

FOCUS ON IT-ENABLED CHANGE –  
ST. GALLEN'S MASTER OF BUSINESS ENGINEERING PROGRAM

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**ABSTRACT**

The industrial economy in developed countries is transforming into a new “economy of the information age”. For nearly every company, complex, often radical and dramatic transformation needs are created. Executive programs in continuing education, however, are usually focussing on business “administration” rather than on business transformation. For a successful management of change projects, it is necessary to integrate skills from different areas: While general management skills are needed for strategic vision, organizational development, and process analysis, more technical skills are necessary to assess business potentials of IT innovations and to manage the development of appropriate information systems. Change management and other “soft” skills are a prerequisite for successful leadership in transforming organizations. The post-graduate executive program “Master of Business Engineering” has been developed to integrate knowledge from all of these areas, thereby enabling high potentials to succeed in transforming industrial companies into the information age. This paper outlines theoretical foundations and describes current curriculum as well as experience and future plans.

**1. INTRODUCTION**

The transition into the information age creates dramatic change for most companies [7]. Well-known examples are electronic commerce [3], the restructuring of financial institutions, the rise of infomediaries [6], or inter-company supply chain optimization [12]. Most business transformations are triggered by IT innovations, by new standardized application packages, or by radical changes in the way information is structured, accessed, and processed: Electronic commerce is enabled by common access to the Internet, scalable WWW server technology, standardized application packages, data warehousing, and customer profiling. The restructuring of financial institutions is enabled by electronic marketplaces, virtual banking business models, standardized application packages, and development of Business Networking standards. New layers of service intermediaries are enabled by common access to the Internet and a growing independence of services from physical restrictions resulting from traditional production processes and distribution channels. Supply chain optimization is enabled by new standardized application packages and the development of business-oriented communication standards.

The Business Administration discipline faces massive entrepreneurial challenges: Entirely new business models are enabled, while many traditional business models become obsolete. Moreover, integration and automation do not only require a radical redesign of internal processes [2]. Managing alliances, distributed process management, and application integration are recent entries on nearly every top management agenda [12].

Business Engineering [11] was developed as a holistic methodology for the conceptualization, design, and implementation of IT-enabled business transformations. „Holistic“ means one the one hand that methodology support is not restricted to information systems development, but that issues like strategic planning, quality management and organizational development as well as organizational psychology are involved. On the other hand, a holistic approach requires to cover not only technical aspects, but also cultural and political issues that are crucial for the successful implementation of change. Business Engineers must apply technical competencies as well as cultural and political competencies to manage change projects from the assessment of business potentials of IT innovations, strategy making, and process design through the conceptualization and development management of appropriate information systems.

Traditional continuing education at universities is not well prepared to qualify professionals for business transformation. Like undergraduate programs, MBA programs often focus on traditional, functional knowledge (e.g. marketing, accounting / finance, human resources, operations management, and IS). Even at renown business schools, integrated, cross-functional programs that focus on change are hard to find [9]. If they exist at all, “change” programs often are restricted to soft factors and exclude IT issues. IS programs, on the other hand, mostly focus on implementation and systems related issues (e.g. communication systems and networks, management information systems, information management, systems development, even programming). Programs that cover the complete range from IT potential assessment over strategy making and process design to systems development are hard to find.

In this paper, we describe our Master of Business Engineering (MBE HSG) program that is intended to qualify professionals for all aspects of business transformation. Being the foundation of a business engineering program, the Business Engineering approach is described in section 2. The layout and curriculum is described in section 3. A summary of experience from the first two classes concludes the paper in section 4.

## 2. BUSINESS ENGINEERING

Business Engineering integrates methods from technology and innovation management, strategic planning, systems engineering, total quality management, and organizational design to transform traditional companies into companies of the information age. Due to their focus on business or technology, respectively, general managers or systems engineers are not able to holistically conceptualize and manage large transformation projects. Business engineers should have skills “from both worlds”, enabling them to assess business potentials of IT innovations, create strategic visions, analyze and redesign business processes, plan and control transformation projects, and get people actively involved into change processes [8].

In figure 1, the relationships between transformation, IT, and Business Engineering are illustrated. Traditional general management know-how is needed to run traditional enterprises. IT innovations enable new business models and transformation of existing enterprises. The core of the Business Engineering methodology is a set of methods for business design and transformation management. In addition, business models of the information age are needed to envision the utilization of IT innovations and new management models to reinvent value streams.

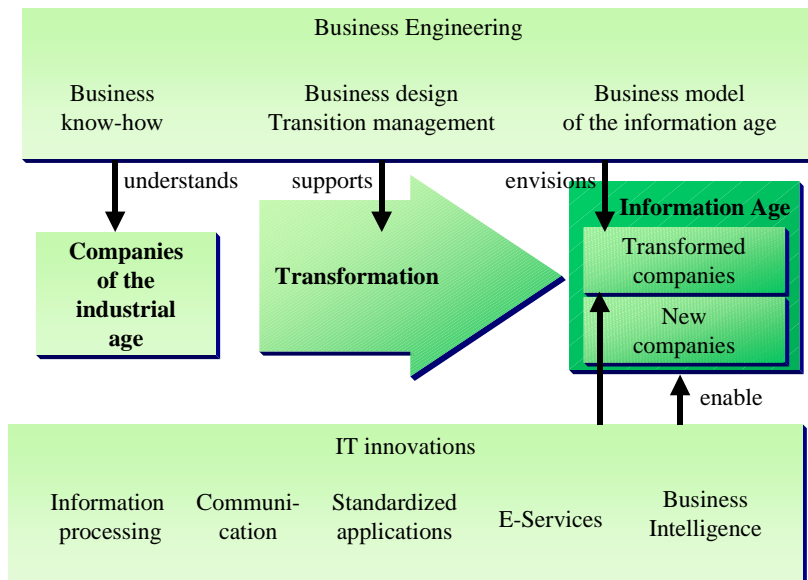


Fig. 1. Transformation, IT, and Business Engineering

The Business Engineering process [11] is illustrated in figure 2. The redesign starts on the information and communication technology layer where IT innovations are identified and assessed with regard to new business opportunities. Then, adequate business models are derived, and business strategy is matched with process visions. On this layer, analyzed objects are industry sectors, business networks, input-output relationships, strategic business units, and goals. By refining goals into critical success factors and finally into performance indicators, a base for the identification of business processes is created. Using state-of-the-art workflow models plus process guidance and process optimization methods, the pivotal layer of business process design is reached. When complemented by data modeling, state transition analyses, and transactional analyses, appropriate appli-

cations and databases are derived from process models at the systems layer. Since standardized business software packages are much more often used for systems implementation than creating individual software systems, process implementation methods must be able to adapt reference processes. Following the Method Engineering approach [1], some methods have been invented from scratch, while others were adapted to fit into the Business Engineering methodology.

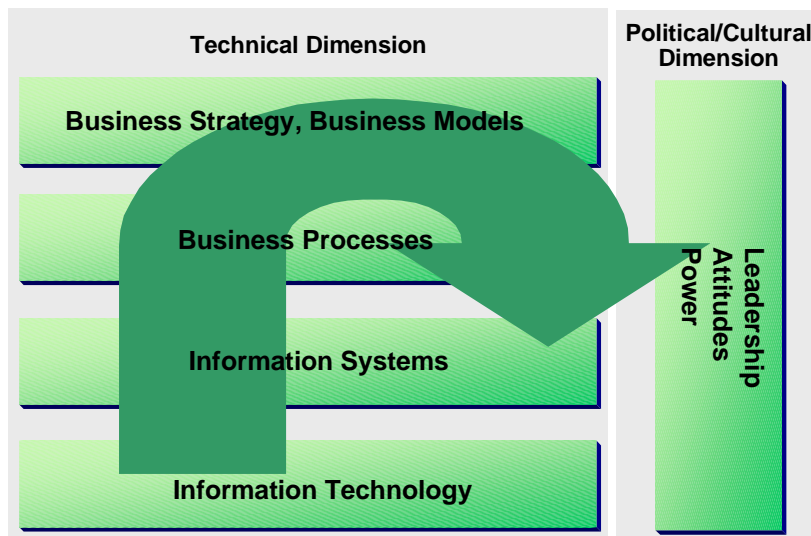


Fig. 2. Business Engineering process

### 3. MBE HSG LAYOUT AND CURRICULUM

Important principles of all post-graduate programs at the University of St. Gallen are

- Executive education: University learning (& teaching) and practical work should happen simultaneously. Students should have at least three years of post-graduate practical experience.
- Homogeneity: If different knowledge areas are to be integrated (e.g. different perspectives of “change”), a small faculty with shared vision and common background should work with students reflecting a broad range of different industries and majors. Students have to be selected very carefully based on experience and project involvement rather than on grades and majors to guarantee the class to be an appropriate learning support.
- Practice: Faculty should be involved in industrial research projects rather than completely focus on teaching or pure academic research. First-hand experience in corporate change projects outweighs didactic perfection as long as university standards are met.

Our role model for Business Engineers is Martins “Enterprise Engineer”. His core qualifications [8] technical / management training, business experience, systems development experience, and understanding of human factors imply the focal issues of the program: Besides mastering the Business Engineering methodology, Business Engineers need to have a broad technical background (current IT trends and business potentials of IT) and a business background (strategic management, reference processes). They should be able to (re-)design companies on the business model level as well as on the process model level and on the information systems level. With regard to transformation processes, they should take into account political issues as well as organizational development issues. With regard to the human factor, they should be capable of change management and leadership in transforming organizations.

It is recommended that MBE HSG students are assigned to a change project in their company and analyze / describe their project with their Master thesis. Besides of that thesis, other continuous activities like working with the Business Engineering Center platform (i.e. a vast collection of Business Engineering related documents on the WWW), communicating via the MBE HSG Intranet, and “fireplace talks” with consultants and managers build a common frame for focussed modules. Figure 3 illustrates the sequence of two-week modules (exception: four-week Silicon Valley module) that is offered over a total of 18 months. The following subsections give an overview over four core areas of the MBE HSG curriculum.

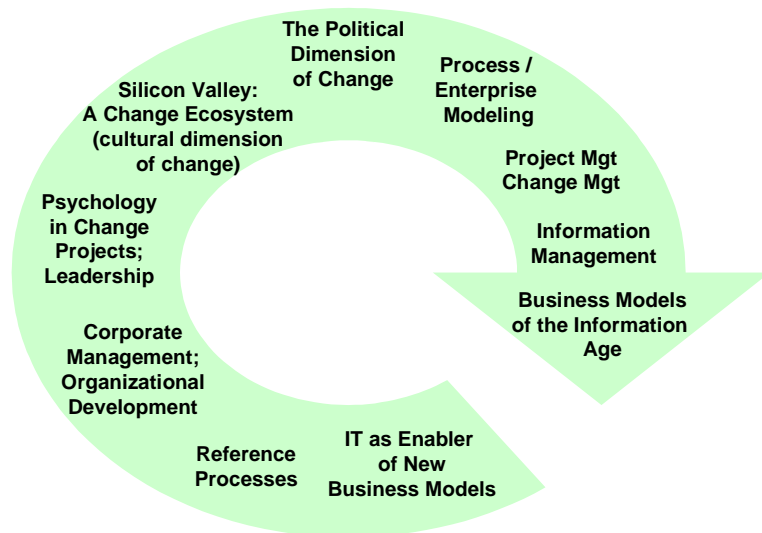


Fig. 3. MBE HSG module sequence

### Information Systems and Change

Being potential enablers for new business models and reinvented processes, IT / IS innovations and novel packaged applications are covered in three weeks. Formal sessions and case studies are used to acquire know-how of state-of-the-art applications like SAP R/3 and ASAP, Hyperion OLAP, Siebel, Lotus Notes, and Oracle Designer. In addition, more technical topics like computer telephony integration, platforms for electronic commerce, infrastructures for mobile work, etc. are covered.

In addition to the three IT potential weeks, two weeks are used to teach Business Engineering methodology and Information Management concepts, basically using real-life cases.

### General Management and Change

To give students an overview of business processes, one week is dedicated to present reference processes in product development, supply chain management, and financial services. Special emphasis is given to process guidance and process optimization.

Another two weeks are focussing on the managerial perspective of transformation. Being presented by renown management faculty, state-of-the-art concepts for shareholder value creation, holistic / network management, strategy development, transformation management, organizational development [4][5][10] are complemented by computer-based simulations and support tool demos (e.g. balanced scorecard).

A highlight of the program is the final week “Business Model of the Information Age”. In this week, students work together with board members of large Swiss and German companies to assess technology innovations and to derive new business models.

### Organizational Psychology and Change

Another three weeks focus on individual and methodological aspects of Change Management. Coordinated by an experienced executive responsible for one of the largest mergers in Switzerland, students get into touch with tools and concepts for business case planning, project management, and financial aspects of change projects.

Less theoretical, but valuable personal experience can be gained in an one-week outdoor module that takes place in the Swiss mountains. The goal of this week is to have personal encounters with uncertainties, conflicts, group dynamics, and other challenges for leadership in transforming companies. Group projects are complemented by extensive analysis and feedback workshops as well as one week of change cases.

### Infrastructure, Culture, and Change

Central Europe may not be the best place for rapid and radical business transformations. Although considerable attention is paid to organizational and personal agility recently, the most comprehensive “ecosystem for IT-enabled change” is Silicon Valley. Therefore, HSG cooperates with the Center for Executive Education (CED), Haas School of Business, University of California at Berkeley, to offer a four-week-in depth experience of the “American way of change”. While formal sessions at CED provide theoretical concepts for Silicon Valley entrepreneurship, innovation management, creativity support, and cultural alignment, various high tech company visits allow to get in touch with Silicon Valley practice.

Another two weeks are dedicated to the political dimension of change and emerging industries and markets.

#### 4. EXPERIENCE AND DIRECTIONS

Although being an entirely new and quite expensive program (35000 USD plus travel / accommodation expenses four 18 weeks), MBE HSG attracts about 100 applications per year for a class of 45 students. 75-90% of the students come from Switzerland, the remainder mostly from Germany. Some 30% have a business administration background, another 30% hold a major in computer science or information systems, the remainder comprising about 20% electrical or mechanical engineers, some psychologists, and a few lawyers. Only few participants are self-employed. As we would have expected it in Switzerland, more than 50% of the class is employed by banking and insurance companies, followed by consulting, chemical / pharmaceutical industry, and other service industries. During the program, a large number of students change their jobs, most of them in order to exploit new career opportunities as Business Engineers (within or outside their company), some to start an own consulting business.

All modules are being extensively evaluated by students and by faculty. As a consequence, a one-week kickoff module has been created starting with the second class (thereby reducing IT potentials from three to two weeks), and the project management module has been shortened to create a one-week module for psychological aspects of change cases. Due to high set-up costs / time both for systems administration and for students, hands-on experience with applications has been widely replaced by application cases and student case studies in the IT potential modules.

The combination of information management issues, general management issues, and human factors under a common focus on business transformation is an innovative discipline still lacking a tight integration and a sound theoretical foundation. We try to create such foundations in two different ways. On the one hand, the Business Engineering Center ([bec.iwi.unisg.ch](http://bec.iwi.unisg.ch)), a platform that allows a structured access to a vast amount of Business Engineering related documents, is intended to support a growing Business Engineering community, thereby gaining empirical feedback on proposed methods and models. On the other hand, various competence centers (e.g. for Business Networking, Banking architectures, Data Warehousing, Knowledge Management) bring together companies and researchers for the continued development of Business Engineering methodology. Both activities are expected to contribute to the integration of the various core concepts of Business Engineering into a sound and comprehensive discipline.

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