the analysis and design of the virtual initiative and works closely with the Ecollaboration project manager, the Ecollaboration designer, the human resources representative, the technology architect, and the virtual team facilitator.

More specifically, the virtual team manager is responsible for:

- Participating in the development of the Ecollaboration project charter and plan;
- Participating in the analysis and design of the work, team, organizational, and technology components;
- Assisting in the validation and approval of the design components and other deliverables specific to the virtual initiative;
- Participating in the virtual team launching session;
- Developing and managing the virtual work plan and work issues;
- Participating in the facilitation of the virtual team;
- Conducting the evaluation of the participants and the virtual initiative;
- Participating in the consolidation of the lessons learned;
- Participating in the Ecollaboration steering committee meetings upon demand.

The virtual team manager should have the following profile:

- Experience in project management and with the work being realized virtually;
- Familiarity with technology projects with organizational impacts;
- Familiarity with collaborative technologies;
- Good comprehension of the culture and leadership style of the organization;
- Understanding of change management and the human factor;
- Ability to control priorities and scope, give assignments to the virtual team, and set limits;
- Ability to communicate and work with coworkers or others involved in the Ecollaboration project and the virtual initiative.

### Virtual Team Facilitator

The virtual team facilitator is mainly responsible for designing the facilitation approach and for facilitating the virtual team. The virtual team facilitator reports directly to the virtual team manager and works closely with the Ecollaboration designer.

More specifically, the virtual team facilitator is responsible for:

- Developing the facilitation plan, templates, and tools;
- Participating in the development of the training program and the analysis and design of the organizational components;

- Participating in the virtual team launching session;
- Facilitating the virtual team;
- Managing virtual teaming issues and measuring progress with the team manager;
- Participating in the evaluation of the participants and the virtual initiative;
- Participating in the consolidation of the lessons learned.

The virtual team facilitator should have the following profile:

- Experience in virtual team analysis and design, and more specifically in facilitation programs;
- Experience in managing human resources and facilitating virtual teams;
- Experience with collaborative technologies;
- Good comprehension of the culture and leadership style of the organization;
- Understanding of change management and the human factor;
- Facility to communicate and work with coworkers or others involved in the Ecollaboration project and the virtual initiative.

### Virtual Team Participant

The virtual team participant is involved in delivering the work virtually and reports directly to the virtual team manager. The participant works closely with the other virtual team members and the virtual facilitator.

More specifically, the virtual team participant is responsible for:

- Participating in the virtual team launching session;
- Participating in the facilitation of the virtual team;
- Delivering the work virtually with respect to the roles and responsibilities;
- Participating in the evaluation of the virtual team members and the virtual initiative;
- Participating in the consolidation of the lessons learned.

The virtual team participant should have the following profile:

- Skills and competencies associated with the participant's role and responsibilities within the scope of the virtual initiative;
- Commitment to working with collaborative technologies;

- Understanding of change management and the human factor;
- Facility to communicate and work with coworkers or others involved in the virtual initiative.

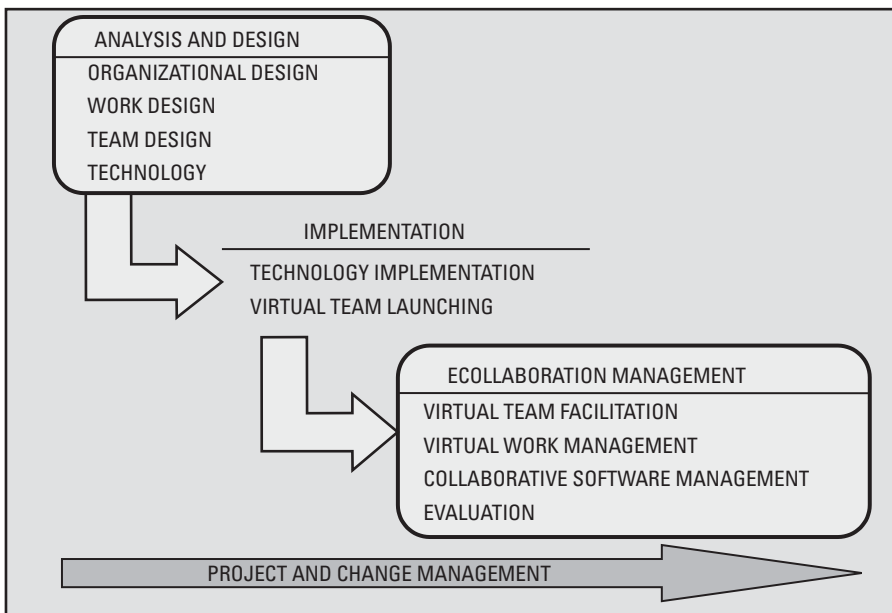
### Information Technology Group

The information technology group is responsible for all activities related to the management of the collaborative software and the technology infrastructure. It works in collaboration with the Ecollaboration project manager and the virtual team manager.

## 4.3 Plan and Deliverables

The Ecollaboration implementation plan includes four phases as pictured in Figure 4.2. They are:

- Phase 1: Project and change management;
- Phase 2: Analysis and design;
- Phase 3: Implementation;
- Phase 4: Ecollaboration management.



**Figure 4.2** Ecollaboration methodology map.

Following is an overview of the activities, tasks, and deliverables for each phase based on the assumption that the collaborative technology has already been selected and installed according to the recommendation discussed in Section 2.2.

*Phase 1—Project and Change Management* refers to the coordination of the Ecollaboration project relative to transitioning from the traditional model of work to the virtual setting. In other words, it addresses the tasks specific to the management of the activities and the organizational change involved with implementing a virtual team. It does not refer to the management of the virtual team or the virtual work itself.

This phase is partly realized in parallel with the other phases. It finishes after the virtual initiative evaluation is completed and the virtual team adjourns. This phase includes the tasks and key deliverables listed in Table 4.1.

*Phase 2—Analysis and Design* involves the definition of the components relative to the virtual initiative. It includes four activities: (1) work analysis and design, (2) team analysis and design, (3) organization analysis and design, and (4) technology analysis and design. Many analysis and design tasks can be performed in parallel. However, it is recommended that one first look at the organization or type and characteristics of the virtual team as well as the culture and leadership style of the organization supporting the initiative. Table 4.2 lists the activities, tasks, and key deliverables involved in the analysis and design.

*Phase 3—Implementation* involves two activities: (1) the preparation of the technology for the virtual initiative and (2) the launching of the virtual team. Typically, these activities are conducted one after the other. They include the tasks and deliverables listed in Table 4.3.

*Phase 4—Ecollaboration management* involves four activities. The first three activities are conducted in parallel: (1) the facilitation of the virtual team, (2) the management of the work and (3) the management of the collaborative software, followed by (4) the evaluation of the virtual initiative. Table 4.4 lists the tasks and deliverables for each activity.

**Table 4.1**  
Phase 1—Project and Change Management

1.1	Develop and approve project charter and plan	Project charter and plan
1.2	Manage organizational change	Change management initiatives
1.3	Approve the design components	Design approved
1.4	Document and manage project issues	Project issues log
1.5	Measure and report project progress	Project progress reports
1.6	Evaluate and close the project	Project closing document

**Table 4.2**  
Phase 2—Analysis and Design

<b>2.1</b>	<b>Work Analysis and Design</b>	
2.1.1	Analyze the work dimensions	Work dimensions
2.1.2	Analyze the work content	Work content
2.1.3	Define the roles and responsibilities	Roles and responsibilities
2.1.4	Detail the work processes, workflows, and deliverables	Work processes, workflows, and deliverables
2.1.5	Develop the work templates and tools	Work templates and tools
2.1.6	Develop the charter and plan for the virtual work	Virtual work charter and plan
<b>2.2</b>	<b>Team Analysis and Design</b>	
2.2.1	Define the virtual team values and boundaries for productivity	Team values and boundaries for productivity
2.2.2	Specify the participant profile, skills, and competencies	Participant profile, skills, and competencies
2.2.3	Elaborate the selection process and procedures	Selection process and procedures
2.2.4	Select the participants and assign roles and responsibilities	Participants selected
2.2.5	Develop the training program for virtual teaming	Training program for the virtual participants
2.2.6	Develop the templates and tools for virtual team facilitation	Virtual facilitation templates and tools
2.2.7	Develop the facilitation plan	Facilitation plan
<b>2.3</b>	<b>Organization Analysis and Design</b>	
2.3.1	Analyze the organizational context of the virtual team	Virtual team organizational context
2.3.2	Analyze the culture and leadership style of the organization	Overview of organizational culture and leadership style
2.3.3	Define the critical success factors	Critical success factors
2.3.4	Develop performance indicators	Performance indicators
2.3.5	Design the reporting process	Reporting process
2.3.6	Design the evaluation program	Evaluation program
2.3.7	Design the reward and compensation program	Reward and compensation program
<b>2.4</b>	<b>Technology Analysis and Design</b>	
2.4.1	Detail the functional and technological requirements	Functional and technological requirements
2.4.2	Develop the final technology design	Technology design



**Table 4.3**  
Phase 3—Implementation

<b>3.1 Technology Implementation</b>		
3.1.1	Prepare the technology infrastructure	Technology infrastructure
3.1.2	Configure the collaborative software	Software configured
3.1.3	Create users and assign passwords	Users and passwords
3.1.4	Convert data and implement interfaces and other required programs	Data conversion, interfaces, and other programs
<b>3.2 Virtual Team Launching</b>		
3.2.1	Introduce participants	Participants' introduction
3.2.2	Present design components	Virtual design presented
3.2.3	Develop the virtual team charter	Virtual team charter
3.2.4	Define the participant baseline and expectations	Participant baseline and expectations
3.2.5	Train participants in virtual teaming and collaborative software	Virtual team training

## 4.4 The Tasks in Detail

This section explains the tasks of the methodology. Each task is described as follows:

- The phase and activities it is associated with;
- The identification of the main deliverable;
- The dependencies, or how the task relates to other tasks in terms of sequencing;
- The description, or what the task involves and how it is being realized;
- The roles and responsibilities of the people involved;
- The templates offered to support the realization of the task with the tools supporting them, namely, Microsoft Project, Word, and Excel. Those templates are presented in the appendix and are available on the CD.

### Phase 1 Project and Change Management

#### Task 1.1 Develop and Approve the Project Charter and Plan

**Deliverable:** Project charter and plan.

**Dependencies:** None—first task.

**Table 4.4**  
Phase 4–Ecollaboration management

<b>4.1</b>	<b>Virtual Team Facilitation</b>	
4.1.1	Facilitate the virtual team	Virtual team facilitation
4.1.2	Document and manage virtual team issues	Virtual team issues log
4.1.3	Measure and report virtual team progress	Virtual team progress reports
<b>4.2</b>	<b>Virtual Work Management</b>	
4.2.1	Manage the virtual work	Virtual work management
4.2.2	Document and manage virtual work issues	Virtual work issues log
4.2.3	Measure and report virtual work progress	Virtual work progress reports
<b>4.3</b>	<b>Collaborative Software Management</b>	
4.3.1	Manage backup, recovery, and archiving	Backup, recovery, and archiving
4.3.2	Manage performance	Performance management
4.3.3	Manage configuration	Configuration management
4.3.4	Manage database	Database management
4.3.5	Manage interfaces	Interface maintenance
4.3.6	Manage security	Security management
4.3.7	Provide user support	User support
<b>4.4</b>	<b>Evaluation</b>	
4.4.1	Evaluate virtual team participants, facilitator, and manager	Team member evaluation
4.4.2	Evaluate virtual initiative performance	Virtual initiative performance evaluation
4.4.3	Summarize lessons learned	Lessons learned

### *Description*

This task concerns the development of the charter for the Ecollaboration project. The charter is a document that provides key information on the Ecollaboration project. It constitutes a formal agreement between the management teams of the different parties involved and the project team members responsible for the Ecollaboration project deliverables. This charter is to be distinguished from the charters for the virtual work (Task 2.1.6) and the virtual team (Task 3.2.3).

The Ecollaboration project manager develops the Ecollaboration project charter using the information gathered in the business case and the input from the project sponsor, the virtual team manager, and the human resources

representative or the change management specialist. A typical project charter includes the following sections:

- Purpose of the charter;
- Presentation of the business partners: a description of the business partners involved in or impacted by the Ecollaboration project;
- Project definition: a presentation of the Ecollaboration project objectives, a definition of the costs and benefits with the intellectual capital improvements, and a description of the success factors for the Ecollaboration project, including:
  - Commitment of the executive management team;
  - Assignment of a project sponsor;
  - Organizational culture focused on human resources and leadership;
  - Alignment of organizational processes with the human resources policies;
  - Virtual team manager supported by a facilitator;
  - Solid technology infrastructure combined with proven collaborative software;
  - Application of a structured methodology in Ecollaboration;
  - Integration of change management and training;
  - Involvement of Ecollaboration experts;
- Project scope;
  - Organizational scope: a description of the different sectors, divisions, departments, and teams impacted by the Ecollaboration project;
  - Functional scope: a description of the functional areas and work processes involved in the virtual initiative;
  - Technological scope: including high-level technology requirements, such as:
    - Collaborative software to be used with targeted functionalities and features;
    - Portal compatibility;
    - Data conversion;
    - Interfaces to enterprise business systems;
    - Use of workflow, templates, and tools;
    - Programs to be developed.
  - Scope limitation and requests for changes: a description of the limitations in the scopes and the procedure to manage requests for changes.
- Project organization:
  - Project organizational chart: a presentation of project organization chart;

- Resources, roles, and responsibilities: a presentation of the resources assigned to the project, including their roles and responsibilities.
- Project management:
  - Ecollaboration methodology overview: a presentation of the methodology used to analyze, design, implement, and manage the virtual initiative;
  - Project plan and milestones: a presentation of the Ecollaboration project plan with deliverables and key milestones;
  - Issue management: a presentation of the approach and the procedures for managing the Ecollaboration project issues;
  - Change management: a presentation of the change management strategies, including the management of the organizational impacts, the training, and the communication for the Ecollaboration project;
- Project assumptions: a description of the assumptions for the Ecollaboration project.

The Ecollaboration project manager also develops a detailed project plan based on the Ecollaboration methodology. He/she validates the Ecollaboration project charter and the plan with the virtual team manager, the Ecollaboration project sponsor, and human resources representative or change management specialist. Once validated, he/she schedules a meeting with the steering committee to present the charter and obtain their approval. The analysis and design can start after the project charter is approved.

#### Resources and Responsibilities

##### *Ecollaboration project manager*

Develops the project charter and details the project plan;

Validates the project charter and plan with the project sponsor, the virtual team manager, and the human resources representative or change management specialist;

Presents the project charter to the Ecollaboration steering committee;

Obtains the approval for the project charter and plan.

##### *Virtual team manager, Ecollaboration project sponsor, human resources representative or change management specialist*

Provide input to the Ecollaboration project manager for the development of the project charter and plan;

Validate the project charter.

##### *Ecollaboration project steering committee*

Approves the project charter and plan.

#### Templates and Tools

Description	Tool	Template File Name
Sample–12 months Ecollaboration project plan	MsProject	ecollaboration project plan.mpp
Sample–12 months Ecollaboration project plan	Excel	ecollaboration project plan.xls
Ecollaboration charter document	Word	ecollaboration project charter.doc
Ecollaboration project structure	PowerPoint	ecollaboration organizational chart.ppt

### Task 1.2 Manage Organizational Change

**Deliverable:** Change management initiatives.

**Dependencies:** Starts after the project charter is approved (Task 1.1) and finishes at the same time as the Ecollaboration project is closed (Task 1.6).

#### *Description*

This task concerns the development and management of organizational change specific to the virtual initiative of the Ecollaboration project.

The Human resources representative or the person responsible for change management analyzes the impacts of the virtual initiative on the organization. He/she can survey the perceptions of the population impacted through interviews, questionnaires, and focus groups. He/she defines activities to manage changes to support the Ecollaboration project manager. These activities are primarily directed to the members of the virtual team and also to the populations impacted by the deployment of other virtual initiatives within the organization.

He/she establishes the profiles of the participants with regard to the participation in change management, namely, the Ecollaboration project manager, the project sponsor, the steering committee members, the virtual team manager, and participants. He/she then consolidates a communication plan identifying the target populations, the events or activities, the key messages, the person responsible, the frequency, and the planned dates.

The profile information of the participant for managing changes in Ecollaboration include:

- Role;
- Years with company;
- Years in the position;
- Years of experience with change management;
- Understanding of the project objectives;
- Influence in organization;

- Interest in ecollaboration;
- Interest in change management;
- Knowledge of collaborative technology;
- Previous involvement in ecollaboration projects;
- Previous involvement in change management;
- Access to financial resources;
- Availability for change management activities;
- Comments and other pertinent information.

### Resources and Responsibilities

*Human resources representative or change management specialist*

Defines and manages organizational change management activities.

*Ecollaboration project manager, project sponsor and steering committee, virtual team manager and participants*

Responsible for and participates in organizational change management activities.

#### Templates and Tools

Description	Tool	Template
Participant profile	Word	ecollaboration change participant profile.doc
Communication plan	Word	ecollaboration change communication plan.doc

### Task 1.3 Approve the Design Components

**Deliverable:** Design approved.

**Dependencies:** Starts after the analysis and design phase is completed (Phase 2).

#### *Description*

This task consists of the approval of all the design components specific to the virtual initiative.

The Ecollaboration project manager meets with the Ecollaboration designer to gather all the information on the components. They consolidate the detailed design information into a formal document.

The design document includes the following elements:

- **Work design:** including the dimension of the work, the content, the role and responsibilities, the processes, the workflow, work plan and deliverables, the work templates, and tools. It can also include a formal charter for the work to be conducted virtually.

- Team design: involving the virtual team values, the profile, skills and competencies of the members, the selection process and procedures, the participants selected with their specific role, the training program, and the facilitation templates, tools, and plan.
- Organization design: addressing the virtual team organization, the culture and leadership style of the organization responsible for the virtual initiative, the critical success factors specific to the virtual initiative, the performance indicators, the reporting process, the evaluation program, and the reward and compensation plan.
- Technological design: detailing the functional and technological requirements based on the enterprise collaborative software, the systems, and technological architectures. The final technology design includes the specification for the software configuration, the interfaces and conversions, and the technological infrastructure.

The Ecollaboration project manager and the designer present the final design document to the virtual team manager and the project sponsor and address any concerns and questions. Finally, the project manager schedules a meeting with the steering committee to present the design and obtain their approval. The implementation phase can start once the design is approved.

### **Resources and Responsibilities**

#### *Ecollaboration project manager*

Consolidates the documentation for the final design;

Presents the document to the project sponsor and the virtual team manager;

Presents the design to the project sponsor and the steering committee;

Obtains the approval for the final design.

#### *Ecollaboration designer*

Consolidates the documentation for the final design;

Presents the document to the project sponsor and the virtual team manager.

#### *Virtual team manager and Ecollaboration project sponsor*

Reviews the final design.

#### *Ecollaboration steering committee*

Approves the final design.

## Templates and Tools

Description	Tool	Template
Approval form	Word	approval form.doc

### Task 1.4 Document and Manage Project Issues

**Deliverable:** Project issues log.

**Dependencies:** Starts after the project charter and plan are approved (Task 1.1) and finishes at the same time as the Ecollaboration management (Phase 4).

#### *Description*

This task concerns tracking and managing all the issues related to the Ecollaboration project, specifically, the analysis and design of the work, team, organization, and technology, and the implementation and the management of the Ecollaboration project.

This task does not include the issues of virtual teaming and work. These issues are tracked and managed in Task 4.1.2 and Task 4.2.2.

The Ecollaboration project manager logs the issues as they are identified or reported by any participants in the Ecollaboration project. Examples of issues are:

- Some resources are not available to work on the analysis and design, resulting in project delays;
- The preparation of the technological infrastructure is stopped because a software purchase order is not being released;
- The launching session is jeopardized because the computers set up for hands-on training is delayed;
- The system performance does not meet the requirements, impacting the work of the virtual team;
- The help desk is responding to many calls concerning basic collaborative functions that are already documented in the user training manuals.

The log or report is used to track issues, resolution time, and responsible persons. The log should include the following information:

- Ecollaboration project name;
- Ecollaboration project sponsor;
- Ecollaboration project manager name;
- Issue number;
- Date the issue is received;
- Description of issue;



- Actions recommended;
- Requestor name;
- Priority;
- Date the action should be undertaken;
- Status of the issue (issue logged, issues assigned, actions in progress, action completed, actions late, critical or late issue, issue escalated, issue closed);
- Person responsible for the action;
- Date the issue is closed.

The procedure for managing issues typically involves the following priorities and procedures:

- **Critical:** issues that can cause interruption to the project and impose important delay in its progress. These issues must be escalated and presented to the steering committee. Solutions must be proposed within 48 hours.
- **Important:** issues that can possibly delay, but not necessarily stop, the project. These issues typically involve problems for which solutions are currently available. They should be resolved within one week after they are submitted. Escalation to steering committee level is not required.
- **Minor:** issues that do not involve real threat to the project and typically require little corrective action. Resolution for these issues should be at the time of its creation. Escalation to steering committee level is not required.

The Ecollaboration project manager revises the issues log on a periodic basis. He/she assigns the responsibility for actions on new issues, discusses actions, and revises the dates with the persons responsible. He provides the necessary support to those responsible for the realization of the actions.

Depending on the impacts and risks, he/she escalates the late and unresolved issues to the Ecollaboration project sponsor, who may turn to the steering committee for resolution.

### **Resources and Responsibilities**

#### *Ecollaboration project manager*

Maintains the issues log;

Revises the issues and discusses actions and dates with the persons responsible;

Provides support to the persons responsible for the resolution;  
Escalates unresolved and late issues to the project sponsor.

*Ecollaboration project sponsor and steering committee*

Support and resolve issues.

Templates and Tools

Description	Tool	Template
Ecollaboration project issues log	Word	Ecollaboration project issues log.doc

### Task 1.5 Measure and Report Project Progress

**Deliverable:** Project progress reports.

**Dependencies:** Starts after the project charter and plan are approved (Task 1.1) and finishes at the same time as the Ecollaboration management phase (Phase 4).

*Description*

This task concerns tracking and documenting the progress of the Ecollaboration project. It does not include tracking and documenting the progress of virtual teaming and work. This is done in Tasks 4.1.3 and 4.2.3.

The Ecollaboration project manager produces a progress report on a periodic basis, typically every two weeks. He/she presents the report and discusses the progress with the project sponsor. He/she also presents the progress at the steering committee meetings.

The report should include the following information:

- Ecollaboration project name;
- Ecollaboration sponsor name;
- Ecollaboration project manager name;
- Reporting period;
- Date of the report;
- Phases, activities, or tasks completed during the period, started and in progress, planned to start, and to be completed the next period;
- Planned and actual to-date costs and efforts;
- Comments on costs and efforts discrepancies, risks, and escalation of issues.

### Resources and Responsibilities

*Ecollaboration project manager*

Produces the progress reports;

Sends, presents, and discusses the progress with the project sponsor;

Presents the progress to the steering committee.

*Ecollaboration project sponsor and steering committee*

Review the progress of the project.

#### Templates and Tools

Description	Tool	Template
Project progress report	Word	ecollaboration project progress report.doc

### Task 1.6 Evaluate and close the project

**Deliverable:** Project closing document.

**Dependencies:** Starts after the project issues (Task 1.4), the progress reporting (Task 1.5), and the Ecollaboration management phase (Phase 4) are completed.

#### *Description*

This task consists of formally closing the Ecollaboration project.

The Ecollaboration project manager gathers and consolidates all the relevant information for closing the project. This information involves the financial and intellectual perspectives, as well as the evaluation and the best lessons learned of the virtual initiative. He/she comments on the results and provides recommendations for future projects in a formal report.

He/she discusses the report with the project sponsor. He/she subsequently presents it to the last steering committee meeting. The steering committee comments and acknowledges the results. The project is finally closed.

The final project report includes:

- Ecollaboration project name;
- Ecollaboration sponsor name;
- Ecollaboration project manager name;
- Date of the report;
- Project closing date;
- Planned and actual costs;
- Planned and actual efforts;
- Planned and actual benefits;
- Comments and recommendations.

### Resources and Responsibilities

*Ecollaboration project manager*

Gathers and consolidates the required information into a final evaluation report;

Presents the final report to the sponsor and steering committee;

Closes the Ecollaboration project.

*Ecollaboration project sponsor and steering committee*

Comment and acknowledge the Ecollaboration project evaluation.

#### Templates and Tools

Description	Tool	Template
Project closing report	Word	ecollaboration project closing report.doc

## Phase 2 Analysis and Design

### Activity 2.1 Work Analysis and Design

#### Task 2.1.1 Analyze the Work Dimensions

**Deliverable:** Work dimensions.

**Dependencies:** Starts after the definition of the organizational context (Task 2.3.1) and the analysis of the culture and leadership (Task 2.3.2) are completed.

#### *Description*

This task involves the definition of the dimensions or characteristics of the work to be conducted virtually. This task is done concurrently and uses information from the analysis of the work content, the roles and responsibilities, the work processes, workflow, and deliverables. Information about the organizational context, culture, and leadership style of the organization initiating the virtual initiative is also used as input.

The Ecollaboration designer meets the virtual team manager to discuss and define the dimensions of the work.

The dimensions include the following elements:

- Social complexity: the degree to which a team member is dependent upon or supported in task accomplishment;
- Variety, predictability, and complexity of the work: the degree to which there are frequent exceptions or routines in the task;
- Analyzability or divisibility: the degree to which a task can be broken down into steps or subparts;
- Environmental uncertainty: the degree of the stability of the larger system in which the team resides;
- Difficulty: the amount of efforts and level of skills required for the work;

- Hierarchy and centralization the team is operating in.

The following information can be used as input for analyzing the dimensions:

- Type of virtual team (learning, hybrid, focus);
- Organizational support or sponsorship;
- Anticipated number of members in the virtual team;
- Anticipated geographical distribution of the members;
- Anticipated organizational affiliation, nationality, and languages of the members;
- Corresponding time zone and work schedule of the members;
- Business objectives;
- Critical business processes, workflow, and deliverables;
- Overview of work content (e.g., volume of transactions, frequency of operations, resources availability);
- Overview of roles and responsibilities;
- Expected duration of the work;
- Tangible and intangible costs and benefits ;
  - Culture and leadership style of the organization;
  - Organizational structure: hierarchical versus network;
  - Focus: financial versus marketing;
  - Distribution of information: limited versus extended;
  - Management philosophy: rules and procedures versus principles and guidelines;
  - Orientation: internal versus external;
  - Training: occasional versus continuing;
  - Accountability: unequal versus shared;
- Other pertinent information.

### **Resources and Responsibilities**

#### *Ecollaboration designer*

Initiates the discussion, gathers information, and qualifies the dimensions;

Produces the work dimensions deliverable.

#### *Virtual team manager*

Provides information, views, and opinions on the work dimensions;

Validates and signs the work dimension report.

### Templates and Tools

Description	Tool	Template
Work dimensions report	Word	virtual work dimensions.doc

## Task 2.1.2 Analyze the Work Content

**Deliverable:** Work content.

**Dependencies:** Starts after the definition of the organizational context (Task 2.3.1) and the analysis of the culture and leadership (Task 2.3.2) are completed.

### *Description*

This task consists of describing the content of the work, and more specifically, the tacit and explicit information, templates, tools, and forms to be used.

This definition of the work content is done concurrently and uses the information from the analysis of the work processes, workflow, and deliverables (Task 2.1.4). The content information is also referenced in the documentation produced on the target processes, workflows, and deliverables.

The Ecollaboration designer meets the virtual team manager to discuss and define the work content element along with an estimate of the frequency and volume. They also identify the changes from the traditional scenario and the impacts on the work.

Some examples of content in the context of sales and marketing are:

- Asynchronous discussions on requests for proposals;
- Synchronous discussions or chats on proposals;
- Teleconferences on proposals;
- Clients' requests for proposals received;
- Clients' proposals produced;
- Clients' presentations developed;
- Product documentation used;
- Reusable documents such as proposals, presentations, and contracts;
- Electronic libraries to support the elaboration of proposals;
- Statistical information from business warehouse.

Some examples of changes and impacts are:

- There will be ongoing discussion among all the people involved;
- The proposals will be produced more rapidly;
- There can be more proposals delivered;
- The quality of the proposals can be improved.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates the discussion and gathers information on the work content;  
Produces the work content report.

### *Virtual team manager*

Provides information on the virtual work content;  
Validates and signs the work content report.

### Templates and Tools

Description	Tool	Template
Work content report	Word	virtual work content.doc

## Task 2.1.3 Define the Role and Responsibilities

**Deliverable:** Roles and responsibilities.

**Dependencies:** Starts after the definition of the organizational context (Task 2.3.1) and the analysis of the culture and leadership (Task 2.3.2) are completed.

### *Description*

This task consists of defining the roles and responsibilities of the virtual team members. This task is done concurrently and uses the information from the analysis of the work processes, workflow, and deliverables (Task 2.1.4). The roles and responsibilities are also referenced in the documentation of the target processes, workflows, and deliverables.

The virtual team designer meets the virtual team manager to discuss and define the roles and responsibilities. They identify the changes and impacts on the traditional roles and responsibilities. They also estimate the number of persons for each role. This information will be used later to define the skills and competencies required (Task 2.2.2) and to assign the roles and responsibilities to the participants (Task 2.2.4).

There are two aspects of roles and responsibilities that must be considered:

- The production aspect involves the roles required to perform the related functions, that is, to achieve the task;
- The social aspect involves the roles that support the social interactions for the work to be achieved.

There are three social roles that can be considered:

- Knowledge manager: responsible for communicating know-how, for sharing experiences and references, and for managing the knowledge referential;

- Process manager: responsible for maintaining the documentation of the processes, for keeping the members informed, and for guiding the processes;
- Facilitator: responsible for encouraging contribution and helping the members to focus on sharing knowledge and experience.

It is possible for some roles and responsibilities to be consolidated or combined. For example:

- The role of facilitator might include the responsibilities of process management.
- The role of the virtual team manager could include the responsibility of managing the work as well as the process.

However, combining the facilitator role to a production role or distributing its responsibilities is not recommended. Dividing or diluting the facilitation responsibilities can result in mismanagement of the social aspects and jeopardize the overall team productivity.

The participant's profile, skills, and competencies can be elaborated when the roles and responsibilities are defined.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates the discussion and gathers information on the roles and responsibilities;

Defines the roles and responsibilities and produces the report.

### *Virtual team manager*

Participates in the definition of the roles and responsibilities;

Validates and signs the roles and responsibilities report.

### Templates and Tools

Description	Tool	Template
Roles and responsibilities report	Word	Virtual roles and responsibilities.doc

## Task 2.1.4 Detail the Work Processes, Workflows, and Deliverables

**Deliverable:** Work processes, workflows, and deliverables.

**Dependencies:** Starts after the definition of the organizational context (Task 2.3.1) and the analysis of the culture and leadership (Task 2.3.2) are completed.



*Description*

This task consists of defining the work processes, workflows, and deliverables for the virtual scenario. This task is done concurrently and uses the information from the analysis of the work content (Task 2.1.2) and the roles and responsibilities (Task 2.1.3). The definition of the functional and technological requirements starts subsequently and integrates the information on the processes, workflows, and deliverables.

The Ecollaboration designer meets the virtual team manager to discuss the actual work processes, workflow, and deliverables and to specify the target virtual scenario. They look toward improving the traditional scenario and taking advantages of the features and functionalities of the collaborative software.

One simple and practical approach for developing the target scenario consists of drawing a flowchart of the process with paper stickers of different colors and shapes for each element of the design. Office supplies such as Post-its can be used. For example, a blue square can represent an input, a green square an output, a blue square a formal deliverable, a yellow rectangle a task, an orange lozenge an approval, and a pink square a role.

The shapes are stuck on a large sheet of paper attached to a wall as the process is being defined. This method allows one to visualize the process as it progresses and to easily make changes. Details can be written on the stickers as the design gets confirmed. These details involve specifying the elements, such as:

- How the task is accomplished (e.g., discussed in a virtual forum, in audio conferencing);
- What the are conditions associated with the task;
- How frequently it occurs;
- When it occurs;
- Who is responsible and who participates;
- Whether there are they any special forms or tools supporting the task;
- What the input is and where it comes from (e.g., the ERP system);
- What the output is and where it goes.

The design of the target process must take into account:

- The functionalities, features, and preconfigured modules offered by the collaborative software;
- The role assigned to the tasks and deliverables;
- The processes implemented in the enterprise systems;
- The availability and access to the information required;
- The problems or issues in the actual process;
- The opportunities to improve the actual process;

- The changes and impacts on the current processes.

It is important to keep in mind that the design targets collaborative processes involving tacit as well as explicit information. These collaborative processes are not intended to duplicate or replace the business processes and the data integrated in the enterprise business systems, but to interface with these. The technology architect addresses these issues while consolidating the functional requirements (Task 2.4.1).

Once the exercise is completed, the designer transposes the drawing done with the stickers into an electronic process diagram (using software such as Visio or ABCFlowchart). This document is attached to the report describing the target processes, workflows, and deliverables.

The work templates and tools as well as the charter and plan can be developed when the processes, workflows, and deliverables are defined. The values and boundaries for productivity can also be determined.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates the discussion and gathers information on the actual and target work processes, workflows, and deliverables;

Designs the target processes, workflows, and deliverables;

Documents the target work processes, workflows, and deliverables.

### *Virtual team manager*

Provides information on the actual processes, workflows, and deliverables;

Assists in the design of the target processes, workflows, and deliverables;

Validates and signs the report on the target processes, workflows, and deliverables.

### Templates and Tools

Description	Tool	Template
Report on target processes, workflows, and deliverables	Word	virtual work processes workflow and deliverables.doc

## Task 2.1.5 Develop the Work Templates and Tools

**Deliverable:** Work templates and tools

**Dependencies:** Starts after the work processes, workflows, and deliverables are defined (Task 2.1.4).

### *Description*

This task concerns the development of templates, forms, and tools to achieve the tasks as defined in the content analysis and the design of the processes. This task

is done concurrently with the development of the work charter and plan and the definition of the team values.

Examples of templates, forms, and tools in the context of sales and marketing include:

- Customer information form;
- Quotation template;
- Spreadsheet to calculate price discount;
- Customer presentation format;
- Proposal standard document.

The Ecollaboration designer meets the virtual team manager to identify the templates, forms, and tools already available to support the work. They detail the changes required, if any, and define the specifications of the templates, forms, and tools that need to be developed. They document the specifications and jointly develop the templates, forms, and tools. They can also delegate the development to administrative assistants.

The specifications can include information such as:

- The current template, form, or tool to convert or change;
- The software to use, including word processing, spreadsheet, presentation software;
- Header and footer;
- Page setup;
- Page numbering;
- Table;
- Fonts;
- Formulas;
- Use of logos and colors.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates and participates in the discussion on the work templates and tools;

Produces the list of templates and tools to be developed;

Documents the specifications;

Develops the templates and tools;

Coordinates the development of the templates and tools.

*Virtual team manager*

Provides information on the work templates and tools;

Supports the development of the specifications;

Develops templates and tools;

Validates and signs the list of templates and tools to be developed and the specifications;

Validates the work templates and tools.

**Templates and Tools**

Description	Tool	Template
Templates and tools list	Word	virtual work templates and tools list.doc
Templates and tools specification form	Word	virtual work templates and tools specification.doc

**Task 2.1.6 Develop the Charter and Plan for the Virtual Work**

**Deliverable:** Virtual work charter and plan.

**Dependencies:** Starts after the work processes, workflows, and deliverables are defined (Task 2.1.4).

*Description*

This task concerns the development of the charter and the plan for the work or the project being conducted virtually. This task is done concurrently with the development of the templates and tools and the definition of the team values. The charter involved in this task is to be distinguished from the charters for the Ecollaboration project (Task 1.1) and for virtual teaming (Task 3.2.3).

A typical charter includes the following sections:

- Purpose of the charter;
- Presentation of the business partners: a description of the business partners involved or impacted by the virtual work;
- Work definition: including a presentation of the objectives, a definition of the costs and benefits, and a description of the success factors for the work;
- Scope of the work:
- Organizational scope: a description of the different sectors, divisions, departments, and teams impacted;
- Functional scope: a description of the functional areas and work processes involved;
- Technological scope: including high-level technology requirements;

- Scope limitation and requests for changes: a description of the limitations in the scopes and the procedure to manage requests for changes.
- Work organization:
  - Organizational chart;
  - Resources, roles, and responsibilities: a presentation of the resources assigned to the project, including their roles and responsibilities:
- Work management.
- Methodology overview;
- Work plan and milestones;
- Issue management: a presentation of the approach and the procedures for managing the work issues;
- Change management: a presentation of the change management strategies, including the management of the organizational impacts, the training, and the communication to produce the deliverables;
- Work assumptions.

The virtual team manager also develops the work plan. He/she can use different tools, depending on the nature and complexity of the work. He/she validates the work charter and the plan with the responsible parties.

## Resources and Responsibilities

### *Virtual team manager*

Develops the work charter and plan;

Validates the work charter and plan with responsible parties.

### Templates and Tools

Description	Tool	Template
Project charter	Word	ecollaboration project charter.doc

## Activity 2.2 Team Analysis and Design

### Task 2.2.1 Define the Virtual Team Values and Boundaries for Productivity

**Deliverable:** Team values and boundaries for productivity.

**Dependencies:** Starts after the processes, workflows, and deliverables are defined (Task 2.1.4).

#### *Description*

This task consists of defining the base values and boundaries so that the virtual team can work productively. This task is done concurrently with the development of the work templates and tools and the charter and plan. The development

of the values represents an excellent opportunity for the Ecollaboration designer to transfer knowledge to the team manager on the changes and impacts associated with the transition from the traditional to the virtual environment. This task uses input from the work information, including the roles and responsibilities, the content, the dimensions, the processes, workflows, and deliverables.

The Ecollaboration designer meets the virtual team manager to discuss the key values that should animate the team and stimulate productivity. They also look at issues for productivity.

They can consult the trust constructs involved in the Ecollaboration ecosystem for defining the key values of the virtual team: *good faith, respect, honesty, commitment, competence, expertness, dynamism, encouragement, acceptance, integrity, predictability, transparency, goodwill, benevolence, responsiveness, morality, credibility, reliability, dependability, reciprocity, openness, generosity, carefulness, trustworthiness, and attraction.*

They can consider the following issues or boundaries for productivity:

- Virtual versus human contact: how to create and sustain the human sensation, the feeling and warmth in the virtual setting despite the lack of face-to-face contacts and physical cues;
- Connectedness and coalescence: how to share the responsibility for connecting and bonding amongst the members;
- Roles: how to encourage the development and the endorsement of the social roles by the members (see Task 2.1.3);
- Rules, norms, and participation: how to establish and keep a focus on rules and norms and how to ensure an active participation of the members;
- Psychological and spiritual issues: how to create a safe environment and to protect it despite any conflicts, cultural differences, and other situations that might occur;
- Vulnerability, privacy, and ethics: how to ensure that the members will respect one another psychologically, personally, and professionally.

Finally, they consider and decide on the need for using formal confidentiality and ethics agreements. If required, the specifications are detailed and submitted to the human resources representative responsible for issuing the formal documents.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates and participates in the discussion on the team values and boundaries for productivity;

Documents the key values and main issues for productivity;  
 Consolidates the team values and boundaries report.

*Virtual team manager*

Participates in the discussion on the values and productivity issues  
 Decides on the key values of the team and the need for formal confidentiality and ethics agreements;  
 Validates and signs the team values and boundaries report.

*Human resources representative*

Provides the formal confidentiality and ethics agreements upon demand.

**Templates and Tools**

Description	Tool	Template
Virtual team values and boundaries report	Word	virtual team values and boundaries.doc

### Task 2.2.2 Specify the Participant Profile, Skills, and Competencies

**Deliverable:** Participant profile, skills, and competencies

**Dependencies:** Starts after the roles and responsibilities are defined (Task 2.1.3).

*Description*

This task consists of describing the profile, skills, and competencies for each role and associated responsibilities.

The Ecollaboration designer meets the virtual team manager and the human resources representative to clarify the profile, skills, and competencies in relation to the roles and responsibilities identified earlier. They must look at both the production and social requirements.

Because the virtual work environment is different from the traditional setting, the following characteristics should be integrated into the participant profile:

- Ability to use technologies;
- Ability to work collaboratively;
- Ability to plan and implement networking activities;
- Comprehension of the formal and informal organization and where resources reside;
- Comprehension of the need and ability to interact and to communicate with people from different cultures, functions, and levels in the organization;
- Ability to integrate theory and practice;
- Ability to support and inspire dialogue;

- Flexibility and critical thinking ability;
- Experience in a number of different locations and functions within the organization;
- Experience with business partnering.

The process for selecting the participants can begin when the profiles, skills, and competencies have been defined.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates and participates in the discussion on the profile, skills, and competencies;

Supports the definition of the requirements specific to the social roles;

Validates and signs the report on the profile, skill, and competence requirements.

### *Virtual team manager*

Participates in the discussion on the profile, skills, and competencies;

Supports the definition of the requirements specific to the production roles;

Validates and signs the report on the profile, skill, and competence requirements.

### *Human resources representative*

Guides the discussion on the profile, skills, and competencies;

Consolidates the report on the profile, skill, and competence requirements.

### Templates and Tools

Description	Tool	Template
Profile, skill, and competence requirements report	Word	virtual team profile skills and competencies.doc

## Task 2.2.3 Elaborate the Selection Process and Procedures

**Deliverable:** Selection process and procedures.

**Dependencies:** Starts after the participant profile, skills, and competencies are specified (Task 2.2.2).



*Description*

This task involves the elaboration of the process and procedures for selecting the virtual team members. The selection process may vary depending on the roles, responsibilities, profiles, skills, and competencies. In some cases, the selection is done de facto: for example, when members are already assigned to the work team, when the number of candidates corresponds to the number required, or when there is not time to go through a formal selection process.

The Ecollaboration designer meets the virtual team manager and the human resources representative to discuss the selection process and procedures. The human resources representative presents the different approaches used in the organization and makes recommendations to address the specific needs of the virtual team. The Ecollaboration designer and the virtual team manager decide on the approach for each role.

A typical selection process involves the following steps and procedures:

- Request for candidacy: can be open to the organization at large or can be directed to specific individuals (i.e., by invitation);
- Review of the applications and selection of candidates for interview by the human resources representative;
- Preparation of the interview questions by the human resources representative, interview by the human resources representative, and consolidation of the interview results;
- Meeting of the human resources representative with the virtual team manager and the Ecollaboration designer to review the interview results, to select the candidates for a second interview, and to prepare the interviews;
- Second interviews conducted by the virtual team manager and the Ecollaboration designer;
- Consolidation of the interview results and preparation of the selection report by the virtual team manager;
- Verification of the references by the human resources representative;
- Other strategies and procedures conducted and supervised by the human resources representative (see below);
- Consolidation of the final results by the human resources representative and presentation to the virtual team manager and the Ecollaboration designer;
- Final selection by the virtual team manager.

Other strategies that can be considered in the selection process include:

- Personal profiling to assess sustainability of performance;

- Psychometric tests such as Emotional Intelligence, Enneagram, Myers-Briggs Type Indicator (MBTI), and Gregory Transactional Ability;
- Competency tests;
- Case simulation.

The selection can start when the process and procedures are accepted. Note that the strategies described above may be used even when there is no formal selection process, that is, when the members are selected *de facto*. The results can be used to assess the skills and competencies of the team members and the needs for training.

### Resources and Responsibilities

#### *Ecollaboration designer*

Initiates and participates in the discussion on the selection process and procedures;

Supports the development of the selection process and procedures;

Validates and signs the recommendation for the selection process and procedures.

#### *Virtual team manager*

Participates in the discussion on the selection process and procedures;

Supports the development of the selection process and procedures;

Validates and signs the recommendation for the selection process and procedures.

#### *Human resources representative*

Guides the discussion and the development of the selection process and procedures;

Documents the recommendation for the selection process and procedures.

#### Templates and Tools

Description	Tool	Template
Recommendation for the selection process and procedures	Word	virtual team selection process and procedures.doc

### Task 2.2.4 Select the Participants and Assign Roles and Responsibilities

**Deliverable:** Participants selected.

**Dependencies:** Starts after the selection process and procedures are specified (Task 2.2.3).

*Description*

This task consists of selecting the virtual team members according to the selection process and assigning the roles and responsibilities. As mentioned earlier, it is possible that some members might be selected a priori because the members are already assigned to the work team, the number of candidates corresponds to the number of resources required, or there is not sufficient time to go through a formal selection process.

The human resources representative typically initiates and supports the Ecollaboration designer and the virtual team manager in the selection process. The Ecollaboration designer and the virtual team manager usually do the final interview and select the participants. They can share the responsibility for documenting the interviews and the selection results. They assign the roles to the participants selected.

The development of the training program can start when the team members' selection process is completed and the roles have been assigned.

**Resources and Responsibilities***Ecollaboration designer*

Participates in the selection process;

Documents the interviews and the selection report;

Validates and signs the participant selection reports;

Assigns the social roles;

Validates and signs the team members' roles and responsibilities report.

*Virtual team manager*

Participates in the selection process;

Documents the interviews and the selection report;

Validates and signs the participant selection report;

Assigns the production roles;

Validates and signs the team members' roles and responsibilities report.

*Human resources representative*

Initiates and supports the selection process;

Documents the interviews and the selection report.

**Templates and Tools**

Description	Tool	Template
Team members' roles and responsibilities report	Word	virtual work team members roles and responsibilities.doc

### Task 2.2.5 Develop the Training Program for Virtual Teaming

**Deliverable:** Training program for the virtual participants.

**Dependencies:** Starts after the team members have been selected and the roles and responsibilities have been assigned (Task 2.2.4).

#### *Description*

This task consists of developing the training program for the participants selected based on their profile, skills, and competencies and their roles and responsibilities. This task assumes that the participants selected have the basic skills and competencies to execute the production roles as well as the social roles. In other words, extensive professional training is out of the task scope. This task is done concurrently with the development of the facilitation templates, tools, and plan.

The Ecollaboration designer meets the virtual team manager, the human resources representative, and the facilitator to develop and organize the training program to support virtual teaming. They select the topics, elaborate the content, and develop the training documents.

Topics that can be addressed include:

- Ecollaboration ecosystem;
- Virtual team dynamics and virtual team traps;
- Cultural differences in virtual teams;
- Ecollaboration success stories;
- Collaborative software;
- Netiquette (network etiquette).

The human resources representative organizes the logistics, including:

- The training room reservation;
- The furniture required, such as flip charts, computer projector, paper pads;
- The setup of the computers required for technical training;
- The reproduction of training guides and manuals;
- Communication with the participants, registration, and distribution of agendas;
- Catering services.

### Resources and Responsibilities

#### *Ecollaboration designer*

Initiates the development of the training program;

Documents the design of the training program;

Develops the training guides and manuals.

*Virtual team facilitator*

Participates in the development of the training program, the training guides, and manuals;

Validates and signs the design of the training program.

*Virtual team manager*

Participates in the development of the training program;

Validates and signs the design of the training program.

*Human resources representative*

Organizes the logistics of the training program.

#### Templates and Tools

Description	Tool	Template
Virtual teaming training program report	Word	virtual work training program.doc

### Task 2.2.6 Develop the Templates and Tools for Virtual Team Facilitation

**Deliverable:** Virtual facilitation templates and tools.

**Dependencies:** Starts after the team members have been selected and the roles and responsibilities have been assigned (Task 2.2.4).

#### *Description*

This task concerns the development of templates, forms, and tools to facilitate the team. This task is done concurrently with the development of the training program and the facilitation plan.

Examples of templates, forms, and tools to be used in the facilitation process include:

- Sample of a virtual team charter;
- List of emoticons;
- Culture assessment questionnaire;
- Request for virtual participants' introduction;
- List of members' birthdays;
- List of international holidays, religious holidays, elections, calendars, and exceptional events;
- Team member satisfaction questionnaire.

The Ecollaboration designer meets the virtual team manager and the facilitator to identify the templates, forms, and tools already available to facilitate the team. They discuss the potential application and the development of other

templates and tools in relation to the type of work, the members' profiles, and the virtual team dynamics model. They also consider the templates and tools to be used in the launching session of the virtual team.

### Resources and Responsibilities

#### *Ecollaboration designer*

Initiates and participates in the development of facilitation templates and tools.

#### *Virtual team manager*

Supports the development of the facilitation templates and tools;

Validates the facilitation templates and tools.

#### *Virtual team facilitator*

Develops the facilitation templates and tools.

### Templates and Tools

Description	Tool	Template
Request for member introduction	Word	virtual team request for members intro.doc
Fix bury and burn activity	Word	virtual team fix bury and burn.doc
Team member satisfaction questionnaire	Excel	virtual team member satisfaction questionnaire.doc
Virtual team dynamics questionnaire	Excel	virtual team dynamics evaluation questionnaire.doc
List of basic emoticons	Word	virtual team emoticons list.doc
Sample of virtual team charter	Word	virtual team charter sample.doc
Individual cultural profile	Word	individual cultural profile assessment.doc
Link to holidays of the world	Internet site	<a href="http://www.jours-feries.com/index.php?id_langue=2">http://www.jours-feries.com/index.php?id_langue=2</a>

### Task 2.2.7 Develop the Facilitation Plan

**Deliverable:** Facilitation plan.

**Dependencies:** Starts after the team members have been selected and the roles and responsibilities have been assigned (Task 2.2.4).

#### *Description*

This task concerns the development of the facilitation plan. This task is done concurrently with the development of the training program and the facilitation templates and tools.

The facilitator meets the virtual team manager to discuss the approach and the plan for facilitating the team. In defining the facilitation approach and plan, they take into account the type of work; the members' profiles, skills, and competencies; and the virtual team dynamics model. They also detail the facilitation activities for the launching session.

Examples of facilitation activities include:

- The development of the team charter and the members' expectations;
- The presentation of the virtual team members;
- The periodic review and follow-up on the team charter and members' expectations;
- The assessment of the virtual members' satisfaction;
- The assessment of the team dynamics and the transition points;
- Celebration events;
- Virtual and face-to-face gathering;
- Conflicts resolution meetings;
- Reminders of the members' birthdays, international holidays, and events.

## Resources and Responsibilities

*Virtual team facilitator*

Develops the facilitation plan.

*Virtual team manager*

Supports the development of the facilitation plan;

Validates and signs the facilitation plan.

### Templates and Tools

Description	Tool	Template
Facilitation plan	Word	virtual team facilitation plan.doc

## Activity 2.3 Organization Analysis and Design

### Task 2.3.1 Analyze the Organizational Context of the Virtual Team

**Deliverable:** Virtual team organizational context.

**Dependencies:** Starts after the project charter and plan are completed (Task 1.1).

#### *Description*

This task consists of analyzing the organizational context for deploying the virtual team. This task is done concurrently with the analysis of the culture and leadership style of the organization.

The Ecollaboration project manager meets the designer to discuss and transfer information on the organizational context for the virtual initiative, more specifically:

- The type of virtual team (learning, hybrid, focus);

- The organizational support and sponsorship for the virtual initiative;
- The experience of the organization in virtual teaming;
- The anticipated number of members in the virtual team;
- The anticipated geographical distribution of the members;
- The anticipated organizational affiliation, nationality, and languages of the members;
- The corresponding time zone and work schedule of the members;
- The business objectives of the virtual initiative;
- The critical business processes involved;
- The business justification;
- Other pertinent information.

The information gathered during this task is preliminary. It is used and detailed in the analysis and design of the work and the team.

### Resources and Responsibilities

#### *Ecollaboration project manager*

Initiates and participates in the analysis of the organizational context for the virtual initiative;

Validates and signs the organizational context report.

#### *Ecollaboration designer*

Participates in the analysis of the organizational context;

Documents the organizational context.

#### Templates and Tools

Description	Tool	Template
Report on the organizational context of the virtual initiative	Word	virtual initiative organizational context.doc

### Task 2.3.2 Analyze the Culture and Leadership Style of the Organization

**Deliverable:** Overview of organizational culture and leadership style.

**Dependencies:** Starts after the project charter and plan are completed (Task 1.1).

#### *Description*

This task consists of analyzing the culture and leadership style of the organization initiating the virtual team. This task is done concurrently with the analysis of the organizational context.

The Ecollaboration project manager and the human resources representative meet the designer to transfer their knowledge and to discuss the culture and



leadership style of the organization. The following elements of culture are analyzed:

- Organizational structure: hierarchical versus network;
- Focus: financial versus marketing;
- Distribution of information: limited versus extended;
- Management philosophy: rules and procedures versus principles and guidelines;
- Orientation: internal versus external;
- Training: occasional versus continuing;
- Accountability: unequal versus shared.

The following topics and characteristics may be used to define the leadership style of the organization:

#### *Goals and objectives*

- Vision, values, and strategy;
- Integration of learning and knowledge management;
- Standards for achievements--high or low;
- Consistency in providing direction;
- Integration of technology.

#### *Management*

- Openness to change, new ideas, and risk taking;
- Ability to make change happen;
- Ability to learn from mistakes and successes;
- Ability to integrate resources for continuous improvement;
- Ability to leverage diversity;
- Ability to deploy and empower teams;
- Agility—awareness of opportunities and speed of initiative;
- Information sharing with employees, customers, suppliers, and other business partners.

#### *Employee commitment and mobilization*

- Organizational climate;
- Employee turnover and retention;
- Communication with employees--frequency, mechanisms, reasons;

- Work arrangement—when, where, and what policies, balance between work and personal life;
- Growth opportunities—personal development, training, education;
- Accountability—ownership of results;
- Performance evaluation—focus (e.g., results, team work), frequency, mechanisms;
- Reward and compensation—financial versus nonfinancial, acknowledgment of contribution.

The information gathered during this task is preliminary. It is used in the analysis and design of the work and the team.

### Resources and Responsibilities

#### *Ecollaboration project manager*

Initiates and participates in the analysis of the organizational culture and leadership style;

Validates and signs the organizational culture and leadership report.

#### *Human resources representative*

Participates in the analysis of organizational culture and leadership style.

#### *Ecollaboration designer*

Participates in the analysis of organizational culture and leadership style;

Documents the organizational culture and leadership style.

### Templates and Tools

Description	Tool	Template
Report on the organizational culture and leadership style	Word	virtual initiative organizational culture and leadership.doc
Questionnaire on culture and leadership	Excel	organizational culture and leadership questionnaire.xls

### Task 2.3.3 Define the Critical Success Factors

**Deliverable:** Critical success factors.

**Dependencies:** Starts after the organizational context of the virtual team (Task 2.3.1) and the overview of the culture and leadership (Task 2.3.2) are completed.

#### *Description*

This task consists of defining the critical success factors specific to the virtual initiative, that is, the factors supporting the team and the work that will be achieved virtually. These factors complement the ones for the success of the Ecollaboration project. This task is done concurrently with the definition of

the performance indicators, the reporting process, the evaluation program, and the reward and compensation plan.

The Ecollaboration designer meets the virtual team manager and the facilitator to discuss the success factors, taking into consideration the context, the culture, and leadership style of the organization, as well as the team and work design components.

Some examples of critical success factors for the virtual initiative are:

- Virtual team manager presence and feedback;
- Periodic face-to-face meetings;
- Ongoing training and coaching on diversity;
- Comprehension of key cultural differences;
- Reinforcement of the value of knowledge management;
- Modification of the reward and compensation plan;
- Management consistency in providing direction and support;
- Frequency of management communication;
- Accrued accountability and ownership of results;
- Flexibility in work arrangement;
- Continuous and just-in-time recognition of members' contribution;
- Communication and application of rules for members' exclusion or expulsion.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates and participates in the definition of the critical success factors for the virtual initiative;

Documents the critical success factors for the virtual initiative.

### *Virtual team facilitator*

Participates in the definition of the critical success factors for the virtual initiative.

### *Virtual team manager*

Participates in the definition of the critical success factors for the virtual initiative;

Validates and signs the critical success factors documentation.

### Templates and Tools

Description	Tool	Template
Critical success factors documentation	Word	virtual initiative critical success factors.doc

### Task 2.3.4 Develop Performance Indicators

**Deliverable:** Performance indicators.

**Dependencies:** Starts after the organizational context of the virtual team (Task 2.3.1) and the overview of the culture and leadership (Task 2.3.2) are completed.

#### *Description*

This task consists of developing the performance indicators and the measurements specific to the virtual initiative. These indicators complement the ones identified in the Ecollaboration project justification. This task is done concurrently with the definition of the critical success factors, the reporting process, the evaluation program, and the reward and compensation plan

The Ecollaboration designer meets the virtual team manager and the facilitator to review the project justification. They detail the performance indicators for the virtual initiative and how they will be measured. They look at both the financial and intellectual capital aspects.

Examples of performance indicators and associated measures are:

#### *Financial indicators*

- Costs reduction;
- Sales increase;
- Return on investment;
- Asset turnover;
- Profit margin;
- Collection period;
- Accounts receivable turnover;
- Inventory turnover.

#### *Customer or business partner capital*

- Management credibility;
- Number of customers--number of new and lost customers;
- Number of customer visits;
- Market share;
- Customer and stakeholder satisfaction index;
- Customer and business partner ratings.

#### *Structural capital*

- Quality of processes;
- Number of errors in processes;

- Number of new patents;
- Number of new reusable templates, lessons learned, and best practices documented;
- Number of new business processes documented.

### *Human capital*

- Employee satisfaction index;
- Leadership index;
- Motivation index;
- Empowerment index;
- New suggestions, solutions, and processes.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates and participates in the development of the performance indicators;

Documents the performance indicators and the measures.

### *Virtual team facilitator*

Participates in the development of the performance indicators and the measures.

### *Virtual team manager*

Participates in the development of the performance indicators and the measures;

Validates and signs the performance indicators documentation.

### Templates and Tools

Description	Tool	Template
Performance indicators documentation	Word	virtual initiative performance indicators.doc

## Task 2.3.5 Design the Reporting Process

**Deliverable:** Reporting process.

**Dependencies:** Starts after the organizational context of the virtual team (Task 2.3.1) and the overview of the culture and leadership (Task 2.3.2) are completed.

### *Description*

This task consists of developing the process for reporting the issues and the progress of the virtual initiative relative to the work and teaming. It does not relate to the Ecollaboration project progress (that is dealt with in Task 1.5). This task is

done concurrently with the definition of the critical success factors, the performance indicators, the evaluation program, and the reward and compensation plan.

The Ecollaboration designer meets the virtual team manager and the facilitator to discuss the reporting process for the issues and their progress to the management, more specifically:

- What progress elements will be reported;
- What types of issues will be reported;
- Who will report;
- How and when reporting will be done.

Typically, progress reports should be issued every two to four weeks depending on the nature of the work, the virtual team dynamics model, and the work and facilitation plans. The steering committee meetings should also include periods to review the progress.

Reporting issues should be ongoing using issues logs. The critical issues should be addressed in the steering committee meetings.

If the collaborative environment is considered for reporting progress and issues, the task and work components should be designed accordingly (e.g., roles and responsibilities, process, templates, collaborative environment).

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates and participates in the development of the reporting process;

Documents the reporting process and forms.

### *Virtual team facilitator*

Participates in the development in the reporting process and forms;

Validates and signs the reporting process report.

### *Virtual team manager*

Participates in the development of the reporting process and forms;

Validates and signs the reporting process report.

## Templates and Tools

Description	Tool	Template
Reporting process report	Word	virtual initiative reporting process.doc
Virtual team issues log	Word	virtual team issues log.doc
Virtual team progress report	Word	virtual team progress report.doc
Virtual work issues log	Word	virtual work issues log.doc
Virtual work progress report	Word	virtual work progress report.doc

### Task 2.3.6 Design the Evaluation Program

**Deliverable:** Evaluation program.

**Dependencies:** Starts after the organizational context of the virtual team (Task 2.3.1) and the overview of the culture and leadership (Task 2.3.2) are completed.

#### *Description*

This task consists of developing the evaluation program for the virtual initiative relative to the work and teaming. This task is done concurrently with the definition of the critical success factors, the performance indicators, the reporting process, and the reward and compensation program.

The Ecollaboration designer meets the virtual team manager and the facilitator to develop the program to evaluate the virtual participants' performance both in terms of teaming and work achievement. The evaluation criteria must be clearly defined and assigned a weight. They must also ensure that the evaluation program is aligned with the reward and compensation plan.

The evaluation program can include many aspects, such as:

- Respect for plan and budget;
- Quality of deliverables;
- Respect for the team charter and values;
- Ability to communicate and generate knowledge;
- Creativity and innovation;
- Effort in documenting and organizing knowledge;
- Agility in response--content and speed;
- Collaboration and team spirit;
- Respect for work processes;
- Ability to motivate others;
- Ability to deal with differences.

Resources and responsibilities:

#### *Ecollaboration designer*

Initiates and participates in the development of the evaluation program;

Documents the evaluation program.

#### *Virtual team facilitator*

Participates in the development of evaluation program.

#### *Virtual team manager*

Participates in the development of evaluation program;

Validates and signs the evaluation program.

## Templates and Tools

Description	Tool	Template
Evaluation program report	Word	virtual initiative evaluation program.doc

### Task 2.3.7 Design the Reward and Compensation Program

**Deliverable:** Reward and compensation program.

**Dependencies:** Starts after the organizational context of the virtual team (Task 2.3.1) and the overview of the culture and leadership (Task 2.3.2) are completed.

#### *Description*

This task consists of analyzing the reward and compensation program and recommending a design that will encourage collaboration and generate the expected performance. This task is done concurrently with the definition of the critical success factors, the performance indicators, the reporting process, and the evaluation program.

The Ecollaboration designer meets the virtual team manager and the human resources representative to review the current program and its application in relation to the virtual initiative. They analyze and propose alternative reward and compensation plans for the participants, considering the roles and responsibilities of the members, the business objectives of the team, and the expected benefits. They ensure that each element of the plan is clearly defined and that it is aligned with the evaluation program and integrated into the organizational compensation plan.

The reward and compensation plan in the context of sales and marketing may include:

- A base salary based on the roles and responsibilities;
- A commission based on the achievement of team objectives, such as meeting the sale quotas;
- A commission dependent on the achievement of specific individual objectives, such as opening new markets and getting new customers;
- A bonus for special contribution, such as supporting peer learning, innovation, and knowledge documentation.

### Resources and Responsibilities

#### *Ecollaboration designer*

Initiates and participates in the design of the reward and compensation program;

Documents the reward and compensation program.

#### *Virtual team manager*

Participates in the design of the reward and compensation program;



Validates and signs the reward and compensation program.

*Human resources representative*

Participates in the design of the reward and compensation program;

Validates and signs the reward and compensation program.

#### Templates and Tools

Description	Tool	Template
Reward and compensation program report	Word	virtual team reward and compensation program.doc

## Activity 2.4 Technology Analysis and Design

### Task 2.4.1 Detail the Functional and Technological Requirements

**Deliverable:** Functional and technological requirements.

**Dependencies:** Starts when the definition of the work processes, workflows, and deliverables is in progress (Task 2.1.4).

#### *Description*

This task consists of gathering the functional and technological requirements to support the design of the technological environment, that is, the collaborative software and the technological infrastructure. This task takes into account the functionalities, features, and preconfigured modules offered by the collaborative software selected by the enterprise.

The Ecollaboration designer meets the virtual team manager and the technology architect to review the work design, and more specifically the processes, workflows, deliverables, and roles. They detail the functionalities, features required, preconfigured modules, and setup for each process, such as:

- Workspaces;
- Discussion forums;
- Calendars;
- Folders;
- Chats;
- Workflows;
- E-mail notifications;
- CAD support;
- File import and export;
- Link to electronic libraries;
- Audio conferencing;
- Videoconferencing;
- White boards.

They look at the integration points and analyze the need for interfaces to the enterprise portal and other systems. They specify the data required and the need to convert. They confirm the frequency of the processes and associated tasks and the volume of data. They review the user roles and define the access rights.

They discuss telecommunication, backup, recovery and archiving requirements, maintenance of the collaborative software, users' support, and performance requirements, including system availability.

They consider the actual technology landscape and analyze infrastructure scenarios based on the information collected. In other words, they look at various server configurations for supporting the telecommunication, database, and applications for the test, production, recovery, backup, and other required environments.

## Resources and Responsibilities

### *Ecollaboration designer*

Initiates and participates in the functional and technological analysis;

Validates and signs the functional and technological requirements reports.

### *Virtual team manager*

Participates in the functional and technological analysis;

Validates and signs the functional and technological requirements reports.

### *Technology architect*

Guides the analysis of the functional and technological requirements;

Documents the functional and technological requirements.

### Templates and Tools

Description	Tool	Template
Interfaces requirements report	Excel	interfaces requirements.xls
Conversion requirements report	Excel	conversions requirements.xls
Technological requirements and design	Word	virtual initiative technology requirements and design.doc

## Task 2.4.2 Develop the Final Technology Design

**Deliverable:** Final technology design.

**Dependencies:** Starts after the functional and technological requirements are defined (Task 2.4.1)

### *Description*

This task consists of developing the final design relative to the collaborative software and the technological infrastructure.

The technology architect, the analyst/programmer, and the IT specialists analyze the requirements gathered and develop the final design, including:

- The specifications for configuring the collaborative software;
- The user security profiles to access the collaborative environment;
- The conversion and interfaces programs;
- The technological landscapes (test, production, recovery, backup, and other required environments) with the telecommunication, database, and application server setup.

The IT group also defines the software and procedures for maintaining the collaborative environment once it is in production, more specifically, in relation to backup, recovery, archiving, performance, configuration, database, interfaces, security, and help-desk (user support).

## Resources and Responsibilities

### *Technology architect*

Initiates and participates in the development of the final design;

Develops the collaborative software design.

### *Information technology group*

Develops the technological infrastructure design;

Develops the maintenance and support procedures.

### *Analyst/programmer*

Develops the conversion and interfaces programs.

### Templates and Tools

Description	Tool	Template
Technological requirements and design	Word	virtual initiative technology requirements and design.doc

## Phase 3 Implementation

### Activity 3.1 Technology Implementation

#### Task 3.1.1 Prepare the Technology Infrastructure

**Deliverable:** Technology infrastructure.

**Dependencies:** Starts after the design components are approved (Task 1.3).

*Description*

This task concerns the deployment of the components of the technology infrastructure to support the virtual collaborative environment in accordance with the design.

The technology architect and the IT group work together to install and test the necessary hardware and software components of the technological landscapes.

**Resources and Responsibilities***Technology architect and IT group*

Install and test the technological components of the infrastructure.

**Templates and Tools**

Description	Tool	Template
Technological requirements and design	Word	virtual initiative technology requirements and design.doc

**Task 3.1.2 Configure the Collaborative Software**

**Deliverable:** Software configured.

**Dependencies:** Starts after the technology infrastructure has been prepared (Task 3.1.1).

*Description*

This task consists of configuring the collaborative software to support the virtual team according to the design.

The technology architect configures the collaborative software and tests the environment. More specifically, he/she creates the required workspaces, the discussion forums, the chat rooms, the workflows, and other required elements. He/she sets up the required functions such as archiving, administration, CAD support, and videoconferencing.

**Resources and Responsibilities***Technology architect*

Configures and tests the virtual collaborative environment.

**Templates and Tools**

Description	Tool	Template
Technological requirements and design	Word	virtual initiative technology requirements and design.doc

**Task 3.1.3 Create Users and Assign Passwords**

**Deliverable:** Users and passwords.

**Dependencies:** Starts after the collaborative software has been configured (Task 3.1.2).

*Description*

This task consists of setting the user groups and assigning user identifications and passwords for the virtual team members according to the design.

The technology architect creates the user groups, specifying the access rules of the virtual team environment, features, and functions. He/she defines identifications and assigns a password to each user. Depending on the number of users, he/she might create users in bulk.

**Resources and Responsibilities***Technology architect*

Sets up the user access, identifications, and passwords.

## Templates and Tools

Description	Tool	Template
Technological requirements and design	Word	virtual initiative technology requirements and design.doc

**Task 3.1.4 Convert Data and Implement Interfaces and Other Required Programs**

**Deliverable:** Data conversion, interfaces, and other programs.

**Dependencies:** Starts after the collaborative software has been configured (Task 3.1.2).

*Description*

This task consists of converting the necessary data, implementing the interfaces, and other programs required by the virtual team in accordance with the design.

The analyst/programmer converts the data and implements the interfaces and other programs with the support of the technology architect. The virtual team manager and the Ecollaboration designer execute any manual data conversions and ensure that all the required data are valid, available, and accessible. They also ensure that the interfaces and other programs work according to the specifications.

**Resources and Responsibilities***Analyst/programmer*

Converts data and implements interfaces and other programs.

*Technology architect*

Supports the conversion and implementation of interfaces and other programs.

*Ecollaboration designer and virtual team manager*

Convert manual data and validate all the data, interfaces, and other programs.

### Templates and Tools

Description	Tool	Template
Interfaces requirements report	Excel	interfaces requirements.xls
Conversion requirements report	Excel	conversions requirements.xls

## Activity 3.2 Virtual Team Launching

### Task 3.2.1 Introduce Participants

**Deliverable:** Participants introduction.

**Dependencies:** Starts after the technology implementation is completed (Activity 3.1).

#### *Description*

This task involves the professional and personal introduction of the team members. The presentation can be done in a face-to-face meeting or in the virtual environment. This task is usually the first step in the launching session.

The virtual team manager presents the objective of the session. He/she and the facilitator first introduce themselves, setting the tone for the others. The facilitator invites the other team members to present themselves. He/she can provide guidelines and supply templates and tools for the introduction according to the facilitation strategy and plan. He/she also supports and encourages the presentation of the members. More specifically, he/she may ask for information such as:

- Their name (obviously!);
- How long they have been with the organization, where they are located, service, department;
- Their interest in being part of the virtual team;
- Their experience with virtual teaming;
- Their abilities to use technologies;
- Their professional background;
- Their personal background and interests;
- Their professional and personal values, aspirations, and goals.

The virtual facilitator asks the members to post their presentations in a dedicated folder in the Team Start-up discussion forum. (This discussion forum and folder could have been specified in the collaboration software design and configured during the technology implementation.) The members should also be invited to attach a resume and a picture to their virtual profile.

### Resources and Responsibilities

*Virtual team manager*

Initiates the introduction process.

*Virtual team facilitator*

Provides guidelines and supports the introduction.

*Virtual team participants*

Introduce themselves.

#### Templates and Tools

Description	Tool	Template
Request for member introduction	Word	virtual team request for members intro.doc

### Task 3.2.2 Present Design Components

**Deliverable:** Virtual design presented.

**Dependencies:** Starts after the introduction of the participants is completed (Activity 3.1).

#### *Description*

This task consists of the presentation of all the design components, namely:

- The work components: dimensions, content, roles and responsibilities, work processes, workflows and deliverables, work templates, tools, and plan;
- The team components: values, selection process and the profile of participants searched for, and overview of the training and facilitation process;
- Organizational components: organizational context of the virtual initiative, culture and leadership style of the organization, critical success factors for the initiative, performance indicators, reporting process, evaluation program, and reward and compensation plan;
- Technological components: configured collaborative software environment in the production landscape. (There is no need to present all the technological components in every landscape. From a user's perspective, the presentation of their immediate working environment is sufficient.)

The task can be done in a face-to-face meeting or in the virtual environment.

The facilitator sets the stage for the presentation of the components by explaining how they were developed and who participated. He shares the responsibility for presenting the components with the virtual team manager. They both encourage the team members to ask questions and to comment.

The sequence and length of the presentation depends on the strategy agreed upon between the two presenters and the medium used. The presentation can be sequenced as shown in Table 4.5.

### Resources and Responsibilities

#### *Virtual team facilitator*

Initiates and sets the context for the presentation of the design components;

Presents the team, organizational, and technological components.

#### *Virtual team manager*

Presents the work and organizational components.

#### *Virtual team participants*

Participate in the presentation.

### Templates and Tools

Description	Tool	Template
Agenda for the virtual components presentation	Word	agenda for components presentation.doc

**Table 4.5**  
Presentation overview

Themes	Presenters
1. Context of the component's development	Virtual facilitator
2. Organizational context of the virtual initiative	Virtual facilitator
3. Culture and leadership of organization	Virtual facilitator
4. Critical success factors for the virtual initiative	Virtual facilitator
5. Selection process and profile searched	Virtual facilitator
6. Team values	Virtual facilitator
7. Overview of training program and facilitation process	Virtual facilitator
8. Overview of the collaborative technology	Virtual facilitator
9. Work dimension and context	Virtual team manager
10. Work charter and plan	Virtual team manager
11. Production roles and responsibilities	Virtual team manager
12. Social roles and responsibilities	Virtual facilitator
13. Work processes, workflows, and deliverables	Virtual team manager
14. Work templates and tools	Virtual team manager
15. Performance indicators	Virtual team manager
16. Reporting process	Virtual team manager
17. Evaluation program	Virtual team manager
18. Reward and compensation program	Virtual team manager



### Task 3.2.3 Develop the Team Charter

**Deliverable:** Virtual team charter.

**Dependencies:** Starts after the introduction of the participants is completed (Activity 3.1).

#### *Description*

This task involves the development of the team charter by the virtual team members. This charter is distinct from the Ecollaboration project charter (Task 1.1) and the virtual work charter (Task 2.1.6). This team charter's objective is to guide the participants in the virtual experience. The task can be done in a face-to-face meeting or in the virtual environment.

The facilitator explains the purpose of the team charter and presents the key elements involved in a team charter, namely:

- The purpose of the team;
- The operating guidelines.

The facilitator guides the discussion of the participants and gathers ideas and comments for the development of the team charter. The following topics can be used to initiate the brainstorming session:

- The members' experiences in traditional and virtual teams;
- The differences between the good and the bad experiences;
- The definition of successful teams;
- The importance of task versus people.

Once the team charter is completed, the facilitator posts it in a dedicated folder in the Team-Start-up discussion forum. (This discussion forum and folder could have been specified in the collaboration software design and configured during the technology implementation.) They are later used for reference and to follow up and review how the team is doing with respect to the team charter.

### Resources and Responsibilities

#### *Virtual team facilitator*

Initiates and guides the development of the team charter;

Documents the team charter and posts it in the virtual environment.

Virtual team manager and team participants

Develop the team charter.

#### Templates and Tools

Description	Tool	Template
Sample of virtual team charter	Word	virtual team charter sample.doc

### Task 3.2.4 Define the Participant Baseline and Expectations

**Deliverable:** Participant baseline and expectations.

**Dependencies:** Starts after the introduction of the participants is completed (Activity 3.1).

#### *Description*

This task consists of defining and understanding the knowledge, experience, and expectations of the members with regard to the work and teaming. The task can be done in a face-to-face meeting or in the virtual environment.

The virtual facilitator animates the discussion, encouraging the participants, including the virtual team manager, to share and comment on their experiences and anticipations with regard to this specific virtual initiative.

Once the participants have finished, they document their baselines while the facilitator summarizes the team expectations. They post the information in a dedicated folder in the Team-Start-up discussion forum. (This discussion forum and folder could have been specified in the collaboration software design and configured during the technology implementation.). They are later used for reference and to follow up and review the progress in relation to the baselines and expectations.

### Resources and Responsibilities

#### *Virtual team facilitator*

Initiates and guides the discussion on baselines and expectations;  
Summarizes and posts the expectations in the virtual environment.

#### *Virtual team manager and team participants*

Define their baselines and expectations;  
Summarize their baselines and post it in the virtual environment.

#### Templates and Tools

Description	Tool	Template
Sample of virtual team expectations	Word	virtual team expectations sample.doc

### Task 3.2.5 Train Participants in Virtual Teaming and Collaborative Software

**Deliverable:** Virtual team training.

**Dependencies:** Starts after the introduction of the participants is completed (Activity 3.1).

#### *Description*

This task concerns training the team members in the concepts of Ecollaboration and collaborative software. For a population that has had little or no exposure to collaborative technology, it is recommended that this task be conducted in a face-to-face environment or with synchronous and videoconferencing features.

The facilitator, supported by the virtual team manager, presents the Ecollaboration concepts and encourages the discussion among the participants. The following topics can be included:

- Ecollaboration ecosystem;
- Virtual team dynamics model;
- Social roles;
- Cultures and differences;
- Typical virtual team traps;
- Purpose of facilitation.

They demonstrate the configured collaborative environment, functionalities, and features. They also support the participants in the hands-on training.

### Resources and Responsibilities

#### *Virtual team facilitator*

Trains the team members.

#### Virtual team manager

Supports the virtual facilitator in training the participants.

#### *Virtual team participants*

Learn about the Ecollaborative concepts and the collaborative technology;

Practice in the virtual environment.

#### Templates and Tools

Description	Tool	Template
Training agenda	Word	agenda for virtual team training.doc
Individual cultural profile	Word	individual cultural profile assessment.doc

## Phase 4 Ecollaboration Management

### Activity 4.1 Virtual Team Facilitation

#### Task 4.1.1 Facilitate the Virtual Team

**Deliverable:** Virtual team facilitation.

**Dependencies:** Starts after the launching session is completed (Activity 3.2).

#### *Description*

This task concerns all the actions and activities to facilitate the team in achieving the goals. This task is conducted in accordance with the facilitation plan and the templates and tools. It is done concurrently with the management of the virtual

team issues (Task 4.1.1) and progress reporting (Task 4.1.2) and the work management activity (4.2)

The key objectives of facilitation are to (1) support mutual knowledge construction, (2) offer opportunities for broader participation and more dynamic interaction, (3) allow for the creation of a sense of a virtual community, and (4) use technology to build real solidarity.

Even if the community is already established, the facilitation process must continue. Ongoing facilitating responsibilities include (1) maintaining the community environment, (2) guiding and moderating the process, (3) managing the content, (4) using introductions and ice breakers (as new participants are joining), (5) involving participants in a collaborative and creative process, and (6) connecting participants in a transformative learning experience.

In facilitating the team, the facilitator, supported by the virtual team manager, must keep in mind the following aspects of virtual teaming:

- Communication that rallies around the project and tasks appears to be necessary to maintain trust. Social communication that complements rather than substitutes for task communication may strengthen trust. Responding behaviors are as critical as initiating behaviors and members must explicitly verbalize their commitment, excitement, and optimism.
- When teams encounter a technical or task uncertainty early in the group process, teams with a higher level of trust can solve problems and resolve conflicts.
- The task focus can co-exist in parallel with the social focus. Social exchange is not at the expense of a task focus.
- In the teams with high trust, there are explicit verbal statements about commitment, support, and excitement. The expression of commitment, excitement, and optimism increases the attraction to the group, tendency for agreement, and collaboration.
- By making cultural differences less noticeable, electronic media may increase the perceived similarity among members and, consequently, trust.

The facilitator can integrate many mobilizing techniques in the ongoing activities, such as:

- Fostering relentless discomfort: creating a sense of questioning to push the individual and the team toward a higher level of performance;

- **Harnessing adversity:** encourage learning from adverse situations to improve knowledge and to create an environment for innovation;
- **Demanding straight talk:** using conflicts as a way to express differences of opinions, to learn about the other individuals and oneself, and to realign efforts to innovate;
- **Infusing intricate understanding:** getting the members to relate to the key factors that drive the business;
- **Using macro-perspective:** focusing and encouraging the expression of individual perceptions;
- **Appreciative inquiry:** showing appreciation and a favorable critical judgment or opinion;
- **Cultivating mental fitness:** promoting individual and team introspection to increase the level of concentration and creativity in the virtual environment.

The facilitator must consult with the team manager when dealing with dominators or troublemakers. Some techniques that can be used are (1) the silent treatment or letting go and waiting to see if the group will correct itself, (2) suggesting air time to let the participants cool down, (3) politely asking the participants or groups of participants to cool down, (4) providing directions to get back to the mainstream issues, (5) conducting debriefing and discussing ground rules, (6) contacting and discussing the matter off-line with the individuals concerned, and (7) expelling the troublemakers.

The facilitator should periodically revisit the team charter, baselines, and expectations with the team members, as well as survey the team dynamics and members' satisfaction from time to time.

### **Resources and Responsibilities**

#### *Virtual team facilitator*

Facilitates the virtual team.

#### *Virtual team manager*

Supports the facilitation process.

#### *Virtual team participants*

Contribute to the facilitation process.

### Templates and Tools

Description	Tool	Template
Fix bury and burn activity	Word	virtual team fix bury and burn.doc
Team member satisfaction questionnaire	Excel	virtual team member satisfaction questionnaire.doc
Virtual team dynamics questionnaire	Excel	virtual team dynamics evaluation questionnaire.doc
List of emoticons	Word	Virtual team emoticons list.doc
List of tips for facilitation	Word	facilitation tips.doc
Link to holidays of the world	Internet site	<a href="http://www.jours-feries.com/index.php3?id_langue=2">http://www.jours-feries.com/index.php3?id_langue=2</a>

### Task 4.1.2 Document and Manage Virtual Team Issues

**Deliverable:** Virtual teaming issues log.

**Dependencies:** Starts at the same time as the team facilitation (Task 4.1.1).

#### *Description*

This task concerns tracking and managing all the issues related to teaming. This task does not involve the issues related to the work itself (managed in Task 4.2.2) or the Ecollaboration project (managed in Task 1.4). It is done concurrently with the team facilitation (Task 4.1.1), the team progress reporting (Task 4.1.3), and the virtual work management activity (4.2). This task can be done in a private virtual forum shared by the facilitator and the team manager.

The virtual team facilitator logs the issues as they are identified or reported by any participants in the virtual initiative.

The log or report is used to track issues, resolution time, and responsible persons. The log should include the following information:

- Virtual initiative or project name;
- Ecollaboration project sponsor name;
- Virtual team manager name;
- Virtual team facilitator name;
- Issue number;
- Date the issue is received;
- Description of issue;
- Actions recommended;
- Requestor name;
- Priority;
- Date the action should be undertaken;

- Status of the issue (issue logged, issues assigned, actions in progress, action completed, actions late, critical or late issue, issue escalated, issue closed);
- Person responsible for the action;
- Date the issue is closed.

The procedure to manage issues typically involves the following priorities and procedures:

- **Critical:** issues that can cause interruption to the project and impose important delay in its progress. These issues must be escalated and presented to the steering committee. Solutions must be proposed within 48 hours.
- **Important:** issues that can possibly delay, but not necessarily stop, the project. These issues typically involve problems for which solutions are currently available. They should be resolved with one week after they are submitted. Escalation to steering committee level is not required.
- **Minor:** Issues that do not involve real threat to the project and typically require little corrective action. Resolution for these issues should be at the time of its creation. Escalation to steering committee level is not required.

The virtual team facilitator revises the issue's log with the virtual team manager on a periodic basis. He/she assigns the responsibility for actions on new issues, discusses actions, and revises the target dates for resolution. He/she provides the necessary support to the persons responsible for the realization of the actions.

Depending on the impacts and risks, the facilitator and the virtual team manager can escalate the late and unresolved issues to the Ecollaboration project sponsor, who may turn to the steering committee for resolution.

## **Resources and Responsibilities**

### *Virtual team facilitator*

Maintains the teaming issues log;

Revises the issues and discusses actions and dates with the persons responsible;

Provides support to the persons responsible for the resolution;

Escalates unresolved and late teaming issues.

Virtual team manager, Ecollaboration project sponsor, and steering committee

Support the resolution of virtual team issues.

#### Templates and Tools

Description	Tool	Template
Virtual team issues log	Word	virtual team issues log.doc

### Task 4.1.3 Measure and Report Virtual Team Progress

**Deliverable:** Virtual teaming progress reports.

**Dependencies:** Starts at the same time as the team facilitation (Task 4.1.1).

#### *Description*

This task concerns tracking and documenting the progress of virtual teaming. It does not include tracking and documenting the progress of the work (done in Task 4.2.3) or the Ecollaboration project (done in Task 1.5). It is done concurrently with the virtual team facilitation (Task 4.1.1), the management of the team issues (Task 4.1.2), and the virtual work management activity (4.2). This task can be conducted in a private virtual forum shared by the facilitator and the team manager.

The virtual team facilitator produces a progress report on a periodic basis, typically every two weeks. He/she can relate the progress to the team charter and facilitation plan, the team dynamics, the social roles, and the members' expectations. He/she presents the report and discusses the progress with the virtual team manager. He/she presents periodically, or on demand, to the Ecollaboration sponsor and steering committee.

The report should include the following information:

- Virtual initiative or project name;
- Ecollaboration project sponsor name;
- Virtual team manager name;
- Virtual team facilitator name;
- Reporting period;
- Date of the report;
- Facilitation activities completed during the period, started and in progress, planned to start, and to be completed in the next period;
- Planned and actual to-date costs and efforts;
- Comments on costs and efforts, discrepancies, risks, and escalation of issues.



## Resources and Responsibilities

### *Virtual team facilitator*

Produces the virtual team progress reports;

Sends, presents, and discusses the team progress with the virtual team manager, Ecollaboration sponsor, and the steering committee.

### *Virtual team manager, Ecollaboration project sponsor, and steering committee*

Review the virtual team progress.

### Templates and Tools

Description	Tool	Template
Virtual team progress report	Word	virtual team progress report.doc

## Activity 4.2 Virtual Work Management

### Task 4.2.1 Manage the Virtual Work

**Deliverable:** Virtual work management.

**Dependencies:** Starts after the launching session is completed (Activity 3.2).

#### *Description*

This task concerns all the actions and activities for managing the virtual work according to the work charter and plan, the production roles, the deliverables, the work processes, the workflows, the work templates, and tools. It is done concurrently with the virtual team facilitation activity (4.1), the management of the virtual work issues (Task 4.2.2), and progress reporting (Task 4.2.3). This task can be conducted in a virtual forum shared by all the team members.

In managing the work, the virtual team manager must keep in mind that managerial behavior control and mechanisms considerably impair trust in the virtual teams and usually fail to improve the performance. On this basis, the team manager should consider self-direction a better management approach and endorse it as a leadership style to foster collaboration and trust.

The virtual team manager should periodically revisit the work charter and plan with the team members.

## Resources and Responsibilities

### *Virtual team manager*

Guides the work and coaches the team members.

### *Virtual team participants*

Deliver according to the work charter and plan.

## Templates and Tools

Description	Tool	Template
Virtual work progress report	Word	virtual work progress report.doc

### Task 4.2.2 Document and Manage Work Issues

**Deliverable:** Virtual work issues log.

**Dependencies:** Starts at the same time as the management of the work (Task 4.2.1).

#### *Description*

This task concerns tracking and managing all the issues related to the work of the virtual team. It does not involve the team issues (managed in Task 4.1.2) or the Ecollaboration project issues (managed in Task 1.4). This task is done concurrently with the team facilitation activity (4.1), the management of the work (Task 4.2.1), and progress reporting (Task 4.2.3). It can be conducted in a private virtual forum shared by the team manager and the sponsor.

The virtual team manager logs the issues as they are identified or reported by any participants in the virtual work. The issues may relate to the work plan, the production roles, the deliverables, the work processes, the workflows, the work templates, and tools.

The log or report is used to track issues, resolution time, and responsible persons. The log should include the following information:

- Virtual initiative or project name;
- Ecollaboration project sponsor name;
- Virtual team manager name;
- Issue number;
- Date the issue is received;
- Description of issue;
- Actions recommended;
- Requestor name;
- Priority;
- Date the action should be undertaken;
- Status of the issue (issue logged, issues assigned, actions in progress, action completed, actions late, critical or late issue, issue escalated, issue closed);
- Person responsible for the action;
- Date the issue is closed.

The procedure to manage issues typically involves the following priorities and procedures:

- **Critical:** Issues that can cause interruption to the project and impose important delay in its progress. These issues must be escalated and presented to the steering committee. Solutions must be proposed within 48 hours.
- **Important:** Issues that can possibly delay, but not necessarily stop, the project. These issues typically involve problems for which solutions are currently available. They should be resolved within one week after they are submitted. Escalation to steering committee level is not required.
- **Minor:** Issues that do not pose real threat to the project and typically require little corrective action. Resolution for these issues should be at the time of its creation. Escalation to steering committee level is not required.

The virtual team manager revises the issue's log on a periodic basis. He assigns the responsibility for actions on new issues, discusses actions, and revises the target dates for resolution. He provides the necessary support to the persons responsible for the realization of the actions.

Depending on the impacts and risks, the virtual team manager can escalate the late and unresolved issues to the Ecollaboration project sponsor, who may turn to the steering committee for resolution of the work issues.

## Resources and Responsibilities

### *Virtual team manager*

Maintains the work issues log;

Revises the issues and discusses actions and dates with the persons responsible;

Provides support to the persons responsible for the resolution;

Escalates unresolved and late work issues.

### *Ecollaboration project sponsor and steering committee*

Support the resolution of work issues.

### Templates and Tools

Description	Tool	Template
Virtual work issues log	Word	virtual work issues log.doc

### Task 4.2.3 Measure and Report Work Progress

**Deliverable:** Virtual work progress reports.

**Dependencies:** Starts at the same time as the management of the work (Task 4.2.1).

#### *Description*

This task concerns tracking and documenting the progress of virtual work and the deliverables. It does not include tracking and documenting the progress of virtual teaming (done in Task 4.1.3) or the Ecollaboration project (done in Task 1.5). It is done concurrently with the virtual team facilitation activity (4.1), the management of the virtual work (Task 4.2.1), and associated issues (Task 4.2.2). This task can be done in a private virtual forum shared by the virtual team manager and the sponsor.

The virtual team manager produces a progress report on a periodic basis, typically every two weeks, in relation to the work charter and plan. He/she presents the report and discusses the progress with the Ecollaboration project sponsor. He/she also formally presents the progress to the steering committee.

The report should include the following information:

- Virtual initiative or project name;
- Ecollaboration project sponsor name;
- Virtual team manager name;
- Virtual team facilitator name;
- Reporting period;
- Date of the report;
- Phases, activities, and tasks completed during the period, started and in progress, planned to start, and to be completed the next period;
- Planned and actual to-date costs and efforts;
- Comments on costs and efforts discrepancies, risks, escalation of issues, and measurement of performance indicators.

### Resources and Responsibilities

#### *Virtual team manager*

Produces the virtual work progress reports;

Sends, presents, and discusses the work progress with the Ecollaboration sponsor and the steering committee.

#### *Ecollaboration sponsor and steering committee*

Reviews the virtual work progress.

### Templates and Tools

Description	Tool	Template
Virtual work progress report	Word	virtual work progress report.doc

## Activity 4.3 Collaborative Software Management

### Task 4.3.1 Manage Backup, Recovery, and Archiving

**Deliverable:** Backup, recovery, and archives.

**Dependencies:** Starts after the technology is implemented (Activity 3.1).

#### *Description*

This task consists of ensuring that the collaborative software and the virtual environments are backed up according to the requirements specified in the design. It also involves recovering the software and virtual environments when the system fails and the application and data are lost. Finally, it deals with any archiving that is required. This task is done concurrently with the other tasks involved in the management of the collaborative software.

The IT group manages the backups according to the requirements specified in the design. The frequency of the backup depends on how critical the application and the data are.

The IT group typically deals with recovery and archiving on demand. The recovery and archiving demands typically include the following information:

- Ecollaboration project name;
- Ecollaboration project manager name;
- Virtual team manager name;
- Recovery information: name, location ,and dates or period of the objects (e.g., folders, forums, files);
- Archiving information: name, location, and dates or period of the objects (e.g., folders, forums, files).

### Resources and Responsibilities

#### *Virtual team manager*

Fills in the request for back up, archiving and recovery.

#### *IT group*

Backs up the collaborative software and virtual environments;

Recovers and archives according to the request specifications.

## Templates and Tools

Description	Tool	Template
Request for recovery and archiving	Word	recovery and archiving request form.doc

**Task 4.3.2 Manage Performance**

**Deliverable:** Performance management.

**Dependencies:** Starts after the technology is implemented (Activity 3.1).

*Description*

This task concerns the monitoring of the collaborative system performance. It involves gathering statistical information, maintaining and examining historical logs, determining system performance under natural and artificial conditions, and altering system modes of operation. This task is done concurrently with the other tasks involved in the management of the collaborative software.

The IT group manages the performance on an ongoing basis.

**Resources and Responsibilities***IT group*

Requests and analyzes system performance reports;

Takes actions to ensure the adequacy of the performance.

## Templates and Tools

Description	Tool	Template
System performance reports	Refer to the system used	application/

**Task 4.3.3 Manage Configuration**

**Deliverable:** Configuration management.

**Dependencies:** Starts after the technology is implemented (Activity 3.1).

*Description*

This task consists of maintaining the collaborative software configuration and environment according to any new requirements. This can involve creating, deleting, and modifying objects such as zones, workplaces, forums, folders, workflows, templates, data files, functionalities, and features. It is done concurrently with the other tasks involved in the management of the collaborative software.

The IT group manages the configuration based on the requests of the virtual team manager.

**Resources and Responsibilities***IT group*

Analyzes and manages the requests relative to the management of the collaborative software configuration.

#### Templates and Tools

Description	Tool	Template
Technological requirements and design	Word	virtual initiative technology requirements and design.doc
Conversion requirements report	Excel	conversions requirements.xls

### Task 4.3.4 Manage Database

**Deliverable:** Database management.

**Dependencies:** Starts after the technology is implemented (Activity 3.1).

#### *Description*

This task consists of monitoring and ensuring the operations of the database including storing, deleting, organizing, searching, retrieving, and managing access to the data. It is done concurrently with the other tasks involved in the management of the collaborative software.

The IT group manages the database of the collaborative software and virtual environments on an ongoing basis.

### Resources and Responsibilities

#### *IT group*

Requests and analyzes database reports;

Takes actions to ensure the adequacy of the database.

#### Templates and Tools

Description	Tool	Template
Database management reports	Refer to the system used	application/

### Task 4.3.5 Manage Interfaces

**Deliverable:** Interfaces management.

**Dependencies:** Starts after the technology is implemented (Activity 3.1).

#### *Description*

This task consists of managing interfaces. It can involve adding, modifying, or deleting interfaces based on new requirements from the virtual team or changes in the technological and system architecture. This task is done concurrently with the other tasks involved in the management of the collaborative software.

The IT group manages the interfaces for the collaborative software and virtual environments based on the requests from the virtual team manager and the analyst/programmer.

### Resources and Responsibilities

#### *IT group*

Analyzes and manages the requests relative to interfacing.

#### Templates and Tools

Description	Tool	Template
Interfaces requirements report	Excel	interfaces requirements.xls

### Task 4.3.6 Manage Security

**Deliverable:** Security management.

**Dependencies:** Starts after the technology is implemented (Activity 3.1).

#### *Description*

This task consists of managing the security for the collaborative software and virtual environments. It involves creating, modifying, or deleting user groups and users as well as managing passwords. This task is done concurrently with the other tasks involved in the management of the collaborative software.

The IT group is responsible for managing security on an ongoing basis.

### Resources and Responsibilities

#### *IT group*

Analyzes and manages the requests relative to security.

#### Templates and Tools

Description	Tool	Template
Technological requirements and design	Word	virtual initiative technology requirements and design.doc

### Task 4.3.7 Provide User Support

**Deliverable:** Users support.

**Dependencies:** Starts after the technology is implemented (Activity 3.1).

#### *Description*

This task consists of supporting the users. It is typically assigned to the help-desk. This task is done concurrently with the other tasks involved in the management of the collaborative software.



The IT group provides user's support on an ongoing basis. Depending on the nature of the call, the help-desk representative can provide an answer immediately or document the request and dispatch it to a technology analyst.

A typical user support request includes the following information:

- The user name;
- The user identification;
- The system and application involved;
- The description of the problem and its priority;
- The person taking the call and the date;
- The name of the person assigned to the call and the assignation date;
- The description of the resolution and associated date.

## Resources and Responsibilities

### *IT group*

Supports the users.

### Templates and Tools

Description	Tool	Template
User support form	Word	user support form.doc

## Activity 4.4 Evaluation

### Task 4.4.1 Evaluate Virtual Team Participants, Facilitator, and Manager

**Deliverable:** Team members' evaluation.

**Dependencies:** Starts after the virtual facilitation and work are completed (Activities 4.1 and 4.2).

### *Description*

This task concerns the final evaluation of the team members based on the evaluation program and criteria established in Task 2.3.6.

The virtual team manager asks all the team members for a self-evaluation and peer evaluation in terms of teaming and work achievement. He/she reviews the evaluations with the facilitator and meets with the individuals for a final evaluation.

## Resources and Responsibilities

### *Virtual team manager*

Initiates the individual evaluation process;

Discusses the evaluations with the virtual team facilitator and each individual team member;

Documents the final evaluation for each member.

*Virtual team facilitator*

Discusses the evaluations with the virtual team manager.

*Virtual team participants*

Discusses the evaluations with the virtual team manager.

#### Templates and Tools

Description	Tool	Template
Evaluation program report	Word	virtual initiative evaluation program.doc

### Task 4.4.2 Evaluate Virtual Initiative Performance

**Deliverable:** Virtual initiative performance evaluation.

**Dependencies:** Starts after the virtual facilitation and work are completed (Activities 4.1 and 4.2).

#### *Description*

This task consists of a final evaluation of the virtual initiative performance in relation to the criteria established in Task 2.3.4.

The virtual team manager meets the participants and the facilitator to discuss the performance of the virtual initiative.

### Resources and Responsibilities

*Virtual team manager*

Initiates the final performance evaluation of the virtual initiative;

Documents the final performance evaluation of the virtual initiative.

*Virtual team facilitator and team participants*

Participate in the final performance evaluation of the virtual initiative.

#### Templates and Tools

Description	Tool	Template
Performance indicators documentation	Word	virtual initiative performance indicators.doc

### Task 4.4.3 Summarize Lessons Learned

**Deliverable:** Lessons learned.

**Dependencies:** Starts after the evaluations are completed (Tasks 4.4.1 and 4.4.2).

*Description*

This task consists of collecting, organizing, and reporting the lessons learned from the virtual initiative.

The virtual team manager, supported by the facilitator, meets with the team members and the project partners, including the Ecollaboration project manager, designer, the human resources representative, the technology architect, and the IT group to discuss and draw lessons from the virtual initiative. They look at the strengths and weaknesses and propose recommendations for future virtual initiatives.

**Resources and Responsibilities***Virtual team manager*

Initiates the discussion on the best lessons learned;

Documents the best lessons learned.

*Virtual team facilitator*

Animates and facilitates the discussion on the best lessons learned.

*Virtual team members and project partners*

Participate in the discussion on the best lessons learned.

**Templates and Tools**

Description	Tool	Template
Lessons learned report	Word	virtual initiative lessons learned report.doc

# 5

## Key Success Factors

Transitioning to collaborative virtual teams goes beyond the implementation of a technology. It constitutes an important change in the way people interact, share knowledge, and work together. Organizations wishing to implement collaborative virtual teams must comprehend that technology, skills, and competencies are not enough to do the job.

Virtual teams that are using collaborative technologies are expected to engage in a higher level of collaboration than the teams that simply share e-mails or are periodically using voice or teleconferencing. Collaborative virtual teams can recreate or even surpass the traditional face-to-face environment when the key success factors are combined. Those factors are:

- The commitment of the executive management team and the assignment of a project sponsor;
- The transition to the knowledge culture with a focus on human resources and shared leadership;
- An investment in organizational change management;
- A robust Ecollaboration ecosystem;
- The application of a structured Ecollaboration methodology;
- The deployment of facilitation strategies;
- The involvement of Ecollaboration experts;
- A solid technology infrastructure and proven collaborative software.

### *Commitment of the Executive Management Team and Assignment of a Sponsor*

Implementing successful virtual teams requires significant investments in money, time, people, and technologies. It should not be treated as an isolated initiative but as an enterprise project of strategic importance for the future.

Organizations making this shift must address the selection and implementation of collaborative technologies based on the best lessons learned from previous enterprise initiatives, such as ERP, B2B, CRM solutions, and the business information warehouse and intelligence applications.

In this respect, the success of the project cannot happen without the commitment of the executive management team. Commitment means making the necessary resources available as well as providing support every step of the way. Commitment also means giving a priority and visibility to the project at the corporate level. From an operational perspective, a committed executive management team reviews the progress of the Ecollaboration project and associated virtual initiatives in the corporate meetings.

The executive management also assigns a sponsor to demonstrate and strengthen their commitment to the Ecollaboration project. The sponsor is empowered by the executive committee and acts on its behalf. He/she has authority and is responsible to ensure the progress of the project and to resolve any issues that might occur. Because this role is strategic to the success of the Ecollaboration project, the sponsor must be carefully selected. He/she must endorse the knowledge philosophy and be a fierce defender of the inherent values.

The sponsor is also known for having a hand of steel in a velvet glove. He/she is a respected manager known for his commitment to life-long learning and his/her uncompromising straight talk that makes the organization move and push itself toward greater challenges and innovative perspectives. He/she is renowned for his/her coaching and mentoring abilities and for his/her capability to share a vision with patience and dynamism.

The sponsor must also be willing to assume the role for the period of time it will require for the organization to truly transition to the knowledge culture. Sponsoring the Ecollaboration project is usually not a short-term adventure. Consequently, the sponsor must acknowledge and accept the role.

### *Transition to the Knowledge Culture with a Focus on Human Resources and Shared Leadership*

Understanding that a cultural shift must happen for the deployment of successful collaborative virtual teams is another determinant factor. Ecollaboration is not a short-term affair or a passing fashion. It is a new and powerful way to bring people together to create, innovate, learn, and generate even more knowledge and opportunities so that the organization is kept alive, healthy, and

strong. Organizations that embark on an Ecollaboration project and initiatives must have acknowledged the need to transition to this new cultural mindset.

However, the industrial mentality is not something that can go away easily. Hundred of years have been invested in the current modus operandi of our organizations. Not surprisingly, shifting to a knowledge culture will require daily efforts and a long-term commitment to human resources and a new leadership style. The idea that everyone can be replaced must now be excluded from our thoughts. People must be seen as one of the most precious resources an organization can possess. The knowledge workers must be thought of as the gold mine of our organizations. They are critical assets, as important as the financial ones.

In this respect, shifting to Ecollaboration implies significant investments in human resources development and growth. It involves encouraging new behaviors, reinforcing active listening, conversing, respecting the uniqueness of individuals, sharing information, and expressing opinions. Moreover, Ecollaboration looks for rewarding results, not compliance, and promoting risk-taking while emphasizing professionalism and self-reflection.

It also means converting to a networkcentric structure where people work in teams and share the leader role. Focusing on human resources and shared leadership can improve the speed of consolidating knowledge and provide a solid platform for innovation.

Furthermore, this networkcentric structure can be expected to promote and support the sense of confidence in the group and the establishment of trust principles or constructs, such as fairness, consistency, honesty, and reliability, to name a few. Finally, shifting to the knowledge culture with a focus on people and shared leadership offers many opportunities to build solid professional and interpersonal relationships which can, in turn, contribute to the organization's mission and objectives.

### *Investment in Organizational Change Management*

Many of us are using e-mail, voice conferencing, and other advanced technology in our work. But how many can say they are efficiently integrating the people, the work, the organizational components, and the technology? Collaboration does not simply occur because people are connected together with state-of-the-art technology. There are virtual team dynamics to understand and behaviors to encourage, develop, and reinforce.

Working in a virtual environment using collaborative technologies represents a major change for most organizations. Successful Ecollaboration initiatives involve more than the implementation of a technology. They require a complete shift in how we are working and how we consider teamwork today. In fact, Ecollaboration is more than a project. It is a conceptual change and a

cultural venture. In this respect, the impacts of Ecollaboration must be carefully analyzed and strategically planned.

As a matter of fact, industrial-minded organizations are used to operating at a “material level.” They are tied to their past, known strategies, products, processes, customers, and markets. Under this operative leadership, these organizations are centered on themselves. They are consequently limiting their options when confronted with change. They can also operate at the “financial level,” with a focus on, for example, margin, ROI, sales, and market share. While this level has added flexibility, it is centered on financial goals. But when organizations operate at the conceptual level, they are bound by nothing and are highly adaptive. They can enter into motion and are capable of providing energy and direction, with a variety of possibilities emerging in a self-organizing structure. But this motion cannot happen by magic. It requires investment, time, and effort in managing the change.

Much like the Ecollaboration sponsor who must accept the role for the time period required for the cultural shift to occur, organizations must be willing to invest substantially in change management. They must put everything together to get into this new motion. They must assign enough change management specialists capable of guiding and coaching the management team, the leaders, and the knowledge workers in the cultural venture, from the beginning to the end.

### *Robust Ecollaboration Ecosystem*

The industrial culture has its own value system and intrinsic framework. It is built on a financial system with control and command values at its center. It is a closed system with not much permeability. It is a system based on the belief that outcomes can be predicted. But this reasoning goes against the laws of nature: there cannot be absolute accuracy, because the initial state keeps changing and moving. One cannot control all the elements of influence and their interrelations.

In contrast, the knowledge culture promotes an open and chaotic system. *Chaotic* is used here in the sense of being unpredictable and nondeterministic. It replaces the Newtonian imagery of the organizations as machines and human beings as machines or parts of machines with the notion of living systems.

Indeed, the knowledge culture promotes a robust, yet dynamic, ecosystem with people and collaboration at its center. The Ecollaboration ecosystem is not disordered, but perceives order differently than the industrial system. It believes in self-organization and relies on trust constructs and people to create an environment where collaboration can truly and naturally occur.

The Ecollaboration ecosystem encourages knowledge workers to share responsibilities, to welcome diversity, and to learn from one another. It does not falsely assume that there is a sense of purpose and belonging. On the contrary, it

promotes the environment as a place where people can develop satisfying social relationships, engage in creative disorder, and contribute to organizational growth and innovation. In the twenty-first century, it will no longer be the durability of a product that differentiates enterprises, but rather the caliber of their people, the innovation they represent, the culture they create, and the messages they convey.

### *Application of a Structured Ecollaboration Methodology*

Organizations with a history of successful initiatives have long recognized the need and the importance of using structured approaches for managing projects, implementing new technologies, and dealing with organizational changes. Successful organizations are not blindly embarking on projects, but are carefully evaluating the costs, the benefits, and the risks. They are also being rigorous in elaborating and managing the projects from beginning to end. Ecollaboration projects should be treated in the same way.

The application of the methodology proposed in this book constitutes a solid approach for analyzing, designing, and implementing virtual teams and collaborative technologies. It goes beyond the simple implementation of a technology by integrating the best practices in virtual team design, project, and change management. It also innovates by building into its framework the notion of an Ecollaboration ecosystem and the values of the knowledge culture.

The Ecollaboration methodology wants to ensure that nothing is forgotten or falls into a crack. Yet it does not intend or pretend to control every aspect or to predict every situation. The methodology simply offers a starting and ending places with a comprehensive path between the two. It encourages learning and collecting lessons to improve and ease future Ecollaboration initiatives. As in cooking, the great chefs can always improve their best recipes.

### *Deployment of a Facilitation Strategy*

Trust is an underlying condition for successful collaborative virtual teams. Trust is difficult to achieve in the traditional face-to-face environment. It does not become easier in the virtual world. From the employees' perspective, participating in a virtual knowledge network can represent an important investment. They can perceive it as a sacrifice, that is, giving up power and letting go of the sources of value and potential personal benefits.

In this context, facilitation strategies must be carefully planned and deployed so that the attitude of "one for all and all for one" is able to emerge and collaboration can truly occur. Indeed, collaboration cannot be forced on people. It can only be facilitated. Facilitation is even more important because of the chaotic and unpredictable or moving nature of the Ecollaboration ecosystem.

Traditional managers used to directing and controlling, rather than guiding, people will be uncomfortable in this improvisational setting. They need the



participation of virtual team facilitators so that the fulfillment of organizational objectives is based on the strength of social and knowledge relationships rather than the traditional command and control environment. As a matter of fact, managing an Ecollaboration initiative requires a synergy approach based on a new workplace perspective and new imperatives for personcentric management.

Virtual facilitation strategies must consequently build on the shift from placecentric to peoplecentric. They must consider relationships to be the key determiner of successful virtual initiatives. They need to focus on empowering the members to plan and execute the team mission and objectives. The facilitation strategies do not intend to create a place, an influence, or a destination, but to develop fields that influence vision and power. In other words, virtual team facilitation aims at bringing the people together in a constructive way with good information so that they can create ways for addressing organizational concerns.

Moreover, virtual team facilitation should rest on the interconnectedness of a deep and intimate synergy of the members and on the trustfulness of the environment so that the team can focus on strategic thinking, creation, and innovation rather than on strategic planning.

The virtual team facilitators can propose a set of guidelines and principles for the creation of a trusting environment. They can also be proactive in supporting the virtual team manager or leader so that collaboration can rapidly emerge.

The facilitation strategies involve:

- Clarifying the purpose, direction, and behavioral models of the virtual team;
- Rewarding results, not compliance;
- Encouraging initiatives and risks;
- Emphasizing professionalism, information sharing, and self-reflection;
- Integrating the notions of:
  - Dependability, that is, how people behave, respect deadlines and appointments;
  - Consistency, that is, respect of individuals, applications of standards;
  - Congruency, or perception matching reality;
  - Mutuality and reciprocity, that is, “all for one and one for all.”

### *Solid Technology Infrastructure and Proven Collaborative Software*

Ecollaboration projects and initiatives cannot be successful without a solid technological infrastructure and proven collaborative software. Selecting the collaborative software must not be done in vacuum. It should involve key players who are representative of the organizational needs. The technology must also be selected and designed based on the current and future requirements of a wide

range of collaborative initiatives and users. It must be flexible and easily adaptable when the needs are changing or evolving.

The technology infrastructure must also be carefully planned to support the collaborative environments. Indeed, collaborative virtual teams must be confident that their working environment will be available, accessible, and maintained. The last thing a virtual team needs is to doubt the work environment. Just think of a collaborative environment as a car. Who would want to find his car without gas and with a dead battery and a faulty transmission! In this respect, best technology practices such as backup, recovery, archiving, security, database administration, performance management, maintenance, and support must be enforced at all times.

### *Involvement of Ecollaboration Experts*

The involvement of Ecollaboration experts is another key success factor of virtual initiatives. These experts include the Ecollaboration project manager, the virtual team designer, the facilitator, and the technological architect. Their experience in Ecollaboration projects and knowledge of collaborative software must not be overlooked or underestimated.

As a matter of fact, organizations embarking on Ecollaboration projects must not neglect the involvement of experts. They must not believe that they can go solo based on their experience with technology and change projects.

Indeed, these experts should be actively participating in every phase of the Ecollaboration project. This includes from the planning and management of the project, the analysis and design of the work, team organization and technological components to the implementation and evaluation phases. However, their involvement can vary depending upon the size and nature of the virtual initiatives.

Organizations should also plan for experts to transfer knowledge to their internal resources. They must look at the experts as partners and coaches, yet not become captive of their services. In other words, the Ecollaboration experts must walk the talk, that is, share their knowledge and collaborate to empower the customer team.



# 6

## Conclusion

This book has been written for business leaders and managers who are interested in implementing virtual teams using collaborative technologies with the objectives of:

- Increasing their knowledge of collaborative technologies and virtual teaming concepts and requirements;
- Supporting the development of the business case for Ecollaboration and the measurement of the returns on investments;
- Offering a structured approach for the selection and implementation of collaborative technologies;
- Proposing a rigorous methodology based on the best business practices in project management, change management, and virtual team design for the analysis, design, and implementation of virtual teams in their respective fields;
- Ensuring that all the critical success factors are accounted for.

Indeed, the term Ecollaboration is becoming more and more popular these days. However, it is often misused or used too loosely. As a matter of fact, simple tasks such as exchanging data files or sending e-mail between business partners are being called Ecollaboration. Some people also attach the term to information and transactional portals. But Ecollaboration is much more than that. Ecollaboration implies a self-contained secure virtual environment for knowledge workers. It involves a system that offers synchronous and asynchronous functionalities and features to share explicit and implicit information.

There is a wide range of collaborative technologies available on the market. Some software applications offers basic functions while others include a fully integrated set of modules, from discussion forums to voice and videoconferencing. Selecting the technology for Ecollaboration is a project in itself. It should be based on a structured analysis of the needs of the enterprise in a long-term strategic perspective. Designing virtual teams should also rely on the application of a structured methodology such as the Ecollaboration methodology detailed in this book.

However, the success of virtual teams' initiatives requires more than the application of a specific methodology and the implementation of a collaboration technology. It requires managing changes in the organization as a whole. This is one of the lessons learned from previous enterprise projects that must be remembered when planning and deploying Ecollaboration initiatives.

Along the same lines, organizations must recognize the importance of knowledge workers and acknowledge them as the new economic resource before embarking on Ecollaboration. Ecollaboration must be built on a new mindset, where the industrial philosophy is replaced by a peoplecentric attitude. This is not a small affair. The traditional management philosophy based on control and command and the popular formula of plan, manage, and control represents a major change and challenge for the implementation of Ecollaboration. The transition can be expected to be difficult and painful for some managers. Many people who began their careers in the 1970s and 80s under the traditional management approach have now become senior managers. They may find the idea of knowledge workers, trust, and collaboration farfetched. While they may agree in principle with the collaborative concepts, they may not be at ease with them or proactive in applying them in day-to-day operations. Behaviors cannot change overnight. Skepticism can be expected as well as resistance to change.

It is recommended that organizations consider Ecollaboration as a long-term project because cultural change of this magnitude takes a lot of time. The theory of small steps is encouraged. In other words, pilot initiatives should be considered and supported by a change management strategy and communication plan. In this context, the choice of the project sponsor becomes critical. He/she is the one promoting changes starting at the level of the executive team. He/she is also responsible for sustaining the movement toward knowledge and collaboration in the organization. Consequently, he/she must be a strong believer of the benefit of Ecollaboration and an ardent defender of the strategic cause.

Some early adopters have already made the shift to Ecollaboration with success. The success stories of Shell, Fielding Institute, GlaxoSmithKline, Ford, and Canam Manac, to name a few, can be stimulating and even inspiring for the skeptical. Recent world events such as September 11th, the SARS virus, and the Iraq war, combined with the increasing cost of traveling, the lower birth rate,

and the aging knowledge workers' population are other incentives to get into the Ecollaboration wave.

However, building collaborative virtual teams in those conditions can also be perceived as paradoxical. On one side, organizations need collaboration to survive and grow. On the other, they need trusting relationships to develop collaboration. So the more we wish to deploy Ecollaboration, the less feasible it can appear to be. Not surprisingly, the paradox of trust can be expected to provoke a clash of oppositional forces among the deciders and participants. Conflict is common and emotionally powerful and so will be the movement to shift to Ecollaboration. It is an inevitable feature of group life because people are born with differences, live with different perspectives, and accumulate different experiences.

Dealing with this paradox reinforces the application of the small steps theory. Getting into a debate on Ecollaboration is not advised. One needs to identify the pros and cons, the sources of power, and the connections. Moreover, it means exploring the issues and trying to answer many questions prior to collaborating. Can I trust you? Can you be trusted? Why would I trust you? Why should you trust me? But the ultimate decision is to be willing to learn how to trust and to have faith in the system, a small step at a time. It is when we can engage in the process of trust that the paradox gets diluted and Ecollaboration can make sense.

Another paradox that might come into play is the paradox of creativity. Ecollaboration might be perceived as the novelty that requires throwing out the traditional management concepts, or at least challenging the status quo. As a matter of fact, Ecollaboration requires letting go of the command and control ideology and the hierarchical organization. It means shifting from a limited to an extended distribution of information, from an internal to an external orientation, from an unequal to a shared accountability, and from a financial to a marketing focus. However, these changes do not mean destroying the past; on the contrary, it means building from it.

The paradox of creativity also came into play in the ERP wave. Business systems had been developed in "silo", i.e. in isolation from one another for many years. While they were offering a wide range of functionalities, the information was duplicated in many systems and databases. The information was not always valid and required many efforts to be cleaned up. It took several years for organizations to accept and justify the transition to an integrated system environment. In fact, replacing the numerous systems that had been the core and the pride of many organizational units required even more than trust and creativity; it called for courage to embark on the project.

Becoming engaged in an Ecollaboration project demands as much courage. Courage is itself paradoxical when we think of the uncertainty of getting results. So courage involves moving ahead in spite of doubt and despair and getting energized by the challenge. Fear can be one's worst enemy or a great ally. It

can either paralyze or mobilize us to accomplish great things. For organizations in the twenty-first century, Ecollaboration corresponds to staying alive, growing, and being healthy and competitive. Ecollaboration might be troublesome at times, but the paybacks can only be greater. So organizations need to be courageous and take on the challenge with confidence.

From an individual perspective, getting involved in Ecollaboration can be paradoxical as well. Virtual participants may want to preserve their identity while at the same time contribute and belong to a team. They may struggle with letting go of some of their beliefs in order to join the team. In the same way, the team will have to adapt to the differences of each member and embrace diversity. The individuals will create within the group and the group will influence and shape their creativity. At first, the paradox of identity may generate some tension in the individuals. But once involved in Ecollaboration, they can expect to be energized and fueled with innovative ideas.

Being part of a virtual team can also be paradoxical with regard to the notion of involvement. The virtual team can operate on a schedule of 24 hours, 7 days a week. The participants may want to get involved but not be overwhelmed by the virtual team. They will desire to find support in the team but not to the point of forgetting themselves. Dealing with the paradox of involvement requires that the members are able to get outside the team and for the team to create realistic expectations for participation.

The first Ecollaboration initiatives are expected to diminish the paradoxical pressure and tension in the organization and among the virtual team participants. As the situation evolves and lessons are learned, progress will occur more steadily and rapidly. More initiatives will be planned and deployed with less resistance to change. So while the Ecollaboration sponsor might feel lonely at times, his/her vision, determination, patience, courage, and trust are keys to making the transition.

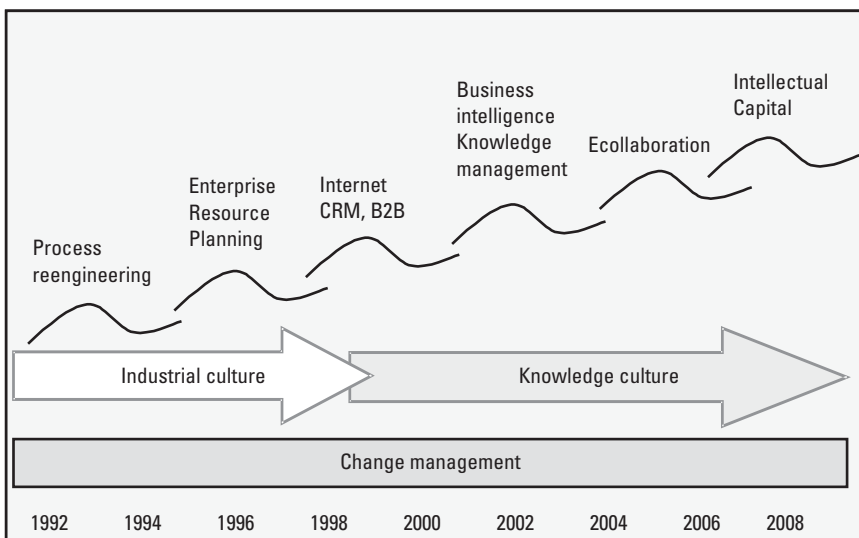
The Ecollaboration sponsor and his/her supporters can also emphasize the importance of getting into collaborative virtual teams using the global demand for intellectual capital measurements. Indeed, there is growing pressure to disclose all intangible assets generated internally or acquired externally into the balance sheet statement. One of the reasons is that financial results are no longer considered enough to reassure the shareholders of the health and strength of an organization. So innovative metrics about employee, customer, and structural assets are becoming popular. The intangible assets that would qualify for disclosure would have the following characteristics:

- They are intended to be used, tracked, and measured;
- They are intended to produce future economic benefits;
- Their costs can be measured reliably.

These are still many questions and unresolved issues for tracking those characteristics, but organizations keep investing efforts to define an approach that could be accepted in the near future. Some organizations have been using approaches like the balanced score card from Kaplan and Norton and the Skandia navigator. These initiatives can only reinforce the importance of Ecollaboration in producing intellectual capital assets. One fundamental notion to emphasize in managing and measuring intellectual capital is that its value resides in its use and not its costs.

Let us illustrate this with an example. A company hires a new graduate into an information technology analyst position with a starting salary of \$40,000. It invests into a new orientation program at the beginning of the employment. It continues the investment through formal and hands-on training. Over his/her professional life with an annual growth estimated to be 4% in income, this IT specialist is expected to earn about \$6 million. Assuming that 50% of this salary is brain value and can be considered an intellectual asset on the basis of the accumulated knowledge of the organization and the industry, it would mean that \$3 million could be recorded on a balance sheet. If we lower this expectation to half of this, it still represents \$1.5 million. This new perspective reinforces the need to take care of business as well as people. It also means implementing systems to accumulate and manage the tacit knowledge; that is what Ecollaboration is about.

In this context, the intellectual capital wave could be next after the Ecollaboration wave, as pictured in Figure 6.1.



**Figure 6.1** Intellectual capital wave.



This trend could be considered the revenge of the industrial workers. Indeed, the knowledge workers of the twenty-first century will be in a better position to negotiate working conditions. They will be able to demand a new social contract, that is, where they are not treated as machines that can be replaced at any time.

The new economic reality will need to address the quality of life, offer greater opportunities for learning, and encourage risk-taking while allowing for mistakes. In turn, collaboration can be improved, knowledge preserved, innovations multiplied, business partners and employee satisfaction increased, and much more. Bottom line, the profitability will be sustained and improved in a win-win perspective for the workers and the organizations.

Finally, the phrase “all for one and one for all” will take on a new meaning in the knowledge era—a more equitable and rewarding one for everyone.

## **Appendix A:**

# **List of Templates Included on the CD**

1. Agenda for components presentation
2. Agenda for virtual team training
3. Approval form
4. Conversions requirements
5. Ecollaboration change communication plan
6. Ecollaboration change participant profile
7. Ecollaboration organizational chart
8. Ecollaboration project charter
9. Ecollaboration project closing report
10. Ecollaboration project issues log
11. Ecollaboration project plan–Excel
12. Ecollaboration project plan–MsProject
13. Ecollaboration project progress report
14. Facilitation tips
15. Individual cultural profile assessment
16. Interfaces requirements
17. Organizational culture and leadership questionnaire
18. Recovery and archiving request form
19. User support form

20. Virtual initiative lessons learned report
21. Virtual initiative critical success factors
22. Virtual initiative evaluation program
23. Virtual initiative organizational context
24. Virtual initiative organizational culture and leadership
25. Virtual initiative performance indicators
26. Virtual initiative reporting process
27. Virtual initiative reward and compensation program
28. Virtual initiative technology requirements and design
29. Virtual team charter sample
30. Virtual team dynamics evaluation questionnaire
31. Virtual team emoticons list
32. Virtual team expectations sample
33. Virtual team facilitation plan
34. Virtual team fix bury and burn
35. Virtual team issues log
36. Virtual team member satisfaction questionnaire
37. Virtual team profile skills and competences
38. Virtual team progress report
39. Virtual team request for members intro
40. Virtual team selection process and procedures
41. Virtual team training program
42. Virtual team values and boundaries
43. Virtual work content
44. Virtual work dimensions
45. Virtual work issues log
46. Virtual work participants roles and responsibilities
47. Virtual work processes workflow and deliverables
48. Virtual work progress report
49. Virtual work roles and responsibilities
50. Virtual work template and tools specification
51. Virtual work templates and tools list

# Appendix B:

## How to Use the CD-ROM

### *Software requirements*

The templates use the following Microsoft 2000 tools/software:

- Excel;
- Word;
- PowerPoint;
- Project.

### *Installing and Working with the CD-ROM*

1. Create a folder name, “Ecollaboration Templates,” on your local disk or network.
2. Save the files of the CD-ROM in the newly created “Ecollaboration Templates” folder.
3. Create a folder for your Ecollaboration project, such as “Ecollaboration Project XYZ.”

### *Using the Templates*

1. Select and open the template file.

2. Save the file in the folder created for the Ecollaboration project under a new name, for example, by adding the project name to the original file name: "{Project name}virtual team charter."
3. Insert the name of the company or project and logo at the right side at the top of the page.
4. Complete the template information.

# List of Acronyms

2-D	two-dimensional
3-D	three-dimensional
AP	Asia Pacific
API	application programming interface
B2B	Business to business
CAD	computer-aided design
CBS	Copenhagen Business School
CRM	customer relationship management
EAI	enterprise architecture integration
EI	emotional intelligence
EII	enterprise infrastructure integration
ERP	enterprise resource planning
GSK	GlaxoSmithKline
HTTP	Hypertext Transfer Protocol
IT	information technology
ITENOF	IT-Enabled New Organizational Forms
LAN	local-area network
LDAP	Lightweight Directory Access Protocol

<b>MBO</b>	management by objectives
<b>ODBC</b>	Open Database Connectivity
<b>RFI</b>	request for information
<b>RFP</b>	request for proposals
<b>RFQ</b>	request for quote
<b>SIEP</b>	Shell International Exploration and Production
<b>USIIA</b>	U.S. Internet Industry Association
<b>W3C</b>	World Wide Web Consortium
<b>WWW</b>	World Wide Web

## Selected Bibliography

- Ahuja, M. K., and K. M. Carley, "Network Structure in Virtual Organizations," June 1998, available at <http://www.ascusc.org/jcmc/vol3/issue4/ahuja.html>, June 11, 2002.
- Allyn, C., "Shifting Gears: Passion Will Drive Business Management at Boeing up the Road on the Journey to High Performance," Santa Barbara, Fielding Institute, 2002.
- Argyris, C., "Double Loop Learning in Organizations," *Harvard Business Review*, Sept.-Oct., 1997.
- Argyris, C., "Teaching Smart People How to Learn," *Harvard Business Review*, May-June, 1991.
- Aurosoorya, "Business Transformation Through the Creation of a Complex Adaptive System," available at <http://www.aurosoorya.com/r&d/Business%20Transformation%20through%20the%20Creation%20of%20a%20Complex%20Adaptive%20System.htm>, Apr. 1, 2004.
- Babin, G., and M. Leblanc, "Les Web Services et leur impact sur le commerce B2B," Oct. 2003, available at <http://www.adviso.ca/fr/recherche.php>, Mar. 9, 2004.
- Bell, M., "Virtual Teaming: Getting it work," Gartner, 2000.
- Bell, M., S. Hayward, and D. Morello Tunick, "The New Synergy: People, Systems, Settings," Gartner, 2000.
- Bion, W. R., *Experiences with Groups*, New York: Basic Books, 1961.
- Brown, B. K., "A Model of Virtual Organization Effectiveness: Optimizing the Outcomes of Interorganizational Project Teams," Columbian School of Arts and Sciences, George Washington University, 1999.
- Campany, N., and P. Grant, "In Over Our Heads: Workplace Strategies for Transformation Growth," Alumni Professional Workshop, Raleigh, NC, Feb. 4, 2001.



Cantu, C., "Virtual Teams," Center for the Study of Work Teams, University of North Texas, 1997, available at <http://www.workteams.unt.edu/reports/Cantu.html>, June 11, 2002.

CEFRIQ, "Work and Collaborative Methods in the Internet Age," available at [http://www.cefrio.qc.ca/english/projets/proj\\_14.cfm](http://www.cefrio.qc.ca/english/projets/proj_14.cfm), June 11, 2002.

Chapman, A., "Tuckman Forming Storming Norming Performing Model," available at <http://www.businessballs.com/tuckmanformingstormingnormingperforming.htm>, Mar. 13, 2004.

Cohen, S. G., and D. E. Bailey, "What Makes Teams Work: Group Effectiveness Research from the Shop Floor to Executive Suite," *Journal of Management*, No. 23, 1997, pp. 239–290.

Connolly, F. W., "Who Are the Electronic Learners? Why Should We Worry About Them?" *Change*, Vol. 26, Mar.-Apr. 1994, pp. 39–41.

De Gooijer, J., "Designing a Knowledge management performance framework," *Journal of Knowledge Management*, Vol. 4, 2000, pp. 303-310.

Documentum, "Ford Motor Company," available at [http://www.documentum.com/customer\\_success/success/ford\\_eroom.htm#6](http://www.documentum.com/customer_success/success/ford_eroom.htm#6), Feb. 22, 2004.

Drucker, P., "The Age of Social Transformation," *Atlantic Monthly*, Aug. 24, 1998, available at <http://www3.theatlantic.com/atlantic/election/connection/ecbig/soc-trans.htm>, Sept. 13, 2001.

Duarte, D., and N. Snyder, "Mastering Virtual Teams: Strategies, Tools, and Techniques That Succeed," San Francisco: Jossey-Bass, 2001.

Eggert, M., "When the Going Gets Tough, the Tough Get Trusting. Improving Collaboration Among Knowledge Workers," Santa Barbara, Fielding Institute, 2002.

Ferris State University. "Retention Rates of Information Based on Learning and Teaching Approaches", available at [http://www.ferris.edu/HTMLS/academics/center/Teaching\\_and\\_Learning\\_Tips/Learning%20How%20to%20Skills%20and%20Strategies/RetentionRates.htm](http://www.ferris.edu/HTMLS/academics/center/Teaching_and_Learning_Tips/Learning%20How%20to%20Skills%20and%20Strategies/RetentionRates.htm), August, 2004.

Fisher, K., and M. Fisher, *The Distance Manager: A Hands-on Guide to Managing Off-Site Employees and Virtual Teams*, New York: McGraw-Hill, 2000.

Flower, J., "The Power of Chaos Excerpts from a Conversation with Meg Wheatley," available at <http://www.well.com/user/bbear/wheatley.html>, Sept. 11, 2001.

Flypaper. "Case Study—Compaq Application—Sales Collaboration," available at <http://www.flypaper.com/exec.asp?Page=0.62&display=3507/1077464921974228>, Feb. 22, 2004.

Full Circle Associates, "Facilitator Qualities and Skills," available at <http://www.fullcircle.com/community/facilitatorqualities.htm>, Mar. 5, 2004.

Full Circle Associates, "Telephone Conference Call Tips," available at <http://www.fullcirc.com/community/telephonefacilitation.htm>, Mar. 5, 2004.

- Furlong, G. "Knowledge Management and the Competitive Edge," University of Greenwich Business School, available at <http://www.gre.ac.uk/schools/business/Dissertation/index.html>, Jan. 3, 2004.
- Galvin, J. E., "The Effect of Trust, Experience, and Communication Media Use on an Individual's Cooperation with Virtual Teams: A Dispositional and Situational View," Florida State University, College of Education, 2000.
- Gersick, C. J. K., "Time and transition in work teams: Towards a new model of group development", *Academy of Management Journal*, Vol. 31, 1988, pp. 9–41.
- Gilbert, M. R., F. Caldwell, and S. Hayward, "The Smart Enterprise Suite Is Coming: Do We Need It?" Gartner, 2002.
- Goleman, D., *Emotional Intelligence*, London: Bloomsbury, 1996.
- Gorelick, C. K., "Toward an Understanding of Organizational Learning and Collaborative Technology: A Case of Structuration and Sensemaking in a Virtual Project Team," Graduate School of Education and Human Development, George Washington University, 2000.
- Goetz, K., *Community Building: Renewing Spirit and Learning in Business*, San Francisco: New Leaders Press, 1995.
- Gristock, J., "Communications and Organizational Virtuality," *Electronic Journal of Organization Virtualness*, Vol. 1, No. 5, 1997, available at <http://www.virtual-organization.net>, June 11, 2002.
- Groove Networks, "GlaxoSmithKline," available at [http://www.groove.net/default.cfm?pagename=CaseStudy\\_GSK](http://www.groove.net/default.cfm?pagename=CaseStudy_GSK), Feb. 19, 2004.
- Groove Networks. "Lowe," available at [http://www.groove.net/default.cfm?pagename=CaseStudy\\_lowe](http://www.groove.net/default.cfm?pagename=CaseStudy_lowe), Feb. 21, 2004.
- Gundry, J., "Trust in Virtual Teams. Working by Wire," 2000, available at <http://www.knowab.co.uk/wbtrust.html>, June 11, 2002.
- Hackman, J. R., *The Design of Work Teams. Handbook of Organizational Behavior*, Englewood Cliffs, NJ: J. W. Lorsch edition, Prentice Hall, 1987.
- Harris, K., and F. Caldwell, "Knowledge Management Scenario: The Enterprise and Beyond," Gartner, 2000.
- Hugli, W. G., "Teams, Training and Trust in the Virtual Environment," University of West Virginia, 2000.
- IBM, "Canam Manac Group Builds Quick ROI and Competitive Advantage," available at <http://www.lotus.com/news/news.nsf/a47bf6d43eeaa55e85256659005cfe50/083db4a2b5c7143585256c00005cfc52?OpenDocument>, Feb. 22, 2004.
- IBM, "Sharp Microelectronics Puts a New Spin on Marketing," available at <http://www-306.ibm.com/software/swnews/swnews.nsf/n/jmae5msp3n?OpenDocument&Site=default>, Feb. 22, 2004.
- Isaacs, W., *Dialogue and the Art of Thinking Together: A Pioneering Approach to Communicating in Business and in Life*, New York: Currency, 1999.

- Jarvenpaa, S. L., and D. E. Leidner, "Communication and Trust in Global Virtual Teams," 1998, available at <http://www.ascusc.org/jcmc/vol3/issue4/jarvenpaa.html>, June 11, 2002.
- Kaplan, R. S., and D. P. Norton, "The balance scorecard—Measures that drive performance," *Harvard Business Review*, 1992, pp. 71–79.
- Kantor, D., and W. Lehr, "Inside the family," San Francisco: Jossey Bass Publishers, 1975.
- Kegan, R., "*The Evolving Self*", Cambridge: Harvard University Press, 1982, p. 142.
- Kegan, R., "*In Over Our Heads: The Mental Demands of Modern Life*," Cambridge: Harvard University Press, 1994.
- Kim, A., "*Community Building on the Web*," Berkeley, CA: Peachpit Press, 2000.
- Kimball, L., "Text of Speech for Team Strategies Conference," Toronto: Federated Press, 1997.
- Kimble, C., F. Li, and A. Barlow, "Effective Virtual Teams Through Communities of Practice," *Management Science, Theory, Methods and Practices*, Strathclyde Business School, 2000.
- King, W. R., "Strategies for Creating a Learning Organization," *Information Systems Management*, Vol. 18, No. 1, 2001, pp. 12–20.
- Kivowitz, B., "T3--The Central Paradigm of Virtual Teaming," available at [http://www.jacobson.com/tgj.nsf/Art/DocBK\\_T3/\\$FILE/bk\\_t3.htm](http://www.jacobson.com/tgj.nsf/Art/DocBK_T3/$FILE/bk_t3.htm), June 11, 2002.
- Kline, T. J. B., M. MacLeod, and J. L. McGrath, "Team Effectiveness: Contributors and Hindrances," *Human Systems Management*, Vol. 15, No. 3, 1997, pp. 183–186.
- Kollock, P., and M. Smith, "Managing the Virtual Commons: Cooperation and Conflict in Computer Communities. Computer-Mediated Communication," in *Linguistic, Social, and Cross-Cultural Perspectives*, Amsterdam: John Benjamins, 1996, pp. 109–128, available at <http://www.sscnet.ucla.edu/soc/faculty/kollock/papers/vcommons.htm>, June 11, 2002.
- Leimeister, J. M., J. Weigle, and H. Krcmar, "Efficiency of Virtual Organizations. The Case of AGI," *Electronic Journal of Organization Virtualness*, Vol. 3, No. 3, 2001.
- Leonard, D., and S. Straus, "Putting Your Company's Whole Brain to Work," *Harvard Business Review*, July-Aug. 1997.
- Liebowitz, J., and C. Y. Suen, "Developing Knowledge Management Metrics for Measuring Intellectual Capital," *Journal of Intellectual Capital*, Vol. 1, No. 1, 2000, pp. 54–67.
- Luft, J., "*Group Processes. An Introduction to Group Dynamics*," San Francisco: Mayfield Publishing Company, 1984.
- Lurey, J. S., "A Study of Best Practices in Designing and Supporting Effective Virtual Teams," California School of Professional Psychology, Los Angeles, 1998.

- Majchrzak, A. and all, "Development and adaptation of inter-organizational virtual team norms using collaborative technology," 1999, available at <http://www.cogtech.org/CT99/rice1.htm>, June 11, 2002.
- Malhotra, Y., "Why Knowledge Management Systems Fail? Enablers and Constraints of Knowledge Management in Human Enterprises," available at <http://www.brint.org/WhyKMSFail.htm>, Feb. 20, 2004.
- Marshall, E. M., "The Collaborative Workplace," *Management Review*, Vol. 84, June 1995, pp. 13–17.
- Mayer, L., "Relevant Literature," available at [http://www.google.ca/search?q=cache:s1bb92DI0WYJ:www.loyno.edu/~dmyers/S04\\_classes/S04\\_CMMN702/temp\\_examples/www.stedwards.edu\\_science\\_last\\_Literature\\_Review.rtf+robbins+virtual+dynamics&hl=en&ie=UTF-8](http://www.google.ca/search?q=cache:s1bb92DI0WYJ:www.loyno.edu/~dmyers/S04_classes/S04_CMMN702/temp_examples/www.stedwards.edu_science_last_Literature_Review.rtf+robbins+virtual+dynamics&hl=en&ie=UTF-8), March 15, 2004.
- Miller M., et al., "A. Measuring and Reporting Intellectual Capital from a Diverse Canadian Industry Perspective: Experiences, Issues and Prospects," June 9–11, 1999, available at <http://www.oecd.org/dataoecd/16/18/1947855.pdf>, Feb. 5, 2004.
- Montagna, J. A., "The Industrial Revolution," available at <http://www.yale.edu/ynhti/curriculum/units/1981/2/81.02.06.x.html>, June 11, 2002.
- Nonaka, I., and H. Takeuchi, *The Knowledge Creating Company: How Japanese Companies Create the Dynasties of Innovation*, New York: Oxford University Press, 1995.
- O'Hara-Devereaux, M., and R. Johansen, *Globalwork: Bridging Distance, Culture and Time*, San Francisco: Jossey-Bass, 1994.
- O'Sullivan, E., "Integral Education: A Vision of Transformative Learning in a Planetary Context," 2001, available at <http://fcis.oise.utoronto.ca/~tlcentre/integraleducation.htm>, June 18, 2001.
- Palloff, R., and K. Pratt, *Building Learning Communities in Cyberspace*, San Francisco: Jossey-Bass, 1999.
- Palloff, R., and K. Pratt, *Lessons from the Cyberspace Classroom*, San Francisco: Jossey-Bass, 2001.
- Pearson, T. A., "Measurements and the Knowledge Revolution," American Society for Quality, available at <http://www.google.ca/search?q=cache:TWG148K5GFAC:www.measurementquality.org/papers/Pearson.doc+knowledge+revolution&hl=en&ie=UTF8>, June 11, 2002.
- Piccoli, G., "Virtual Teams: An Investigation of the Determinants of Team Effectiveness and the Contribution of Managerial Behavior Control," Louisiana State University and Agricultural & Mechanical College, 2000.
- Preece, J., *Online Communities*, New York: John Wiley & Sons, 2000.
- Rees, S., "The Feudal System," available at [http://themiddleages.tripod.com/feudal\\_system.htm](http://themiddleages.tripod.com/feudal_system.htm), June 11, 2002.

Riff, R., "Collaboration at Ford," available at [http://www.e-designcenter.info/p\\_events/papers/dec\\_pdfs/Collaboration%20at%20Ford%20-%20Richard%20Riff%20-%20KP%20-%20Dec%202002.pdf](http://www.e-designcenter.info/p_events/papers/dec_pdfs/Collaboration%20at%20Ford%20-%20Richard%20Riff%20-%20KP%20-%20Dec%202002.pdf), Feb. 22, 2004.

Robbins, H., and M. Finley, *The New Why Teams Don't Work*, San Francisco: Berrett-Koehler Publishers, 2000.

Robbins, S. P., "Organizational Behavior," NJ: Prentice Hall, 1993.

Robinson, J. H., "The Decree Abolishing the Feudal System," 1789, available at <http://www.arts.adelaide.edu.au/personal/DHart/ETexts/Serfdom/DecreeAbolishing-Feudalism.html>, July 10, 2002.

Rosenhead, J., "Complexity Theory and Management Practice," available at <http://www.human-nature.com/science-as-culture/rosenhead.html>, Nov. 11, 2002.

Rosser, B., "Mapping Knowledge for Business Value," Gartner, 2000.

Rylanders, A., K. Jacobsen, and G. Roos, "Towards Improved Disclosure on Intellectual Capital," *International Journal of Technology Management*, Vol. 20, No. 5/6/7/8, 2000, pp. 2–31, available at <http://www.oecd.org/dataoecd/16/18/1947855.pdf>, Feb. 12, 2004.

Sahay, S., S. Sarker, and F. Lau, "Understanding Virtual Team Development Process: An Empirical Analysis and a Theoretical Model," 2000, available at <http://www.ifi.uio.no/in364/docs/MISQVTfinalsubmission.htm>, June 11, 2002.

Sanborn, S., "Collaboration to the Rescue," *Infoworld*, available at <http://archive.infoworld.com/articles/fe/xml/01/12/24/011224felockheed.xml>, Feb. 22, 2004.

Schein, E. H., *Organizational Culture and Leadership*, San Francisco: Jossey-Bass Publishers, 1985.

Schein, E. H., "Three Cultures of Management: The Key to Organization Learning," *Sloan Management Review*, Vol. 38, 1996, pp. 9–20.

Schultz, B., "Best of the Rest: Honorable Mentions by Network World," available at <http://www.nwfusion.com/power/2003/1222userexhonor.html>, Feb. 22, 2004.

Senge, P., *The Fifth Discipline: The Art and Practice of The Learning Organization*, New York: Currency Doubleday, 1990.

Sherman, L., "Working Better Together. New Tools Make the Business Case for Collaborative Platforms," *Knowledge Management Magazine*, October 2001, available at <http://www.destinationkm.com/articles/default.asp?ArticleID=358>, Feb. 22, 2004.

Sitescape, "Fielding Institute," available at [http://www.sitescape.com/next/test\\_fielding.html](http://www.sitescape.com/next/test_fielding.html), Feb. 19, 2004.

SiteScape, "Shell International Exploration & Production: Huge Savings Through Knowledge-Sharing," available at [http://www.sitescape.com/next/test\\_shell.html](http://www.sitescape.com/next/test_shell.html), Feb. 21, 2004.

Sitescape, "Sentara Healthcare Stays Fit with SiteScape Collaboration Software," available at [http://www.sitescape.com/next/test\\_sentara.html](http://www.sitescape.com/next/test_sentara.html), Feb. 21, 2004.

- Sitescape, "University of Copenhagen," available at [http://www.sitescape.com/next/test\\_cbs.html](http://www.sitescape.com/next/test_cbs.html), Feb. 19, 2004.
- Slobodnik, A., and K. Wile, "Taking the Teeth out of Team Traps," available at <http://www.optionsforchange.com/teamtrapsarticle.pdf>, Mar. 18, 2004.
- Snow, M. P., "Charting Presence in Virtual Environments and Its Effects on Performance," Virginia Polytechnic Institute and State University, 1996.
- Strassmann, P. A., "Measuring and Managing Knowledge Capital," Knowledge Executive Report, 1999, available at <http://www.strassmann.com/pubs/measuring-kc/>, Nov. 8, 2002.
- Stratton, J., "The Generation Gap," available at <http://www.hoboes.com/html/Net-Life/Children/Gap.html>, Mar. 17, 2004.
- Sudweeks, F., and M. Allbritton, "Working Together Apart: Communication and Collaboration in a Networked Group," *Proceedings of the 7th Australasian Conference of Information Systems (ACIS96)*, Vol. 2, Department of Computer Science, University of Tasmania, pp. 701–712, available at <http://www.it.murdoch.edu.au/~sudweeks/papers/acis96.html>, June 11, 2002.
- Thinkquest Organization, "The Feudal Structure of the Medieval World," available at <http://library.thinkquest.org/10949/fief/lofeudal.html?tqskip1=1&tqtime=0603>, June 11, 2002.
- Thompson, J. A., "Leading Virtual Teams," available at <http://www.qualitydigest.com/sept00/html/teams.html>, Mar. 11, 2003.
- Trigaux, R., "Generation Y Needs New Business Model," available at [http://seattletpi.nwsourc.com/business/152415\\_tunein15.html](http://seattletpi.nwsourc.com/business/152415_tunein15.html), Mar. 17, 2004.
- Trompenaars, A., and C. Hampden-Turner, *Riding the Waves of Culture: Understanding Cultural Diversity in Global Business*, New York: McGraw Hill, 1998.
- Tuckman, B. W., "Developmental Sequence in Small Groups," *Psychological Bulletin*, No. 63, 1965, pp. 384–389.
- Tuckman, B. W., and M. A. Jensen, "Stages in Small Group Development Revisited," *Group and Organisation Studies*, Vol. 4, No. 2, 1997, pp. 419–427.
- Turkle, S., *Life on the Screen*, New York: Simon and Schuster, 1995.
- Ulrich, D., J. Zenger, and N. Smallwood, *Results-Based Leadership*, Harvard Business School Press, 1999.
- Van Deventer, M. J., "Introducing Intellectual Capital Management in an Information Support Services Environment," University of Pretoria, Nov. 2002, available at <http://upetd.up.ac.za/thesis/available/etd-08012003-162454/unrestricted/00front.pdf>, Feb. 12, 2004.
- Vignette, "Barclays Banks on Vignette," available at <http://www.vignette.com/content-management/0,2097,1-1-30-72-407-3476,00.html>, Feb. 19, 2004.

Wang, P. R., "Media Choice in Virtual Teams. Linking Task Requirement and Communication Technology to Enhance Task Effectiveness," Florida State University, College of Education, 2001.

Welch, K., "Teaching and Learning Styles," available at <http://www.utah.edu/tare-sources/Styles.html>, Mar. 16, 2004

Wheatley, M. J., "*Leadership and the New Science. Discovering Order in a Chaotic World*," San Francisco: Berrett-Koehler, 1999.

Wiesenfeld, B. M., S. Raghuram, and R. Garud, "Communication Patterns as Determinants of Organizational Identification in a Virtual Organization," 1998, available at <http://www.ascusc.org/jcmc/vol3/issue4/wiesenfeld.html>, June 11, 2002.

Yager, E. S., "The Role of Information Technology Support Mechanisms in Coordination Management for Virtual Teams," University of North Texas, 1998.

## About the Author

Francine Gignac is a baby boomer born and raised in Montreal, Quebec, Canada. She studied in French until she enrolled in a bachelor of commerce degree program at McGill University. Upon her graduation in 1981, she decided to continue her education and attained a master of business administration degree in 1984, concentrating in information systems and statistics. While working toward her degrees, she did substitute teaching for the Montreal School Board and worked with learning-disabled children. She was a precursor in the use of computers in the classroom.

In 1985, she joined the information technology group of Nortel Networks, where she held several positions, from systems analyst and architect, to functional team leader, and finally to project manager. She left Nortel to become a consultant for Raymond Chabot Grant Thornton.

In 1992, Ms. Gignac worked for Bombardier Aerospace, where she was responsible for the Information Technology Architecture and Development group. In 1994, she managed the implementation of the Oracle ERP solution for Sico, a paint manufacturer.

From 1996 to 1998, she was principal consultant for IBM and then director for the Fujitsu-DMR consulting group, where she was actively involved in implementing ERP and SAP practices.

In 1998, she initiated her own consulting practice, under the name of Actigo Inc., with a focus on enterprise integration, project and change management. In 2001, she returned to the school bench toward a master of arts in organizational management in the virtual program of Fielding Institute, based in Santa Barbara, California. She graduated in 2002 with a specialization in



virtual team design and pursued her research in collaborative technologies and best practices in the field.

She dreamed of writing a fiction novel since she was a youngster, but settled on the topic of virtual teams and collaborative technologies in the twenty-first century for this book, a subject that might be considered fictitious by many people. She is now working closely with a number of leading collaborative firms and looks forward to the expansion of the Ecollaboration wave.

# Index

- action learning, *ix*  
analysis and design, *xvi*, 3, 36, 60, 105–111, 123, 132, 142, 152, 185  
architecture, *xii*, 3, 4, 6, 41, 42, 44, 45, 47, 51–53, 55, 56, 65, 99, 105, 106, 118, 174, 197  
Argyris, *vii*, *viii*, 77  
audio conferencing, *x*, 6, 41, 88, 128, 152, 209  
  
balanced scorecard, 61, 92, 93  
behavior, *viii*, *ix*, *x*, 62, 68, 70, 77–83, 86, 89, 163, 168, 181, 184, 188  
Bion, 67  
Brown, 90  
business case, *xiv*, *xii*, 30, 50, 53, 92, 93, 97, 113, 187  
business intelligence, *xii*, 2, 5, 6, 47, 56, 85  
business to business—B2B, *xii*, 2, 5–7, 43, 52, 53, 56, 61, 180, 191, 197  
  
capital, *xii*, 2, 5, 6, 52, 53, 55, 56, 59, 61, 85, 180, 191, 197  
change management, *xii–xiv*, 2–6, 20, 50, 51, 53, 61, 64, 67, 85, 97, 99, 101–110, 114–117, 132, 179, 181–183, 187, 188, 191  
charter, 83, 86–88, 100, 102, 107, 110–117, 119, 121, 129–132, 140–143, 150, 159, 160, 164, 167, 168, 171, 193, 194  
  
chat, 25, 45, 46, 54, 83, 125, 152, 155  
client server, *xii*, 3, 4, 41  
Cohen, 91  
collaboration, *xii*, *xiii*, *xv*, 1, 6–8, 11, 13, 15, 16, 17–21, 23, 26, 28, 29, 33, 43, 46, 48, 50, 53, 55, 61, 62, 64, 66, 71, 73, 75, 79, 84–87, 97, 101, 102, 105, 109, 150, 151, 157, 160, 161, 163, 168, 179, 181–184, 188, 189, 192  
conversion, 62–64, 67, 72, 74, 133, 181, 182  
cooperation, *xii*, 51, 52, 55, 73, 99, 106, 112, 114, 118, 153, 154, 156, 157, 174, 193  
creativity, 28, 30, 69, 73, 74, 77, 78, 87, 150, 164, 189, 190  
culture, *xiv*, 1, 2, 7–11, 14, 18–21, 23, 50, 52, 53, 56, 61, 62, 64, 65, 71, 75, 79, 81–85, 87, 101–103, 105, 108, 110, 111, 114, 118, 123–127, 134, 140, 142, 143–148, 150, 151, 158, 159, 162, 179, 180, 183, 191, 193, 194  
customer relationship management—CRM, *xii*, 2, 5, 6, 52, 53, 56, 59, 61, 85, 180, 191, 197  
  
database, 41, 42, 45, 47, 48, 94, 113, 153, 154, 174, 185, 189, 198  
Duarte and Snyder, 22, 70, 72, 82, 91

- dynamics, *x*, *xiii*, 15, 67, 69, 70–71, 85, 91, 97, 139, 141, 142, 149, 162–165, 181, 182, 194
- Ecollaboration, *x*, *xii–xv*, 1, 2, 6, 7, 11, 20, 21, 48, 61, 63, 98, 181–185, 188–193
- ecosystem, *xiii*, *xiv*, 61, 64, 65, 67, 72, 74, 133, 139, 162, 179, 182, 138, 209
- effectiveness, 67, 90, 91
- efficiency, 27, 67, 90, 91
- emoticons, 87, 88, 140, 141, 165, 194
- emotional intelligence—EI, 73, 137, 197
- enterprise resource planning – ERP, *xii*, *xiii*, 4–6, 15, 49, 50, 52, 53, 55, 56, 58, 59, 61, 85, 128, 180, 189, 197
- evaluation, *xiv*, 30, 36, 51, 52, 54, 60, 64–67, 87, 90, 94, 99, 102–105, 107–110, 113, 118, 122, 123, 141, 145, 147, 149, 150, 151, 158, 159, 176, 178, 185, 209
- facilitation, *xiv*, 19, 27, 36, 63, 65, 66, 84, 86, 89, 90, 97, 99, 107–111, 113, 118, 127, 139, 140–142, 149, 157, 159, 162–167, 169, 171, 176, 177, 179, 183, 184, 193, 194
- forum, 6, 21, 25–29, 34, 45, 47, 54, 84, 85, 88, 90, 128, 152, 155, 157, 160, 161, 165 167–173, 188
- four player system, 89
- Gersick, 69, 70, 72
- Glasser, 76
- Hackman, 91
- implementation, *x*, *xiii*, *xiv*, 5, 6, 15, 17, 25, 50, 51–54, 60, 99, 103–106, 109, 110, 112, 118, 119, 154, 156, 157, 160, 161, 179, 180, 181, 183, 185, 187, 188, 207
- integration, *xiii*, 4, 6, 30, 46, 50–53, 55–60, 97, 99, 105, 114, 144, 153, 197, 207
- intellectual quotient—IQ, 73, 75
- interface, *xiii*, 3, 44, 45, 51, 55, 59, 73, 75, 99, 106, 112–114, 118, 129, 153, 154, 156, 157, 174, 175, 193, 197
- Internet, *ix*, 2, 5, 6, 9, 25, 41, 42, 43, 45, 83, 84, 191, 198
- ITENOF framework (IT–Enabled New Organizational Forms), 90, 198
- Kantor, 89
- Kaplan, 92, 191
- Kegan, 90, 198
- knowledge management, *viii*, *xii*, *xv*, 5, 11, 15–17, 19–21, 30, 34, 56, 61, 93, 97, 144, 146
- leadership, *ix*, *xiv*, 14, 19, 23, 25, 27, 64, 65, 68, 73, 86, 94, 98, 101–103, 105, 107, 108–110, 111, 114, 118, 123–127, 142–148, 150, 151, 158, 159, 168, 179, 180–182, 193, 194
- Leimeister, 90
- Lightweight Directory Access protocol—LDAP, 45, 198
- Lotus Notes, *viii*
- maturity, *xiii*, 16, 17, 52, 53
- methodology, *xii–xiv*, 22, 30, 97, 99, 101, 109, 112, 114, 115, 132, 179, 183, 187, 188
- Microsoft, *viii*, 59, 112, 195
- motivation, 17, 20, 23, 33, 34, 73, 74, 84, 86, 94, 148
- Nonaka and Takeuchi, 76
- Open Database Connectivity –ODBC , 45, 47, 55, 198
- organizational structure, *xiv*, 8, 16, 39, 56, 70, 101, 124, 144
- paradigm, *xiii*, 20, 61, 63–65, 97
- partner capital approach, *xiii*, 48, 49, 52, 55
- performance, *vii*, *x*, *xiii*, 13, 20, 21, 34, 42, 61, 63–67, 70, 80, 87, 89, 90–94, 98, 104, 111, 113, 118, 119, 136, 145–151, 153, 154, 158, 159, 163, 168, 171, 173, 177, 185, 194
- portal, *xiii*, 6, 41, 43, 44, 51, 54, 59, 114, 153, 187
- process reengineering, *xii*, 3, 4, 52
- reward and compensation, 64, 65, 67, 70, 87, 98, 105, 111, 118, 145–147, 148, 150, 151, 158, 159, 198
- Robbins, 71–73
- Sahay, 71

- Schein, 69, 81
- Senge, 77
- software, *xiii–xv*, 2–4, 6, 9, 29, 30, 35–37, 41–45, 47–54, 56, 59, 64, 83, 93, 99, 103–105, 109–114, 118, 119, 128–130, 139, 152–161, 172–175, 179, 184, 185, 188, 195
- teamwork, *vii, xii*, 6, 8, 9, 13–15, 19, 21, 61, 62, 81, 181
- teleconferencing, *viii*, 55, 60, 88, 179
- tips, *xiv*, 6, 84, 87, 88, 165, 193
- transformational learning, 77
- traps, *xiv*, 85, 89, 139, 162
- Trompenaars, 79, 81
- trust, *ix, x, xiii*, 8, 9, 20, 21, 24, 61–67, 72, 74, 77, 81, 84–87, 133, 163, 168, 181–183, 188–190
- Tuckman, 68, 71
- Ueshiba, *ix*
- virtual star team model, *xiii*, 67, 72, 74, 97
- Wang, 91
- work content, 111, 123–125, 194
- work dimensions, 65, 66, 111, 123–125, 194
- workspace, 25, 27–29, 45–47, 152, 155