Characterization and Classification of Cross–Organizational Business Processes

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INTRODUCTION

Business processes have arisen as the primary structuring object for enterprises (Davenport, 1993; Hammer & Champy, 1993; Scheer, 1999b). They overcome the recent function-orientation that leaded the organization of the enterprise since the industrial age in the 18th century (Wardell, Steiger, & Meiksins, 1999). However, current economic trends foster a specialization of the enterprise's portfolio towards its core competencies (Prahalad & Hamel, 1990) and a simultaneous intensification of the inter-enterprise relations (Perry, 1999). Consequently, current value-generating structures consist of a set of highly specialized enterprises that intensively collaborate to create the intended products for the markets. Thus, the producing business process spans over multiple organizations. Therefore, the concept of business processes originally conceived for single-enterprise-purpose has to be extended to usage scenarios where multiple organizations jointly process outputs.

ABOUT THE NATURE OF BUSINESS PROCESSES

Originally, Hammer & Champy (1993) defined the business process as a collection of functions that transform inputs into an output for the benefit of the customer. This definition contains the economical motivation. However, it does not reflect structural aspects. The relations between the functions are not explained. In contrast, Olle, Hagelstein, Macdonald et al. (1991) refer exclusively to a structural definition. They define a process as a chain of functions. Similar, Elgass and Krcmar (1994) understand the business process as "sequence of activities that are logically connected and that are content-wisely enclosed (...)." Scheer (1999a) defines the business process as "a coherent sequencing of business tasks in order to provide an output. The result of the business process is an output

that is requested or ordered from an internal or external customer." Concluding, two substantial definitions seem to have been developed. On the one hand an objective-oriented, which comprises processes with the intention to provide output and on the other hand an activity-oriented, which comprises all processes, that contribute to the output provision. The first interpretation only includes the core processes of an enterprise (e.g., in Kaplan & Murdoch, 1991). The second one covers also support processes.

THE CROSS-ORGANIZATIONAL BUSINESS PROCESS

Cross-organizational business processes are enterprise-spanning, per se. The cross-organizational or inter-organizational characteristic designates the relationship of an enterprise with others. This characteristic is to be distinguished however from community relations which presuppose joint objectives. Such relations can be found in associations and chambers.

The first attempts to expand the business process term on cross-organizational applications have taken place in the 80s. These approaches mainly address the information technology domain and only fairly and implicitly touch the cross-organizational business process. Scheer (1987) shows an implication to the process organization for the automotive industry. Until the 90s, the information technology component was placed into the foreground. The introduction of e-business and e-commerce-concepts prospered the viewing shift from the single enterprise towards value chains.

Hirschmann (1998) describes the participation of organizational units of different enterprises in a business process as basic property for cross-organizational business processes. Thereby, she doubts the existence of process ownerships for inter-enterprise processes. Schneckenbach (1997) reduces cross-organizational business processes to their communication and co-ordination aspects. For him, the inter-enterprise process

integration only comprises the data transfer (transfer process) and the communication of the application systems.

However, such a reduction on the information technology aspects neglects time- and cause-logical functional dependences, which are constituent for business processes. Thus, Karni (2004) describes inter-company business processes as generalization of B2B and B2C business processes. These processes have to answer the question, how an enterprise and its partners or customers have to be organized and have to act together, in order to generate an output. Helbig (2003) addresses the relation between intra- and inter-organizational business processes. He understands each (intra-operational) business process as "cutout from a superordinate process" and therefore justifies the inter-enterprise dimension of the business processes. He differentiates in this context between contractual, guided and participative process nets. Similarly, Hoffmann, Scheer & Hanebeck (1995) address the decomposition of cross-organizational business processes. They argue that in the co-operation of enterprises cross-organizational business process results from composition.

In summary, cross-organizational business process addresses a purely organizational structural constellation with the concatenation of operational performing. It focuses the aspect of interaction, while the question of the coordinative control is only slightly addressed. Thus, the understanding of the cross-organizational business process results in a partitioning of the jointly added value generation of multiple enterprises.

SPECIFIC CHARACTERISTICS

Even if cross-organizational business processes share many commonalities with conventional business processes, they are not the same kind. Therefore, simply applying the concept of (intra-enterprise) business process orientation to enterprise networks is not sufficient. In contrast to a single enterprise, business networks are composed of legally independent and autonomously acting companies (Smith & Figar, 2002). Therefore, the originally centralized concept of business process is not adequate for this environment. In particular, intra-enterprise and cross-organizational business processes differ in the following aspects:

- **Crossing organizational borders:** The generation of the added value is distributed over several organizations. Thus, there are multiple business activities from different enterprises that collectively create the product. Consequently, this sequence of functions, namely the business process is not limited to a single organization, but crosses organizational borders.

- **Composed of autonomous parts:** In contrast to the crossing-border property of the business process itself, the individual business activities, that compose the process, clearly belongs to one specific organization. Moreover, there are groups of activities that are processed in a direct sequencing before the process switches to another organization. Focusing on these parts, we can state that the business process is partitioned into a set of these parts where each part is clearly associated with an organization (Smith & Figar, 2002). Furthermore, this association comprises the full control of the part. The organization owns a specific part in the sense, that it independently executes it, administrates it and manages it. In this context managing means the definition respectively design of the business process part itself as well as its controlling and if necessary its adaptation. Therefore, those parts of cross-organizational business processes can be characterized as autonomous.

- **Partly visible:** Analyzing a cross-organizational business process composed of autonomous parts from a strict definition, the process comprises the sequencing of all business activities of all organizations involved in a specific added value generation. However, the existence of such a description can be doubted, because this would disclose the structures of all autonomous parts in full detail. But as this parts are integral elements of the organization's business, no enterprise has an ambition to bare such information, even not towards its business partners (McHugh, Merli, & Wheeler, 1995). Therefore it will try to hide crucial and business-critical process information (Kramler & Retschitzegger, 2002). Such information-hidden process descriptions are called public views or public processes (e.g., Arkin, 2002). Consequently, an organization can perceive a cross-organizational business process

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