Collaboration Models or What Does It Take for Collaboration to Become a Common Asset?

Barbara Flügge, CEC St. Gallen/Switzerland, Blumenberplatz 9, 9000 St. Gallen, Switzerland; E-mail: b.fluegge@sap.com

1. INTRODUCTION

The topic that is subject to the paper is the standardization and interoperability of Enterprise Architecture Frameworks with respect to cross-border and cross-country trade in selected EU member states. The topic fits into the EU wide initiative of the European Commission to implement electronic customs. The expected outcome is the reduction of the administrative burden for governmental authorities and business partners, the compliance of logical, data and product flows as well as assuring secure trade lanes.

The paper will give in the first part a background to the field of collaboration and its elements. In the second part it will discuss the research area, introducing some research questions and the research methodology.

1.1 Traditional Context of eCommerce Initiatives

Traditionally academic research in collaborative topics started with a specific focus on the individual elements of collaboration. The relevant elements that have been investigated are Enterprise Architecture Frameworks, Business Process Management and eCommerce, namely B2B, as well as eGovernment standardization initiatives.

1.2 Enterprise Architecture Frameworks

Interoperable solutions and standards are in the focus of research since the first introduction of an Enterprise Architecture Framework by Zachman[1]. Since then various different aspects of interoperability and building elements have been added to apply, adopt and promote interoperable enterprise architectures.

One example of interoperable enterprise architectures is HL7[2], conceptualized by Blobel. Another example is the development of the client-server architecture and application standardization, conceptualized and engineered by SAP[3].

Complementing the research of enterprise architectures, the analysis how these frameworks set the ground rules for cross-organizational collaboration is not fully explored yet. Part of the analysis has been carried out in the work of Henriksen (Henriksen, 2002).

1.3 Cross-Organizational Business Process Management and Modelling

This topic focuses on the business process and cross-organizational perspective. Starting with business process re-engineering and the integration of workflow and BPR companies gained deeper understanding of their cross-departmental business processes and enhanced their internal process management capabilities. Having set the ground in a basic understanding of business process management, the cross-organizational perspectives are being extensively discussed in research projects like ATHENA[4] and PICTURE[5].

1.4 Standards and Standardization Efforts

In the arena of standardization efforts, the nature of the research was mainly focusing on individual standards and their usability to companies. With the introduction of marketplaces and the web itself, organizations got an accessible tool that enabled the proliferation of their own business models. Governmental institutions themselves commenced with eCommerce scenarios by publishing information and later forms and documents on the web.

Gathering counterparts and sparing partners from a range of alike companies and industry sectors, standardization organizations and initiatives (for example UN/CEFACT[6], AIAG[7], RosettaNet[8]) evolved the eCommerce commencements by setting ground rules for the composition of standards in their specific business / research field. They allowed companies to contribute to cross-organizational business models and process management by providing standardized processes and / or data schema. Today, we encounter more than 200 standards that are offered in the market.

1.5 Collaboration in Present and Future Perspectives

With respect to global trade, collaboration is a critical success factor where business and governmental institutions meet. Through the entire supply chain, the connected document flow and back-and-forth-approvals there are public process elements, commonly relevant for each of the business partners. They play the role of providing a common denominator to collaborative business scenarios.

Historically, collaboration research analysed the nature of networks (internal and external networks), business as well as cultural relationships. Through the introduction of local networks like the *keiretsu* phenomenon in Japan (Satoshi Hamaya, 2004) eCommerce and collaboration moved towards IT enabled collaborative scenarios for many to many relationships and away from the one to one focus in eCommerce. As *keiretsu* is specifically linked and limited to the Japanese cultural and business environment, the research will introduce the term ecosystem. The ecosystem illustrates participants and contributors in a pre-defined business environment such as the trade environment and their interactions.

2. RESEARCH APPROACH
2.1 Research Problem

The collaboration elements that have been discussed above still leave a (growing) community of business and governmental partners who seek for constant and reliable effects of collaboration beyond the traditional one to one solutions. In the area of electronic customs for example, business and governmental partners are confronted with an increasing demand for secure trade, compliant and accessible data at any time for any business partner participating in trade processes. Today's trade business is also characterized by new business partners entering existing and already collaborating ecosystems.

A substantial effort in proper and necessary business process re-engineering has been made in the past years. They aimed to analyse existing process scenarios, identified potential process breaks and resulted in a number of best practice approaches. One of the major achievements in research is the development of business process re-engineering models and their visualization through modelling techniques. These emerged from the usage of Petri nets, unified modelling language (UML) activity diagrams, business process modelling notation (BPMN), event triggered process chains (EPC), business process execution language (BPEL) to business process modelling language (BPML). Donath among others is introducing the evolvement of these modelling techniques.(Donath, 2006) Another major achievement has been made by integrating process modelling techniques with workflow modelling. (Wittges, 2005)

Proprietary IT solutions and industry standardization facilitate collaboration within industry sectors (MATTHEW L. NELSON, 2005; Sanna Maria Kallioranta, 2002; Sissonen, 2002). These efforts eased the ground of commencing discussions and research on appropriate collaboration (Wittges, 2005).

However, process modellers, IT developers and technical providers as well as business partners still see standards dynamically changing. Various studies and research projects have been conducted on standards and their evolution. They reviewed different aspects such as standards dynamics like in the research project NO-REST[9] under the sixth framework. Studies have been conducted on the evolvement and usability of standards in specific industries, specific scenarios like B2B or B2G and their diffusion (The European e-Business Report 2005, Studie eBusiness-Barometer 2006/2007, Global E-Government Readiness Report 2005, et.al.)(Commission, 2005; Myriam Fricke, 2006; Nation, 2005; NIELS BJØRN-ANDERSEN, 2004).

Due to high investments in IT, skill development and interface development, organizations find it still difficult to manage proprietary standards on the one hand and to limit the restrictions in collaboration caused by proprietary solutions and caused by the smaller number of personnel that is trained and capable to deal with standardization in ICT. Investments however have been made. Business and governmental partners seek a way to build upon their existing software solutions applying proper standard. They envision successfully deployable standards for collaborative business scenarios where companies and governmental institutions are not limited to any lack of skills, IT budgets or time constraints.

The expectation in the market is to overcome any effort that is needed to transform collaboration into a common (accessible, understandable and available) asset. Collaboration should be an out-of-the-box or better built-in-characteristic of any solution being offered in the market.

Accompanying the previous discussion there is a number of research questions that may be formulated:

- *What are the main elements of collaboration in the traditional context? Why is electronic collaboration still not a common asset to support daily business operation?*
- *What are the main factors driving collaboration needs in present and future business operations? How does the content and purpose of collaboration evolve in the context of the ecosystem?*
- *How could we invite technically, content and document wise a new business partner to join a trade ecosystem?*
- *Which standards related to technology, content and documents would the business partner need to apply or adopt to do business?*

2.2 Research Approach

Based on the various angles of collaboration the dissertation will map the research approach to various research methods.

Table 1 describes the main activities

The on-going research, relevant to Phases 2b and 3, is mainly linked to ITAIDE (ITAIDE, 2006) and further activities in Europe focusing on the Living Lab approach as a research method to investigate in ecosystems. ITAIDE is an integrated project funded by the IST 6th Framework Programme of the EU which has been initiated at the beginning of 2006 to address some of the key issues related to cross-border trade. Since I am involved in ITAIDE and the Living Lab approach, I will take the opportunity to carry out the various assessments, interviews and case studies in co-operation with these projects.

Phase 4 will draw assumptions of the key findings of Phase 3. Assumptions derive from three dimensions, the technical, the cultural and the process dimension.

To verify (heuristically) the assumptions, they will be confronted with a set of contradictions. In addition, the assumptions will be applied to future sub-sets of the ecosystem. There is no certainty for example that collaboration based on the UN/CEFACT methodology will not work tomorrow, although past experience (in the sub-sets of the ecosystem) would make such an occurrence seem unlikely. Phase 5 verifies the collaboration approach of UN/CEFACT in additional sub-sets of the ecosystem.

2.3 Research Progress

The following activities are currently carried out:

- Interviews with governmental institutions in the area of global trade and customs processes in the European Union
- Study about the ecosystem for the Finnish paper industry including the involved business and governmental partners and their interactions
- Study about the ecosystem for the Dutch beer manufacturing industry including the involved business and governmental partners and their interactions
- Study about process drivers for cross-organizational business with relevance to global trade, filtering public process views and assessing key performance indicators for successfully conducting customs and trade related processes
- Study about value drivers for each of the individual participants in the ecosystem, starting with small and medium sized enterprises and the customs authorities.

Further accompanying activities are the following:

- A questionnaire to form the basis for structured interviews on both process and value drivers is drafted and currently under review.

Table 1. Overview of research activities

Phases	Research Method	Means	Focus Area
Phase 1	Qualitative Research	• Literature Study • Unstructured and structured Interviews (with experts in the focus areas)	• Evolvement of Enterprise Architecture Frameworks • Business Process Management • eCommerce Development (early stages of collaboration, interoperability and standardization)
Phase 2a	Qualitative Research	• Case Studies	• Ecosystem Trade and sub-sets of the ecosystem throughout the research project
Phase 2b	Qualitative Research	• Literature Study • Unstructured and structured Interviews (with ecosystem participants and contributors in the focus area)	• Ecosystem Trade and sub-sets of the ecosystem throughout the research project
Phase 3	Qualitative Research	• Case Studies applying the collaboration scenario • Scenario study applying the standardization and collaboration methodology (UN/CEFACT)	• Ecosystem Trade and sub-sets of the ecosystem throughout the research project • UN/CEFACT standardization methodology as common denominator for collaboration

- The analysis of the state-of-art literature is an on-going process and will be done in parallel to the activities outlined above.
- Structured interviews are an on-going process. Knowledgeable interview partners are coming from the academic, governmental and business area.

The result from the activities described in this chapter will form the basis for a PhD dissertation concerning collaboration models and the research questions what it takes for collaboration to become a common asset.

3. CONCLUSIONS

Companies and governmental institutions are more and more forced to lower process definition efforts and diminish transaction costs. Time is running and companies as well as their counterparts in governmental authorities are faced with a growing competitive business environment that urges them to dynamically adapt and extend their process models. A research work like this will support both the research community and the European business and governmental ecosystem in introducing on the one hand research techniques to assess complex standardization efforts and to transform that feedback on the other hand into feasible technical, process and academic concepts.

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ENDNOTES

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4. www.athena.org
5. www.picture-eu.org
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