

# GUIDEBIS – GUIDANCE MODEL FOR BUSINESS INTEGRATION SOLUTIONS

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## ABSTRACT

The project GuideBIS focuses on the development of cost- and time-reductive business integration solutions especially for Small and Medium Enterprises (SMEs), which increasingly are forced to implement more effective and efficient exchange of information and goods in value networks due to current business needs. In this project a guidance model containing business integration concepts, approved integration tools in a toolbox, a profound process model for integration implementations, and best practice examples containing successful business integration solutions, is developed. A sound process methodology, which integrates technical analysis, empirical studies, conceptual developments and a pilot phase, guarantees the realization of the project objectives.

## KEYWORDS

Supply chain integration, SME business integration, business integration technologies

## 1. INTRODUCTION

Effective, cost-reducing interchange and cooperation between companies is a crucial prerequisite to compete successfully and to gain more flexibility in globalized value networks (O'Marah, K. 2007; Trappey, C. et al. 2007). A modern organization – regardless of the size – has the need for integrative cooperation that ensures the effectiveness of data and information flow as well as the flow of goods (Zhou, H. & Benton Jr., W. 2007; Iskanius, P. & Kilpala, H. 2006). Small and Medium Enterprises (SMEs) especially feel the increasing pressure to establish inexpensive technological solutions for data and information interchange (Eikebrokk, T. R. & Olsen, D. H. 2007).

Since SMEs need to focus on their core business, the number of business cooperations to be established in value networks increases. However, recent cross-enterprise business processes in value networks are often not integrated or supported by appropriate integrative information systems mainly because of media changes, incompatible digital interfaces or organizational gaps in the information exchange process.

Since business integration solutions include different technical and organizational levels of single companies, they are often very complex and dynamic. Furthermore, they rarely consider the size and type of the involved enterprises. Additionally, the existing information systems' infrastructures and architectures, the instability of the involved processes and even their human resources need to be taken into account during integration projects (Vernadat 2007). Currently, SMEs do not receive any methodological and scientific support to select the appropriate concepts, methods, technologies and tools for their business integration intentions. Furthermore, they often do not deploy state-of-the-art technology for business integration solutions because of increasing complexity and the lack of strategic planning, sparse personal resources, financial bottlenecks or missing know-how in contrast to larger industry (Ferneley, E. & Bell, F. 2006). Therefore SMEs are explicitly focused by the project *GuideBIS*, which stands for *Guidance Model for Business Integration Solutions*. Consequently, several different integration scenarios, concluding a methodologically profound set of procedures, concepts, methods, technologies, standards and tools are needed to bridge this gap and to support SMEs establishing successful business integration solutions in value networks.

## 2. THE GUIDANCE MODEL

The project GuideBIS results in an effective, efficient, methodologically profound and practically tested guidance model to analyze, plan and implement business integration solutions especially for SMEs, which need to be integrated with other SMEs or larger enterprises.

### 2.1 Integration Concepts – Work in Progress

Currently, there is a lack of methodologically profound approaches for the implementation of effective business integration solutions for SMEs. Hence, a guidance-model that supports SMEs in this situation has to offer methods, technologies, concepts, standards and tools at the organizational as well as at the technical level of the business integration (Figure 1). The main goals for the GuideBIS guidance model are:

- (i) to enable efficient and cost-sensitive business integration solutions for SMEs
- (ii) to support the business integration at all levels of cooperation, which includes integration of data, business processes, business rules, communication technologies or enterprise resource planning systems.
- (iii) to provide a structured procedure for integration projects.
- (iv) to develop a state-of-the-art toolbox containing current technologies, standards, tools and partners for business integration of SMEs and/or industries
- (v) to demonstrate best-practice examples that show successful implementations
- (vi) to incorporate the identified methods, technologies, concepts and tools and interconnect them with fitting tasks of the process model and to show when and how to use them during the integration process.

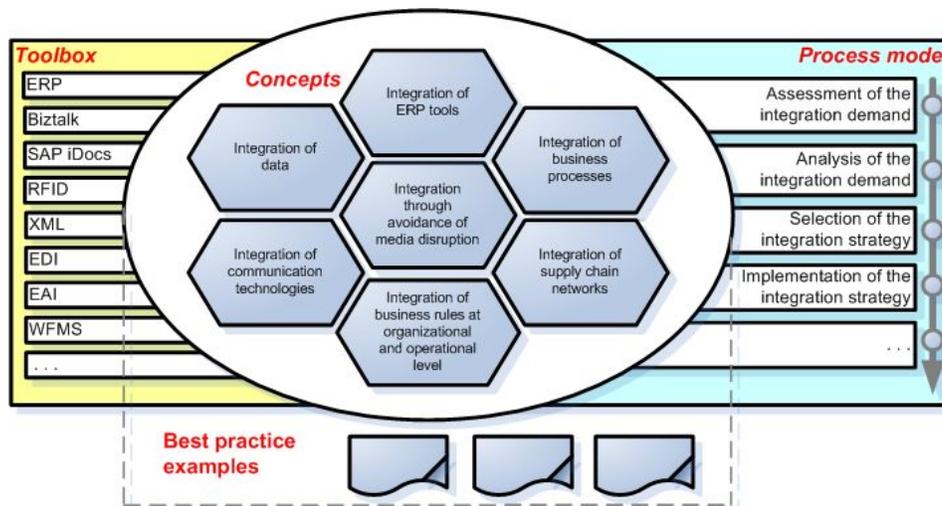


Figure 1: Guidance Model for Business Integration Solutions

**Business Integration Concepts.** The following concepts are considered to be crucial for the project:

(i) *Integration of data:* Database integration, the use of XML and Web Services are considered to have a high impact on future development for achieving business transactions (Amer-Yahia 2004). Web Services promise flexible, cross-platform communication, using the internet to exchange and combine data in new ways, thus enabling on-the-fly business relations to a much greater extent than before (Vlachakis 2003).

(ii) *Integration of ERP systems:* Integration can be explored and managed in various ways in relation to Enterprise Resource Planning systems (Dechow 2005). An ERP system attempts to store all corporate information in one central database, where ERP data (eg. SAP iDocs) can be retrieved, shared and exchanged. The combination of the technologies ERP and internet offers the opportunity to build interactive relationships (Ash & Burn 2003) between partners and suppliers throughout the whole supply chain.

(iii) *Integration through “business integration software”*: This concept envisages the use of dedicated integration software (eg. Microsoft BizTalk) as an approach to business integration.

(iv) *Integration through avoidance of media disruption*: Media disruptions, eg. paper invoices and delivery notes, as well as poorly designed electronic interfaces among corporate partners, lead to efficiency losses, slow and confusing processes, and unreliable data in internal processes. Standards in electronic invoices and delivery notes, barcodes and RFID are the key technologies to bridge this gap.

(v) *Integration at the level of supply chain networks*: The integrated exchange of anticipation and forecast data, respectively supply chain information (Harland et al. 2007), is of particular interest as late and ineffective customer-supplier relationships lead to effects like the bull-whip, because traditional supply chains cannot deal with the complexity and dynamic change-, trust- and security issues. Ubiquitous supply networks are the next step in evolution after adaptive supply networks (Ferstl et al. 2005) and enable multimodal access (voice, web, and mobile) to decision relevant data anytime and anywhere.

(vi) *Integration of business processes*: Business processes management (insourcing vs. outsourcing) paired with service-oriented architecture (SOA) provide an abstract view for building agile and interoperable enterprise systems (Vernadat 2007).

(vii) *Integration through business rules at organizational and operational level*: Lack of skills, awareness (Lange et al. 2000), resources or motivation (Harland et al. 2007) are barriers for successful business integration. Integration has to be accompanied by organizational and operational business rules.

**Toolbox.** Two different types of e-business standards are considered for the Toolbox: (i) Application oriented standards used in context of specific application areas at the content level and (ii) technology oriented standards (eg. SOAP, WSDL, UDDI) used for technical implementation of e-business applications (Lebender et al. 2003). Application oriented standards can be classified as standards for product data classification (eg. eCl@ss, ETIM, Profic@ss, UNSPSC), standards for exchange of catalogue data (eg. BMEcat, UBL, cXML, UN/EDIFACT), standards for exchange of business documents (eg. openTRANS, UBL, cXML, UN/EDIFACT, OBI) and frameworks (eg. ebXML, RosettaNet, UBL, eCO).

**Process Model.** The GuideBIS process model describes the process of B2B integration between the actors. The model consists of the following phases: (i) assessment of the integration demand, (ii) analysis of the integration demand (as-is analysis), (iii) selection of the integration strategy (to-be analysis) and (iv) implementation of the integration strategy.

**Best Practice.** The tools and concepts should be demonstrated with best-practice examples in literature that show their concrete implementation.

## 2.2 Project Methodology

The following phases are performed during the overall GuideBIS project:

(i) *State-of-the-art analysis*: The project was started with the search and analysis of scientific literature in the subject domain. Furthermore, the search for empirical data of national (eg. Statistik Austria) and international (eg. Eurostat) organizations, previous studies (eg. e-business barometer, it-trends) and literature (eg. Lange et al. 2000, Eikebrokk, T. R. & Olsen, D. H. 2007) is part of the research.

(ii) *Requirements analysis*: The requirements are analyzed by an empirical study with qualitative, semi-structured interviews, followed by a quantitative online survey on the thematic relevance of the various integration levels and the demand of integration.

(iii) *Requirements catalogue*: Extraction of the integration requirements from the results of the empirical study, the concepts and best-practice examples from state-of-the-art scientific literature.

(iv) *Conceptualization*: Consolidation of scientifically proven concepts for integration at all levels.

(v) *Process model*: Development of the process model for implementing integration concepts.

(vi) *Toolbox*: Creation of a set of available tools for the implementation of integration concepts.

(vii) *Solution Buddy List*: Development of a list of contacts for implementing the integration concepts and mapping of tools.

(viii): *Guidance Model*: The process model, the toolbox and the integration concepts are integrated in a guidance compendium. This compendium describes the tasks to be carried out all levels of integration, the

tools and partners to be used for business integration solutions and concludes with comprehensive instructions to develop effective business integration solutions.

(ix) *Pilot phase*: Implementation of at least two pilot projects for practical testing of the Guidance Model - this phase starts in parallel with the preparation of the toolbox and the Guidance Model.

### 3. CONCLUSIONS

Since no systematical approach or guideline for SMEs to develop business integration solutions exist, the GuideBIS project includes a number of innovative characteristics, which include: (i) continuous workflows involving different companies of a value network are supported by information systems; (ii) the process model provides a holistic and structured procedure including the necessary steps for a business integration project that aims to develop a business integration system which goes beyond ad-hoc integration of existing systems and also considers the strategic aspects of the participating companies; (iii) media disruptions and incompatible digital interfaces of the affected business processes are avoided by the use of state-of-the-art technology such as XML and web services. As a result, the integration of these processes and the supporting systems lead to more effective business processes; (iv) business integration is focused on SME's point of view and considers the business relations with the larger industry partners who often initialize business integration projects and force SMEs to adopt certain concepts or tools; (v) the project does not aim to re-invent the wheel concerning technical integration solutions, but builds on existing state-of-the-art technology for business integration and focuses on its effective adoption for the needs of SMEs.

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