Collaborative Business Process Engineering and Global Organizations

Frameworks for Service Integration

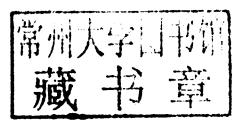Bhuvan Unhelkar, Abbass Ghanbary, & Houman Younessi

Collaborative Business Process Engineering and Global Organizations:
Frameworks for Service Integration

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BUSINESS SCIENCE
Reference

Gaurav and Vaibhav
>   —*Bhuvan Unhelkar*

Naghmeh and Avessta
>   —*Abbass Ghanbary*

Sheyda and Daniel
>   —*Houman Younessi*

Foreword

This book, *Collaborative Business Process Engineering and Global Organizations: Frameworks for Service Integration,* provides a model for collaborative business that not only has a well researched foundation but has also been deployed and tested by the authors in practice.

In the last 10 years, the Internet and Web, supported by several advances in information and communication technology (ICT), has transformed irrevocably the way we work, the way we collaborate with individuals and partner organizations and the way we communicate with each other. As a result there is dramatic change in business landscape. The Web enables businesses to extend and expand their operational boundariesand technological boundaries, as well as helps to achieve better synergy among the triad of a business – people, process and technology – both internal and external to an enterprise.

The Web is no longer just a one-way communication and information dissemination medium, that many businesses have exploited quite effectively. Web is now also global platform for fielding applications, for interaction, coordination and collaboration, and for socializing. Advances in the Web, which are now traced into stages as Web 1.0, Web 2.0 and Web 3.0, are heralding a new era, a paradigm shift, in business – which is popularly known as Business 2.0, Collaboration 2.0, CRM 2.0, BI 2.0, and Innovation 2.0.

In response to call for chapters for the *Handbook of Research on Web 2.0, 3.0 and X.0: Technologies, Business, and Social Applications* (IGI Global, 2009) that I am

currently editing, I have had contributions both from researchers and practitioners on a wide range topics, from business-IT/Web strategies, and Web-enabled business processes, to novel applications of Web in areas such as cross-organizational collaboration, synergizing an enterprise, and the environment. This is just one evidence that alerts (and warns) everyone of us that the Web is no longer a mere tool for communication; it is a global platform as well as a business mechanism that supports a number of different business activities, processes and functions going *beyond* the traditional, often predefined, business-to-consumer (B2C) and business-to-business (B2B) transactions.

A large number of senior executives believe now businesses - small and large, local and global - need to seriously consider and innovatively and effectively employ ICT and Web as strategic business tools to sustain and excel in the highly competitive world we live in now. Though the opportunities for exploiting these new strategic business tools are many and varied, one area that is gaining greater interest is one-to-many and many-to-many dynamic, real-time business-to-business coordination and collaboration. The challenges of conducting and realizing full potential of many-to-many collaborative businesses are, however, huge, and you need to indentify, understand, and address those challenges effectively, and embark on a new journey in this not well-known trail. This book is a helpful, timely resource to help you and show you directions when you are at a cross-road in this endeavor.

Businesses no longer operate in isolation – they need to collaborate with other businesses in the same as well other industry sectors; they need to transition into what we might call collaborative businesses. Though already there are some businesses that falls under this category of collaborative businesses, many of them have met with problems and barriers in the conception of, or transition to, their new collaborative business model, and their journey has not been smooth, either.

The authors of this book - Bhuvan Unhelkar, Abbass Ghanbary and Houman Younessi – who have multidisciplinary expertise and complementary skills and real-world experience have come together to present through this book a robust research-based approach to transitioning traditional businesses to collaborative businesses. This book points you right directions and appropriate methodologies for transitioning into collaborative businesses, and encourages you to consider the various significant aspects of collaborative business processes and strategies.

Beginning with a discussion on foundations of collaborative business and an overview of technologies that support business collaboration, the authors take you through several components and constituents of collaborative business - architectures, organizational structures and quality assurance, to name a few, all encapsulated in what the authors call "Collaborative Business Process Engineering (CBPE). They also discuss often neglected but important socio-cultural aspects and change management that are keys to success of such collaborations. They put together

several practical aspects of CBPE in a Collaborative Web Based System (CWBS), and demonstrated applications of CWBS through two case studies.

You the readers – whether you are a business executive, a business/IT consultant, a developer of business process engineering tools, a researcher, an academic, or someone interested in collaborative business – will surely find this book worth reading and an invaluable resource in your practical work. I wish this book my very best.

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San Murugesan *is a professor at Multimedia University, Malaysia; an Adjunct Professor in the School of Computing and Mathematics at the University of Western Sydney, Australia; and an independent business, IT, and education consultant. Dr. Murugesan's expertise and interests include green computing, cloud computing, Web 2.0 and 3.0, mobile computing, Web engineering, information retrieval, e-business, innovation, IT project management, and offshoring. In 2006, the Council of the Australian Computer Society elected Dr. Murugesan to the grade of Fellow of the Australian Computer Society (ACS), an honor that is awarded to those who have made a distinguished contribution to the field of information and communications technology. Dr. Murugesan is a distinguished visitor of the IEEE Computer Society and a sought-after speaker. He is the editor of the forthcoming new "Handbook of Research on Web 2.0, 3.0 and X.0: Technologies, Business, and Social Applications" (IGI Global, 2009). He was General Chair of the 5th International Conference on Web Engineering, and he has served as cochair and organizer of other international workshops and conferences. He serves as Associate Editor of the "Journal of Web Engineering", "International Journal of E-Business Research", and "International Journal of Health Information Systems and Informatics." Dr. Murugesan served in various senior positions at Southern Cross University and the University of Western Sydney, both in Australia, and the Indian Space Research Organization, Bangalore, India. He also served as Senior Research Fellow of the US National Research Council at the NASA Ames Research Center. He can be reached at san1@internode.net.*

Preface

This book is about achieving organizational synergy in an era of business which is rapidly moving towards electronic collaboration. Times are gone when businesses had well defined boundaries and where they only competed against each other. Modern-day businesses are highly complex, with fuzzy boundaries and where collaboration is as significant as competition, if not more. The core driver of this collaborative business era is electronic and mobile communication. In this book we discuss technologies of collaboration, their challenges and risks, and also how they offer opportunities within and amongst collaborative businesses. Such discussion is based on research and practical experiences of the authors in enabling collaborative business environments within the information and communication technology (ICT) domain. The model of collaborative business presented in this book aims to bring together the business processes of multiple organizations in order to deliver unified service to a customer while transcending time, location, and technological boundaries. Thus, this book synergizes multiple organizations and their business processes to provide a unified view of collaborative business from a customer's viewpoint. The impact of such collaboration on people (developer, user and customer), organizational structure and behavior, process of globalization, socio-cultural and change management are also investigated. The Internet has evolved through the increasingly complex areas of handling information, transaction, operation and collaboration. Acollaboration is initiated when two known organizations (a.k.a. business-to-business [B2B]) start transacting in the market. These collaborations

expand and thrive using the communications technologies and systems that are based on services oriented architecture (SOA). The collaborative issues discussed in this book are of tremendous significance when they are purely electronic and are undertaken in a dynamic manner through an "open market" interaction on the Internet. These collaborations involve even further challenges when organizations in need of collaboration are not known to each other but are only interacting through electronic transactions–leading to the concept of "dynamic" collaboration where physical proximity and personal knowledge of each other play lesser and lesser role in completing collaborative transactions.

The authors strongly believe that this book has significant new material to offer relative this new order in global collaborative business environment. Although the topic of collaboration has a rich literature base, such base is primarily aimed at discussing collaboration across two or more businesses that are known to each other and have financial, legal, social and even more often than not geographical commonality and proximity. This book provides clear definition of the next phase of this collaborative evolution of the Internet. The authors hope that the readers find this book a valuable and practical book in order to increase their knowledge and understanding of collaborative business.

Scope

The scope of this book is to discover the full potential and functionality of a service based approach (using the technologies of Web services/SOA) in order to provide a framework that will enable collaboration amongst multiple organizations. Furthermore, these collaborations are meant to be dynamic–that is, organizations get together to collaborate electronically for a specific purpose or business goal and, after that goal is consummated, they disperse. These organizations may not be necessarily known to each other. Furthermore, their geographical location would be of little interest in consuming transactions, and they would have diverse technical environments.

Later in the book, we propose the *collaborative business process engineering (CBPE)* model of business collaboration which incorporates an understanding of business processes that enable these multiple organizations to collaborate with each other electronically. Through the CBPE model discussed in this book, businesses can collaborate by discovering each other for the products and services that they offer across the Internet and consume each others' offerings using Web services. This book can thus be described as a practical output of a detailed investigation into how Web services (WS) influence the business processes of a cluster or group of organizations. There is a need for the study of such processes that appear unified to the customer (end-user) but are in fact in the background, comprising numerous

organizations, their individual business processes and their diverse underlying technologies. Finally, this book also discusses the socio-cultural aspects of adoption of collaborative business as we believe that with the application of the aforementioned emerging technologies in businesses, the social aspects of the ensuing collaborations will become important – mainly because these social impacts are likely to be unique from previous understandings of social interactions in business.

Justification

The justification for this book is that it draws the attention of business to the possibilities afforded them by engaging in the new collaborative business environment that is growing due to electronic and mobile technologies. This book encourages business strategies that enable multiple organizations to get together rapidly and independent of their locations through Web portals and execute electronic business transactions. These Web portals enable all involved parties to interact with each other rapidly and globally. Thus, the justification for this work is as follows:

- Preparing the organization for the new collaborative environment in the business world.
- Preparing the organization to use ICT as a collaborative business strategy as against a competitive environment.
- Preparing the organization to change and upgrade their organizational infrastructure that would facilitate dynamic collaboration.
- Preparing the organization to have a forward-looking strategic vision that makes them ready for the collaborative business environment.
- Preparing the organization to up skill their people, and upgrade their processes, infrastructure and technology so as to enable electronic business collaboration.
- Preparing the organization to realize the important challenges and risks in adopting emerging collaboration technologies.

There is no doubt that the future success of an organization is based upon the way it adapts the new technologies in its business undertaking–including new hardware, software and telecommunication technologies that enable it to remain competitive in the market. The success of the organizations also depends upon the way they use their resources, work within the constraints and collaborate with each other. Business collaboration provides organizations with better opportunities to provide customer relationship management (CRM), supply chain management (SCM) and enterprise resource planning (ERP) systems. These are some of the significant discussions in this book and that justify the publication of this work.

READERS

This book is aimed at the followed audiences:

a. Strategic decision-makers in industry who are involved in the process of improving their business operations and services through adoption of technology through or for the purpose of collaboration. This book will provide the decision-makers in business with a robust approach to collaboration that will encompass business as well as technological considerations. The strategies outlined in this book will equip business decision-makers to play a *proactive* role in adopting communications technologies in their business processes. Furthermore, discussions in this book on socio-cultural aspects of communications technologies including customer demographics, usability, change management, security and privacy concerns, project management as well as user training should be of immense interest to these audiences from industry as also the action points towards the end of the chapters, and the case study chapters towards the end.

b. Academics involved in teaching courses/subjects that relate to "business strategies", "collaborative business", "mobile technologies for business" and so on, will find this book spot-on. Each chapter is organized with key points, introduction, detailed discussions and action points. The action points, apart from being of value to practitioners, can also be used for discussions and interactions within the classroom environment. These action points can be developed into corresponding exercises that can be worked out by students to consolidate their grasp of the chapter/topic. Thus, this book has an appeal even for classroom teaching for final year students in information and communication technologies. Subjects (units) taught include: business strategies, mobile information systems, advance topics in e-business, IT project management, and business process reengineering, to name but a few.

c. Researchers and higher degree students that are involved in understanding, delving deeper and finding new knowledge within the area of collaborative businesses and mobile technologies. Higher degree students including masters and PhD students, as well as academic researchers and teachers, will find the "research base" of this book quite attractive. Most chapters have a research base and is based on a significant literature review encompassing a number of books, articles and websites cited as well as intensive research (both quantitative and qualitative) conducted by the authors.

CONTENTS

We have based this book on extensive research conducted by the authors over more than three years, informed by a detailed qualitative study using a number of cases dealing with collaboration across multiple organizations. Furthermore, we have brought into play the well-known pedagogy of "student-centered learning" to facilitate the use of this book for higher degree courses as well as for its use in industry. The book contains twelve chapters, each neatly laid out to make it convenient for the readers to select the topics discussed. Furthermore, the book contains a detailed preface, discussing the reasoning for the book including the need for collaboration; detailed references, and bibliography at the end; a comprehensive index; a section describing the meanings of acronyms and keywords; and an exhaustive case study. As far as individual chapters are concerned, each chapter has the following structure:

- Chapter key points; introduction; main discussion of the chapter; action points; end notes and references.

How to use the book (Chapter Summaries)

Chapter	Description
Chapter 1	Fundamentals of Collaborative Business
Chapter 2	Emerging Technologies for Business Collaboration
Chapter 3	Global Collaborative Business
Chapter 4	Collaborative Business Process Engineering (CBPE) Model
Chapter 5	Advanced Technologies and Architecture in the Proposed Collaborative Businesses
Chapter 6	Collaborative Web Based System (CWBS)
Chapter 7	Organizational Structure and Technology Adaptation
Chapter 8	Quality Assurance of the CWBS
Chapter 9	Socio-Cultural Factors and Collaboration
Chapter 10	Change Management in Collaboration
Chapter 11	Case Study 1: A Security Service Organization (Medium-sized Organization)
Chapter 12	Case Study 2: An Energy Provider Organization (Large Organization)

WORKSHOP

The "practical" aspects of collaboration and the extension of this collaboration across multiple organizations are discussed in this book have also been presented in seminars and conferences. As a result, we now have sufficient material included here to form the basis of a one day workshop. The following is a generic outline

of such a one day seminar that can be optionally extended to a two-day workshop for a more comprehensive hands-on discussion on collaborations in business. For the academic community, each chapter in this book can correspond potentially to a 3-hour lecture topic, with Chapters I, II and III used earlier in the semester to establish the Collaborative Business Process Engineering (CBPE) models introduced in Chapter IV.

		Mapping of the Chapters in this Book to a ONE Day Workshop		
Day	Session	Presentation & Discussion Workshop Topic	Relevant	Comments
1	8:30 – 10:00	Business Collaborations: Advantages and Challenges	Ch I	• Static versus dynamic collaboration. • Outlining the value to global collaborations.
1	10:30 – 12:00	Collaboration and Technologies; Proposed Model for Collaboration (*CBPE*)	Ch II,III & IV	• E-collaboration through open market/portal. • Technologies supporting collaboration. • Global issues of collaboration. • Proposed model of collaboration.
1	1:30 – 2:30	Technology Acceptance & Organizational Structure	Ch VI & VII	• Implementation of the proposed model. • Organizational issues while adapting new technologies. • Change to organizational structure as a result of collaboration.
1	2:30 – 3:30	Quality Assurance, Socio-Cultural and Change Management	Ch VIII, IX & X	• Testing and quality assurance. • Mistrust and social perspectives. • Change management due to collaboration.
1	3:30 – 5:00	Case studies	Ch XI & XII	• Practical appreciation of *CBPE* by working out a case study

LANGUAGE

The authors firmly believe in gender-neutral language. *Person* is therefore used wherever possible. However, in order to maintain the simplicity of reading *he* has been used freely, interspersed with *she*. Terms like *user* and *manager* represent roles and not people. Therefore, these terms don't tie down real people who may transit through many roles in a lifetime, or even in a job. Furthermore, individuals often play more than one role at a given time – like *consultant, academic* and *analyst.* As a result, the semantics behind the theory and examples may change depending on the role one is playing, and should be kept in mind as one peruses this book. *We* throughout the text primarily refer to the reader and the authors. Occasionally,

we refer to the general IT community of which the authors and most readers are members. *We* also refer to the teams in which the authors have worked.

COMMENTS AND CRITICISM

Comments about and criticisms of this work are welcome. The authors will be thankful to you, the esteemed readers, for your comments. These comments and criticisms expected from our readers will surely add to the overall knowledge available on the subject. We offer our *a priori* gratitude to all readers and critics.

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Houman Younessi
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