BUSINESS & INFORMATION SYSTEMS ENGINEERING

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BUSINESS & INFORMATION SYSTEMS ENGINEERING

The International Journal of WIRTSCHAFTSINFORMATIK

The journal is receptive to research results from the field of business and information systems engineering as well as cutting-edge business practice findings. Specific solutions for application systems are published only if they serve as a model for other fields of application.

The journal also covers important peripheral areas if developments in the narrower sphere of business and information systems engineering are substantially affected. Examples are the impact of computer science on business, individuals, and society as well as issues regarding training and further education.

The journal publishes original research papers. All papers undergo a thorough double-blind review process. Some issues are devoted to a special focus.
The section BISE – Research Paper splits into the following departments (department editors in brackets):

1. Business Engineering and Theories of BISE Design (Winter, Pries-Heje, Goul)
2. Information Systems Engineering (Müller, Lin, Echizen)
3. Information Systems Management & Operations (Bichler, Bhattacharya)
4. Theories for BISE (Heinzl, Leidner)

Besides, the journal is organized into the following sections (section editors in brackets):
BISE – State of the Art (Buxmann)
BISE – Catchword (Sinz)
BISE – Profile (Heinzl)
BISE – Discussion (Loos)
The journal's website http://www.bise-journal.org is managed by Detlef Schoder.

Overview of BISE Articles Published in 2009, 2010, and 2011

Editorial

Prof. Dr. Hans Ulrich Buhl
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Dear readers,

Today, we are proud to present a reprint of the first 18 issues of the pluralistic, rather design science-oriented, interdisciplinary, and peer-reviewed e-journal "Business & Information Systems Engineering" (BISE). BISE addresses the entire techno-economically oriented community and is globally accessible via http://www.springerlink.com, http://www.bise-journal.org, and http://aisel.aisnet.org/bise.

With this special print we would like to invite interested readers to get a first impression of BISE's contents and to give authors and reviewers a brief overview of articles published in 2009, 2010, and 2011.

BISE has its roots in the journal WIRTSCHAFTSINFORMATIK, which became the central publication of the German-speaking BISE community during the last 52 years, with its research papers as well as state of the art, interview, catchword, and discussion sections. Our primary objective was and still is to align the journal with the requirements of an increasingly international research and to position it among the international top journals. At the same time we intend to convey the field's and journal's strengths to the international world without neglecting their position in the German-speaking countries. These strengths include: pluralistic, rather design science-oriented, and interdisciplinary research approach, fruitful mutual exchange with business practice, simultaneous emphasis on rigor and relevance as well as the journal's double-blind, constructive, and rapid developmental review process.

The journal appears identically in German and English since issue 1/2009, with BISE being the english-language equivalent to the german-language WIRTSCHAFTSINFORMATIK journal. Accepted research papers are translated together with the authors and a professional team of translators. As all articles appear bilingually, they gain high international visibility. Furthermore, BISE became the first AIS Affiliated Journal in December 2010.

This special print compiles the tables of content and the abstracts of the 18 issues from 1/2009 to 6/2011. It furthermore includes the calls for papers for the issues 1/2013 ("Mobile and Ubiquitous Solutions for Health Care of the Future"), 3/2013 ("BISE and Marketing"), and 5/2013 ("Green IS – Information Systems for Environmental Sustainability"). The full versions of all papers are available via http://www.springerlink.com, http://www.bise-journal.org, and http://aisel.aisnet.org/bise.

I would highly appreciate your agreement with our scholarly concept of BISE and your support by sharing it within your personal networks, and therby contributing to its success. Paper submissions via Editorial Manager (http://www.editorialmanager.com/buis) as well as suggestions for improvement are more than welcome.

Sincerely yours,

Hans Ulrich Buhl
(Editor-in-Chief)

BUSINESS & INFORMATION SYSTEMS ENGINEERING

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Abstracts of Issue 1/2009

Ulrich Hasenkamp, Peter Stahlknecht

Wirtschaftsinformatik – Evolution of the Discipline as Reflected by Its Journal

In 1959, the journal "elektronische datenverarbeitung" (electronic data processing) was founded. Later it was renamed as "Angewandte Informatik" (applied computer science). Due to the diversification of computer science and the emergence of the discipline "business and information systems engineering" (BISE) the journal was focused on this discipline. Accordingly, the name was changed to WIRTSCHAFTSINFORMATIK (the German word for BISE). Fifty volumes of the journal reflect major developments and varying topics of the discipline. By installing a broad editorial board comprised of researchers and practitioners as well as cooperation with the major scientific associations the journal became the central publication in the field. The paper gives a survey of organization, design, thematic focuses, and important subjects. Thus, by browsing through the contents of the journal the development of the scientific discipline Wirtschaftsinformatik is illustrated.

Keywords: Wirtschaftsinformatik, Electronic data processing, Applied computer science, Scientific discipline, Journal, Business and information systems engineering

Citation: Hasenkamp U, Stahlknecht P (2009) Wirtschaftsinformatik – evolution of the discipline as reflected by its journal. Bus Inf Syst Eng 1(1):14–24

Hermann-Josef Lamberti, Matthias Büger

Lessons Learned: 50 Years of Information Technology in the Banking Industry – The Example of Deutsche Bank AG

The article describes the development of information technology at Deutsche Bank as an example for the banking industry. We discuss the effect of these developments and ask where they come from. As a result, we obtain lessons learnt from the last 50 years. Based on these lessons we give an outlook on which might be the future drivers.

Keywords: Role of information technology in banking, Historical treatment, Change in banking IT

Citation: Lamberti H-J, Büger M (2009) Lessons learned: 50 years of information technology in the banking industry – the example of Deutsche Bank AG. Bus Inf Syst Eng 1(1):26–36

Martin Jetter, Gerhard Satzger, Andreas Neus

Technological Innovation and Its Impact on Business Model, Organization, and Corporate Culture – IBM's Transformation into a Globally Integrated, Service-Oriented Enterprise

This article investigates the influence of information and communication technology (ICT) on business transformation. First, the general, ICT-driven development lines of globalization and service-orientation are described. Then, an analysis of the IBM Corporation's transformation over the past 50 years into a globally integrated, service-oriented company illustrates that ICT innovations must be dealt with by simultaneous adaptation of business model, organization and corporate culture. For many companies the ability to manage this change becomes increasingly critical.

Keywords: Innovation, Information and communication technology, Business model, Organization, Corporate culture, Transformation, Change management, IBM

Citation: Jetter M, Satzger G, Neus A (2009) Technological innovation and its impact on business model, organization, and corporate culture – IBM's transformation into a globally integrated, service-oriented enterprise. Bus Inf Syst Eng 1(1):37–45

Günter Müller

Was the Internet the Only Option? Which Way Should Business and Information Systems Engineering Go?

In global competition, the Internet turned out to be the single and hegemonial infrastructure for communication. It has become the "nervous system" of today's networked economy. While the first phase provided communication services, like e-mail, the WWW has established an interactive platform to allow easy access to advanced services. Now, in its "third" or cooperative phase, the Internet will at its end lead to a ubiquitous informatization where business processes and applications beyond the boundaries of enterprises become interleaved. For this phase, many analogies to the emergence of the Internet can be observed.

Keywords: Internet, Network models, OSI, SNA, ISO, IETF, Open source community, Standardization, Network institutions, Regulation, Network services, Behavioral vs. design science-oriented approach in BISE and IS

Citation: Müller G (2009) Was the Internet the only option? Which way should business and information systems engineering go? Bus Inf Syst Eng 1(1):46–52

Rex Chen, Kenneth L. Kraemer, Prakul Sharma

Google: The World's First Information Utility?

In only ten years, Google has achieved remarkable success from online search-based advertising. Its search engine is dominant, and its IT infrastructure is the most powerful computing system in the world running on over one million computers and serving more than one billion users globally. Google makes money by using its search engine to deliver online advertising alongside responses to user searches for information, goods, maps, directions, and a host of other services. Its capabilities make it likely to become the world's first information utility – a concept similar to electric utilities that provide services to many corporations and individuals alike. Constant innovation is the key to Google's success and offers lessons for other companies: hire talented people, have them work in small teams, and give them freedom to excel, but use a rigorous data-based approach to evaluating results and making course adjustments.
Keywords: Google, Information utility, Business model, Search engine, Web-based advertising, IT infrastructure, Scalability
Citation: Chen R, Kraemer KL, Sharma P (2009) Google: the world's first information utility? Bus Inf Syst Eng 1(1):53–61

Arnold Picot, Oliver Baumann

The Relevance of Organization Theory to the Field of Business and Information Systems Engineering

Information and communication systems (ICS) impact their organizational environment in significant ways; hence, the design, implementation, and use of ICS are inseparably linked to fundamental issues of organizational design and behavior. Current research in the field of business and information systems engineering (BISE), however, is primarily technology- or practice-oriented and concerned with the construction and validation of prototypes, whereby little attention is paid to theoretical insight about organizational phenomena and relationships. In this paper, we argue that paying more attention to organization theory would provide valuable guidance in addressing the dense links between ICS on the one hand, and organizational systems on the other. To support our argument, we refer to selected theoretical perspectives and highlight their potential relevance to the BISE field.
Keywords: Information and communication systems, Organization theory, Organizational design, Organizational behavior, System design and implementation
Citation: Picot A, Baumann O (2009) The relevance of organization theory to the field of business and information systems engineering. Bus Inf Syst Eng 1(1):62–69

Matthias Jarke

Perspectives of the Interplay Between Business and Information Systems Engineering and Computer Science

The relationship between business and information systems engineering (BISE) and its main reference disciplines business administration and informatics has changed several times during the last decades. Despite some frictions during the 1980s and 1990s, the interplay between informatics and BISE is becoming much more constructive and has proven extremely fruitful. Important examples of this co-evolution include data management and conceptual modeling, internet-based information and transaction systems, and the emergence of computational business sciences. The increasing integration of virtual and real world in the "Internet of Things" offers new scientific and organizational challenges for the cooperation between the BISE and informatics, which can only be formulated and solved conjointly.
Keywords: Computer science, Business and information systems engineering, Co-evolution, Interdisciplinary research
Citation: Jarke M (2009) Perspectives of the interplay between business and information systems engineering and computer science. Bus Inf Syst Eng 1(1):70–74

August-Wilhelm Scheer

Business and Information Systems Engineering Links Science with Entrepreneurship

One of the major success indicators for applied research sciences is the rate of transfer from research into practice. Only if concrete and economically successful products are derived from research results, such sciences can induce an impact. However, this process of innovation mandatorily needs entrepreneurship. Within the domain of business information systems, the two German enterprises SAP AG and IDS Scheer AG demonstrate that linking research and innovation is the key to lasting success in the information technology markets.

German industry has significant disadvantages on the cost of human resources. Therefore it can be only successful with products that incorporate a high degree of innovation and that are consequently highly priced. But the invention of such products needs scientific research as a source of inspiration. Germany has a highly developed infrastructure of research facilities and organizations. However, they need to be better coordinated and aligned with business needs. Vice versa, enterprises need to actively approach the scientific community in order to clearly formulate their demand.

Such a strategy needs changes on all sides. To achieve a change in the domain of science, it is necessary to change the profile of leading researchers, such as full professors. They should incorporate attributes of an entrepreneur and be profiled more as a research manager that tries to anticipate future needs and to develop its unit in terms of research subjects as well as personnel and financial resources. Consequently, the process of application, selection and review of leading researchers should be more oriented on processes that are common in enterprises. E.g. external head-hunters can be involved in the searching and assessing process in order to get the best qualified person for the research vacancy. Also enterprises need to change their attitude towards scientific research. In order to foster this process, executives could be invited to advisory and supervisory boards of research organisations. Furthermore, those executives must be proactively informed about the research activities and results in order to attract their interest and to show potentials for a transfer into products. There is still a long way in the hunt for innovation leadership and all these suggestions can only be a starting point.

Keywords: Business information systems, Entrepreneurship, Research transfer, Product innovation, Innovation challenge

Citation: Scheer A-W (2009) Business and information systems engineering links science with entrepeneurship. Bus Inf Syst Eng 1(1):75–80

John Diebold

Electronic Computers – The Challenge to Management

The potentialities of computers have not been fully exploited in the U.S. because management has underestimated the task of putting them to proper use. Management has believed that computers themselves are automation. But automation places a premium on good management. Without careful management planning, business resources are wasted in terms of managerial and technical time and abilities.

Keywords: Automation, Automatic data processing, Electronic computers, Management, Education

Citation: Diebold J (2009) Electronic computers – the challenge to management. Bus Inf Syst Eng 1(1):81–83

Karl-Heinz Kettner

The Integrative Effect of Electronic Data Processing

Electronic data processing systems have been constructed based on the results of cybernetics and communication theory. They interpret the combination of several constructs as integrated systems that form integrated systems of a higher degree. This corresponds to the way modern economics looks at corporate functions, enterprises, the economy…

This fundamental tendency is reflected by the idea that the most important factor in electronic data processing systems is not the speed of operation but the integrative effect. Therefore it is necessary to arrange workflows in a closed control system, under consideration of the most rational path. Thus IDP advances the aims of business organization to a higher level and at the same time provides means for reaching these aims.

Keywords: Integration, Electronic data processing, Integrative effect, IDP

Citation: Kettner K-H (2009) The integrative effect of electronic data processing. Bus Inf Syst Eng 1(1):84–88

Erwin Grochla

Corporate Information Systems Engineering and Business and Information Systems Engineering as a Necessary Application-Oriented Extension of General Computer Science

In issue 8/1969 of this journal the section "Short news" quoted the common response of the GAMM information processing expert committee and the NTG expert committee No. 6 to the Federal Ministry's recommendations regarding education in the field of data processing published in the end of July 1969. Only now, the editorial staff got to know that the Economic Institute for Organization and Automation at the University of Cologne (BIFOA), which is under the direction of Prof. Dr. Erwin Grochla, published a memorandum called "Corporate Information Systems Engineering and Business Information Systems Engineering as a necessary application-oriented extension of general computer science" already in June 1969, which is also related to these computer science recommendations. In order to enable our readers to form a comprehensive opinion regarding the new and seminal field of computer science we decided to publish the "Second memorandum" of BIFOA in the original wording.

Keywords: Corporate information systems engineering, Business and information systems engineering, General computer science, BIFOA memorandum

Citation: Grochla E (2009) Corporate information systems engineering and business and information systems engineering as a necessary application-oriented extension of general computer science. Bus Inf Syst Eng 1(1):89–93

Henning Kagermann

Distribution of Integrated Business Applications

New corporate developments, such as globalization, diversification and process orientation, are posing a challenge to the degree of integration of business application software. International standard software designed to meet the requirements of all types of business is acquiring greater strategic significance. The increased need for flexibility, localization, and scalable growth makes it necessary for highly integrated businesses applications to be distributable. Possible scenarios reflect business data processing organization requirements. Additional mechanisms must be incorporated and business processes adapted to compensate for the increased autonomy of sub-applications.

Keywords: Standard software, Distribution, Integration, Corporate management, Business applications, Client/server, Master/satellite

Citation: Kagermann H (2009) Distribution of integrated business applications. Bus Inf Syst Eng 1(1):94–100

Jens Dibbern, Armin Heinzl

Outsourcing of Information Systems Functions in Small and Medium Sized Enterprises: A Test of a Multi-Theoretical Model

In this paper determinants of information systems (IS) outsourcing are deduced from transaction cost economic theory, resource-based theory, and power theory. They are summarized in a theoretical framework which is tested using a sample of small and medium sized enterprises (SMEs) in Germany. The results show that internal performance and know-how deficits vis-à-vis external service providers are key determinants that explain why different IS functions are outsourced to varying degrees in SMEs. Moreover, the determinants of IS functions were found to partially differ between IS functions.

Keywords: Information systems outsourcing, Small and medium sized enterprises (SMEs), Transaction cost economic theory, Resource-based theory, Power theory, Structural equation modeling, Partial least squares, Empirical study

Citation: Dibbern J, Heinzl A (2009) Outsourcing of information systems functions in small and medium sized enterprises: a test of a multi-theoretical model. Bus Inf Syst Eng 1(1):101–110

Martin Bichler, Alexander Pikovsky, Thomas Setzer

An Analysis of Design Problems in Combinatorial Procurement Auctions

Combinatorial auctions are promising auction formats for industrial and public procurement. Potential advantages of using combinatorial auctions include lower overall spend, low transaction costs for multi-item negotiations, fairness and market transparency for suppliers, as well as high allocative efficiency. A number of fundamental design considerations are relevant to the application of combinatorial auctions in procurement. In addition, procurement specialists need to consider several domain-specific requirements, such as additional side constraints as well as alternative multidimensional bid types.

Keywords: Combinatorial auction, Multidimensional auction, Industrial procurement, Combinatorial optimization

Citation: Bichler M, Pikovsky A, Setzer T (2009) An analysis of design problems in combinatorial procurement auctions. Bus Inf Syst Eng 1(1):111–117

Abstracts of Issue 2/2009

Kai Fischbach, Peter A. Gloor, Detlef Schoder

Analysis of Informal Communication Networks – A Case Study

The structure and dynamics of informal communication networks are of central significance for the functionality of enterprise workflows and for performance and innovation of knowledge-centric organizations. While most executives are aware of this fact, there is a general lack of (semi-) automated, IT-supported methods and instruments to make informal communication networks measurable. Although logging of electronic communications has made considerable progress over the past few years, it is still extremely difficult to map personal interaction; manual approaches in particular are extremely error-prone. This article shows how informal communication networks can be investigated by IT-based methods. At the same time, we will be presenting an instrument ("Social Badges") that collects personal communications automatically and more precisely than legacy approaches allow. The practical applicability of our approach is evaluated through a case study.

Keywords: Analysis of social networks, Communications analysis, Informal communications, Social badges, Knowledge worker, Communication Networks

Citation: Fischbach K, Gloor PA, Schoder D (2009) Analysis of informal communication networks – a case study. Bus Inf Syst Eng 1(2):140–149

Stephan Aier, Robert Winter

Virtual Decoupling for IT/Business Alignment – Conceptual Foundations, Architecture Design, and Implementation Example

IT/business alignment is one of the main topics of information systems research. If IT artifacts and business-related artifacts are coupled point-to-point, however, complex architectures become unmanageable over time. In computer science, concepts like the ANSI/SPARC three-level database architecture propose an architecture layer which decouples external views on data and the implementation view of data. In this paper, a similar approach for IT/business alignment is proposed. The proposed alignment architecture is populated by enterprise services as elementary artifacts. Enterprise services link software components and process activities. They are aggregated into applications and subsequently into domains for planning/design and communication purposes. Most design approaches for the construction of enterprise services, applications and domains are top-down, i.e. stepwise decompose complex artifacts. As an alternative which takes into account coupling semantics, we propose a bottom-up approach which is demonstrated for the identification of domains. Our approach is evaluated using a telecommunications equipment case study.

Keywords: Integration, decoupling, IT/business alignment

Citation: Aier S, Winter R (2009) Virtual decoupling for IT/business alignment – conceptual foundations, architecture design, and implementation example. Bus Inf Syst Eng 1(2):150–163

Kai Riemer, Stefanie Filius

Contextualizing Media Choice Using Genre Analysis

Value creation is increasingly organised in virtualised settings requiring effective computer-mediated communication. While media choice has been a topic of interest in Information Systems for some time, corresponding media choice theories exhibit a range of shortcomings with regard to applicability in context. Since the theories try to generalise across social contexts, their key constructs are rather abstract and underspecified with regard to application. Against this backdrop we present an approach for contextualising media choice using genre analysis. Genre analysis aims at identifying communication patterns (genres) in social communities (e.g. teams) as a structured overview of existing team communication. By juxtaposing requirements of the identified genres and media characteristics, we are able to pro-pose a new set of media for improving team communication. We illustrate the application of our approach with a case example.

Keywords: Media choice, Genre analysis, Communication analysis, Virtualization, Teamwork, Virtual teams

Citation: Riemer K, Filius S (2009) Contextualising media choice using genre analysis. Bus Inf Syst Eng 1(2):164–176

Jens Vykoukal, Martin Wolf, Roman Beck

Services Grids in Industry – On-Demand Provisioning and Allocation of Grid-Based Business Services

Over the last few years Grid computing has attracted considerable attention from the industry, because it offers opportunities for new on-demand business services for enterprises. In this article, we depict the current trend of enterprises to source Grid services offered by third-party utility providers on a use-on-demand, pay-per-use basis, thus leading to faster IT response to changing business needs. We outline the emerging expansion of Grid computing in industry and discuss the significant challenges still needing to be solved to further promote the adoption of Grid technology in the business domain.

Keywords: Grid computing, Utility computing, Services grid, Grid economy, Grid market

Citation: Vykoukal J, Wolf M, Beck R (2009) Services grids in industry – on-demand provisioning and allocation of grid-based business services. Bus Inf Syst Eng 1(2):177–184

Abstracts of Issue 3/2009

Stefan Strecker, Herbert Kargl

Integration Deficits of IT Controlling – Historical Background, Analysis of Integration Potentials, and Method Integration

The paper is based on the thesis that IT controlling suffers from two integration deficits with regard to its methods base: On the one hand, this is a lack of synchronization between research on IT controlling methods and developments in practice; on the other hand, a lack of integration of IT controlling methods with methods of business and information systems engineering (BISE). Based on this assumption, the paper investigates historical developments in IT controlling research and practice to derive theses about the present state of method integration. The analysis finds indications for further potential for method integration and identifies these potentials. Requirements towards method integration are derived from an analysis of the identified integration potentials and two examples illustrate how to realize further integration.

Keywords: IT controlling, IT controlling methods, Method integration
Citation: Strecker S, Kargl H (2009) Integration deficits of it controlling – historical background, analysis of integration potentials, and method integration. Bus Inf Syst Eng 1(3):204–212

Jörg Becker, Ralf Knackstedt, Jens Pöppelbuß

Developing Maturity Models for IT Management – A Procedure Model and Its Application

Maturity models are valuable instruments for IT managers because they allow the assessment of the current situation of a company as well as the identification of reasonable improvement measures. Over the last few years, more than a hundred maturity models have been developed to support IT management. They address a broad range of different application areas, comprising holistic assessments of IT management as well as appraisals of specific subareas (e.g. Business Process Management, Business Intelligence).
The evergrowing number of maturity models indicates a certain degree of arbitrariness concerning their development processes. Especially, this is highlighted by incomplete documentation of methodologies applied for maturity model development.
In this paper, we will try to work against this trend by proposing requirements concerning the development of maturity models. A selection of the few well-documented maturity models is compared to these requirements. The results lead us to a generic and consolidated procedure model for the design of maturity models. It provides a manual for the theoretically founded development and evaluation of maturity models. Finally, we will apply this procedure model to the development of the IT Performance Measurement Maturity Model ($ITPM^3$).

Keywords: Maturity model, IT management, IT performance measurement, Design science, Epistemology
Citation: Becker J, Knackstedt R, Pöppelbuß J (2009) Developing maturity models for IT management – a procedure model and its application. Bus Inf Syst Eng 1(3):213–222

Jan vom Brocke, Christian Sonnenberg, Alexander Simons

Value-Oriented Information Systems Design: The Concept of Potentials Modeling and Its Application to Service-Oriented Architectures

Companies are increasingly confronted with the question of whether or not the adoption of information technologies (IT) turns out to be a profitable venture. Thus, there is a great need for methods which allow for both the analysis and evaluation of the economic value of IT investments. In this paper we introduce the concept of potentials modeling which integrates a value-oriented perspective into information modeling. More specifically, we set out to explore the economic value of service-oriented architectures (SOA). The practicability of our approach is illustrated on the basis of a simplified application example. It is hoped that this paper will make a contribution to the ongoing discussion of IT value and stimulates further research in the field of value-oriented information systems (IS).

Keywords: Potentials modeling, Information modeling, Service-oriented architectures (SOA), Value
Citation: Vom Brocke J, Sonnenberg C, Simons A (2009) Value-oriented information systems design: the concept of potentials modeling and its application to service-oriented architectures. Bus Inf Syst Eng 1(3):223–233

Eva Peggy Sekatzek, Helmut Krcmar

Measurement of the Standard Proximity of Adapted Standard Business Software

In order to optimize the economical use of SAP software systems and to increase the cost effectiveness of the SAP investment, the available SAP standard system should be implemented in the best possible way. While standard functionality has no negative effects on maintenance and operating cost, modification of the standard has the potential to drive costs (Markus et al. 2000). An integrated methodology and an efficient instrument for the operational and strategic evaluation of this topic are crucial for an efficient application of SAP standard software. This article describes a new technical measurement methodology based on key performance indicators. This measurement methodology allows for measuring the standard proximity (i.e. proximity of used functionality to standard functionality) in SAP systems thereby creating transparency regarding the use of the available standard and non-standard functions. The methodology is evaluated in the context of a case study within the BMW Group. From the results of the measurement, actions are derived which foster the standard utilization and thus the efficiency of an SAP system.

Keywords: Standard business software, SAP, Standard proximity, Standardization degree, Key performance indicator, Efficiency
Citation: Sekatzek EP, Krcmar H (2009) Measurement of the standard proximity of adapted standard business software. Bus Inf Syst Eng 1(3):234–244

Denis Royer, Martin Meints

Enterprise Identity Management – Towards a Decision Support Framework Based on the Balanced Scorecard Approach

Enterprise Identity Management Systems (EIdMS) are an IT-based infrastructure that needs to be integrated into various business processes and related infrastructures. Assessment and preparation of decisions for the introduction need to take the costs, benefits, and the organizational settings into consideration. A variety of methods for the evaluation and decision support of new IT (e.g. EIdMS) are discussed in the literature – however, these are typically based on single dimensions (e.g. financial or technology aspects). This paper proposes a multidimensional decision support framework, based on the Balanced Scorecard concept. The presented approach introduces four perspectives and a related set of initial decision parameters to support decision making. The perspectives are (a) financial/monetary, (b) business processes, (c) supporting processes and (ICT) infrastructure and (d) information security, risks and compliance. Perspectives and adaptable sets of decision parameters also may serve as foundation for software-based decision support instruments.

Keywords: Balanced scorecard, Enterprise identity management, Decision support, IT security
Citation: Royer D, Meints M (2009) Enterprise identity management – towards a decision support framwork based on the balanced scorecard approach. Bus Inf Syst Eng 1(3):245–253

Andreas Gadatsch

IT Controlling – Concepts and Transformation into Practice

In the first part the paper depicts central IT controlling terms and selected IT controlling concepts of the last decade. In the second part a performance oriented IT controlling concept describes central processes of the IT controlling concept by using a three step life cycle model in terms of a reference model. Finally some important results from a current survey concerning the development of IT controlling in German speaking countries are given. Based on these facts the paper describes the needs for action in academia and practice: The role of the IT controller has been established in German speaking countries, but there is disagreement concerning targets, tasks and processes of IT controlling, cost oriented tasks and reporting are dominating the practitioner's work, established economic methods of IT controlling are not consistently used in companies.

Keywords: IT controlling, Information management, IT performance management
Citation: Gadatsch A (2009) IT controlling – concepts and transformation into practice. Bus Inf Syst Eng 1(3):254–262

Abstracts of Issue 4/2009

Daniel Gull, Alexander Wehrmann

Optimized Software Licensing – Combining License Types in a License Portfolio

Although software licenses usually range among the most expensive items within the IT budget, they still lack the necessary attention by many companies. Therefore, most companies inadequately have implemented their software asset management neglecting further potential for cost reduction, which can be obtained by optimizing the use of different license types. This paper shows how possible savings can be realized by combining different types of licenses in a license portfolio. The model presented is based on the most common license types considering different user groups as well as their behavior. Additionally to cost risks, the risk of service quality is also taken into consideration. The following examples illustrate the model's high relevance and show how it can be applied in practice.

Keywords: License portfolios, License types, Software licensing, License management
Citation: Gull D, Wehrmann A (2009) Optimized software licensing – combining license types in a license portfolio. Bus Inf Syst Eng 1(4):277–288

Sven Schade, Thorsten Frey, Nezar Mahmoud

Simulating Discount-Pricing Strategies for the GSM-Mobile Market

The article analyzes network effects on the German GSM mobile telephony market. The authors use an ACE-approach to examine how a new competitor can successfully gain ground in the market with a discount-pricing strategy. In particular they study the impact of several elements of a mobile phone contract like on-net-, landline- or off-net-fees on the competitor's market share. It turns out that it is possible to successfully enter the market with a prepaid contract using a discount-pricing strategy where the single fees only marginally exceed the termination rates, which have to be transferred to foreign network operators.

Keywords: Network effects, Mobile telecommunication, Agent-based computational economics, Pricing strategies
Citation: Schade S, Frey T, Mahmoud N (2009) Simulating discount-pricing strategies for the GSM-mobile market. Bus Inf Syst Eng 1(4):289–300

Sonja Zaplata, Christian P. Kunze, Winfried Lamersdorf

Context-Based Cooperation in Mobile Business Environments – Managing the Distributed Execution of Mobile Processes

Realistic requirements of mobile business applications often exceed the capabilities of their respective local environments. In order to overcome such restrictions of specific mobile devices, services, and resources, this contribution introduces the concept of context-based cooperation. It is based on mobile processes which enable applications to cross boundaries of individual systems and thereby allow combining both mobile and stationary resources in order to realize highly dynamic individual applications. This contribution presents an approach for realizing context-based cooperation built upon on a respective context management infrastructure and execution environment. It also identifies specific requirements and proposes related enhancements for mobile business applications.

Keywords: Business process management, Mobile computing, Context-awareness, Distributed systems, Service-oriented computing, Mobile process, Cooperation, Migration
Citation: Zaplata S, Kunze CP, Lamersdorf W (2009) Context-based cooperation in mobile business environments – managing the distributed execution of mobile processes. Bus Inf Syst Eng 1(4):301–314

Nils Urbach, Stefan Smolnik, Gerold Riempp

The State of Research on Information System Success – A Review of Existing Multidimensional Approaches

Measuring information systems (IS) success is of great interest to both researchers and practitioners. This article examines multidimensional approaches to measuring IS success and explores the current state of IS success research through a literature review and by classifying articles published between 2003 and 2007. Based on a total of 41 academic journal and conference publications, the relevant research carried out is identified, while the research results are categorized, consolidated, and discussed. The results show that the dominant empirical research analyzes the individual impact of a certain type of information system by ascertaining users' evaluation of it by means of surveys and then applying structural equation modeling. The DeLone and McLean information systems success model is the main theoretical basis of the reviewed empirical studies. This article provides researchers with a comprehensive review and structuring of IS success research. Furthermore, opportunities for additional development are identified and future research directions suggested.

Keywords: Information systems success, Information systems effectiveness, Literature review
Citation: Urbach N, Smolnik S, Riempp G (2009) The state of research of information systems success – a review of existing multidimensional approaches. Bus Inf Syst Eng 1(4):315–325

Abstracts of Issue 5/2009

Benjamin Blau, Clemes van Dinther, Tobias Conte, Yongchun Xu, Christof Weinhardt

How to Coordinate Value Generation in Service Networks – A Mechanism Design Approach

The fundamental paradigm shift from traditional value chains to agile service value networks implies new economic and organizational challenges. As coordination mechanisms, auctions have proven to perform quite well in situations where intangible and heterogeneous goods are traded. Nevertheless, traditional approaches in the area of multidimensional combinatorial auctions are not quite suitable to enable the trade of composite services. A flawless service execution and therefore the requester's valuation highly depends on the accurate sequence of the functional parts of the composition, meaning that in contrary to service bundles, composite services only generate value through a valid order of their components. The authors present an abstract model as a formalization of service value networks. The model comprehends a graph-based mechanism implementation to allocate multidimensional service offers within the network, to impose penalties for non-performance and to determine prices for complex services. The mechanism and the bidding language support various types of QoS attributes and their (semantic) aggregation. It is analytically shown that this variant is incentive compatible with respect to all dimensions of the service offer (quality and price). Based on these results, the authors numerically analyze strategic behavior of participating service providers regarding possible collusion strategies.

Keywords: Mechanism design, Coordination, Service value network, Procurement auction, Semantics
Citation: Blau B, van Dinther C, Conte T, Xu Y, Weinhardt C (2009) How to coordinate value generation in service networks – a mechanism design approach. Bus Inf Syst Eng 1(5):343–356

Alexander Benlian, Thomas Hess, Peter Buxmann

Drivers of SaaS-Adoptions – An Empirical Study of Different Application Types

Software-as-a-Service (SaaS) is said to become an important cornerstone of the Internet of Services. However, while some market research and IT provider firms fervently support this point of view, others already conjure up the failure of this on-demand sourcing option. Oftentimes based on weak empirical data and shaky reasoning, these inconsistent perspectives lack scientific rigor and neglect to present a more differentiated picture of SaaS-adoption. This study seeks to deepen the understanding of factors driving the adoption of Software-as-a-Service (SaaS). Grounded in transaction cost theory, the resource-based view, and the theory of planned behavior, we develop a research model to assess SaaS-adoption at the application level. Survey data of 297 firms in Germany with 374 valid response items across different industries were collected to test the theoretical model. Our analysis revealed that patterns on the decision on SaaS-adoption differ across application types. Social influence, attitude toward SaaS-adoption, adoption uncertainty, and strategic value turned out to be the strongest and most consistent drivers across all application types. Furthermore, we found that firm size does not matter in SaaS-adoption, since large enterprises and small- and medium-sized companies had similar adoption rates. Overall, this study provides relevant findings that IT vendors can use to better appeal to potential companies that consider adopting SaaS.

Keywords: Software-as-a-service, IT sourcing, Adoption, Transaction-cost theory, Resource-based view, Theory of planned behavior
Citation: Benlian A, Hess T, Buxmann P (2009) Drivers of SaaS-adoption – an empirical study of different application types. Bus Inf Syst Eng 1(5):357–369

Daniel Oberle, Nadeem Bhatti, Saartje Brockmans, Michael Niemann, Christian Janiesch

Countering Service Information Challenges in the Internet of Services

Business Webs apply the idea of value networks to the WWW. The underlying delivery platform is commonly referred to as the Internet of Services and will certainly have to deal with a great variety and amount of information about services along several service information dimensions. As soon as brokerage, discovery, or community feedback parts are decentralized, there emerge a number of service information challenges (modeling the information in a holistic way, documentation, interlinkage, tool interoperability, distributed querying, inconsistent information, and cooperation of different stakeholders). In this paper, we propose to counter such service information challenges by two artifacts. First, we contribute a Service Ontology based on a sound and rigid foundational ontology. The Service Ontology provides a holistic and consistent way of capturing service information. We apply the recommendations of the W3C Semantic Web Activity whose recent standardization has already opened new possibilities for tool interoperability, interlinkage of information, and distributed querying on the web. However, building and prescribing an ontology in standardized languages is not enough to address all service information challenges. Therefore, as a second contribution, we provide a method around the ontology including a governance framework, guidelines for applying the W3C Semantic Web recommendations, a lifecycle-spanning tool chain, and different levels of applicability. We label our method Semantic Business Web approach, since we build on W3C Semantic Web standards, use and extend them in the Business Web setting. Both artifacts are constructed in an interdisciplinary way by experts participating in the German lighthouse project THESEUS/TEXO. The project's scenario also serves as a proof of concept evaluation of the artifacts.

Keywords: Internet of services, Business web, Semantic web, Service ontology, Service governance framework
Citation: Oberle D, Bhatti N, Brockmans S, Niemann M, Janiesch C (2009) Countering service information challenges in the Internet of services. Bus Inf Syst Eng 1(5):370–390

Christof Weinhardt, Arun Anandasivam, Benjamin Blau, Nikolay Borissov, Thomas Meinl, Wibke Michalk, Jochen Stößer

Cloud Computing – A Classification, Business Models, and Research Directions

Lately, a new computing paradigm has emerged: "Cloud Computing". It seems to be promoted as heavily as the "Grid" was a few years ago, causing broad discussions on the differences between Grid and Cloud Computing. The first contribution of this paper is thus a detailed discussion about the different characteristics of Grid Computing and Cloud Computing. This technical classification allows for a well-founded discussion of the business opportunities of the Cloud Computing paradigm. To this end, this paper first presents a business model framework for Clouds. It subsequently reviews and classifies current Cloud offerings in the light of this framework. Finally, this paper discusses challenges that have to be mastered in order to make the Cloud vision come true and points to promising areas for future research.

Keywords: Cloud computing, Grid computing, Business models, Research directions
Citation: Weinhardt C, Anandasivam A, Blau B, Borissov N, Meinl T, Michalk W, Stößer J (2009) Cloud computing – a classification, business models, and research directions. Bus Inf Syst Eng 1(5):391–399

Abstracts of Issue 6/2009

Katharina Steininger, René Riedl, Friedrich Roithmayr, Peter Mertens

Fads and Trends in Business and Information Systems Engineering and Information Systems Research – A Comparative Literature Analysis

The business and information systems engineering (BISE) discipline, dominating in the German-speaking countries, where it is called"Wirtschaftsinformatik", is currently undergoing a phase of increasing internationalization and the U.S.-based Information Systems (IS) discipline is often considered an ideal. Studies show that BISE has often dealt with fads in the past – for IS there are no findings reporting on the diffusion of fads. The objective of the paper is to close this research gap. The authors conducted a literature analysis to investigate the development of topics and terms in BISE and IS from 1994 to 2007. Titles, abstracts and keywords of 2,564 articles in three BISE journals and 5,647 articles in five IS journals were analyzed. The results show that BISE is topically more diverse and concrete than IS. In addition, the rate of fads is higher in BISE than IS. Being engaged in fads is not necessarily negative – rather, it may considerably contribute to the relevance of research. However, it has to be considered that an overly intense orientation on fads may negatively influence a cumulative research progress. Hence, the authors conclude that for BISE and IS, which both have a theoretical and pragmatic mission, a balanced ratio of short- and long-term topics seems appropriate.
Keywords: Fads, Trends, Topical diversity, Terminology, Information Systems, Literature analysis
Citation: Steininger K, Riedl R, Roithmayr F, Mertens P (2009) Fads and trends in business and information systems engineering and information systems research – a comparative literature analysis. Bus Inf Syst Eng 1(6):412–428

Maximilian Röglinger

Verification of Web Service Compositions – An Operationalization of Correctness and a Requirements Framework for Service-Oriented Modeling Techniques

Web service compositions coordinate Web services of different enterprises. They are expected to constitute the foundation of service-oriented architectures, to improve business processes as well as to foster intra- and inter-organizational integration. Especially in inter-organizational contexts, quality of service referring to non-functional requirements and conformance to functional requirements are becoming vital properties. With Web service compositions being asynchronous and distributed systems, the latter property – which is also called correctness – can be shown best by verification. This paper examines from a system-theoretic perspective how correctness can be operationalized for Web service compositions. It also proposes a requirements framework for service-oriented modeling techniques so that correctness can be shown by verification and Web service compositions can be modeled intuitively. In order to show the framework's principle applicability, an example approach is analyzed with respect to the corresponding requirements.
Keywords: Web service compositions, Service-oriented modeling, Formal methods
Citation: Röglinger M (2009) Verification of web service compositions – an operationalization of correctness and a requirements framework for service-oriented modeling techniques. Bus Inf Syst Eng 1(6):429–437

Oliver Thomas, Michael Fellmann

Semantic Process Modeling – Design and Implementation of an Ontology-Based Representation of Business Processes

An extension of process modeling languages is designed which allows representing the semantics of model element labels which are formulated in natural language by using concepts of a formal ontology. This combination of semiformal models with formal ontologies will be characterized as semantic process modeling. The approach is exemplarily applied to the languages EPC (Event-driven Process Chain), BPMN (Business Process Modeling Notation) and OWL (Web Ontology Language) and is generalized by means of an information model. The proposed formalization of the semantics of individual model elements in conjunction with the usage of inference engines allows the improvement of query functionalities in modeling tools and enables new possibilities of model validation. The integration of the approach in the IT-based work environments of modelers is demonstrated by a system architecture and a prototypical implementation. Evidently, advantages in the areas of modeling, model management, IT-business alignment, and compliance can be achieved by the application of modeling tools augmented with semantic technologies.
Keywords: Process management, Process modeling, Modeling languages, Semantics, Ontologies, Ontology languages
Citation: Thomas O, Fellmann M (2009) Semantic process modeling – design and implementation of an ontology-based representation of business processes. Bus Inf Syst Eng 1(6):438–451

Sonja Lehmann, Peter Buxmann

Pricing Strategies of Software Vendors

Due to the economic characteristics specific to the software industry, pricing concepts existing in other industries cannot be transferred without adaptation. Therefore, this article provides an overview of pricing models for software. In this context we discuss the six parameters formation of prices, structure of payment flow, assessment base, price discrimination, price bundling, and dynamic pricing strategies. Furthermore, we refer to recent software delivery models, such as Software as a service. The results are based on literature research and empirical studies.

Keywords: Pricing strategy, Software vendor, Software industry
Citation: Lehmann S, Buxmann P (2009) Pricing strategies of software vendors. Bus Inf Syst Eng 1(6):452–462

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Abstracts of Issue 1/2010

Oliver Holschke, Jannis Rake, Philipp Offermann, Udo Bub

Improving Software Flexibility for Business Process Changes

In times of continuous change, companies need to adjust their business processes to gain sustainable competitive advantage. Resulting changes in the company's IT currently require the involvement of developers from departments that are mostly not aligned with the business. These changes often result in high transaction and labor costs. The article presents a platform-based method to adjust business processes with the aim of increasing both efficiency and flexibility compared to current approaches. The core of our work is an evaluation against traditional component-based software development using a sound simulation model. Three real-world scenarios of business process change show that – despite a slight increase in transaction costs – our suggested method decreases labor costs while increasing operational flexibility.

Keywords: Business processes, Flexibility, Method, Process platform, Service-oriented architecture, Software-as-a-service
Citation: Holschke O, Rake J, Offermann P, Bub U (2010) Improving software flexibility for business process changes. Bus Inf Syst Eng 2(1):3–13

Dominik Vanderhaeghen, Peter Fettke, Peter Loos

Organizational and Technological Options for Business Process Management from the Perspective of Web 2.0 – Results of a Design-Oriented Research Approach with Particular Consideration of Self-Organization and Collective Intelligence

Corporate operative systems are often highly dynamic, a fact which is only insufficiently taken into account by recent process management approaches. In contrast, the perspective of Web 2.0 opens up new options for action in process management. In this contribution, we figure out new organizational and technological options of process management using a design-oriented research approach. The analysis especially considers the aspects of self-organization and collective intelligence in process management. We conceptually develop options for action and illustrate them based on a prototype platform for process management. The paper is complemented by a presentation of real-world application scenarios in the construction industry and results of an evaluation of the design-oriented research approach.

Keywords: Process management, Enterprise modeling, Web 2.0, Prototype
Citation: Vanderhaeghen D, Fettke P, Loos P (2010) Organizational and technological options for business process management from the perspective of Web 2.0 – results of a design-oriented research approach with particular consideration of self-organization and collective intelligence. Bus Inf Syst Eng 2(1):15–28

Kathrin S. Braunwarth, Matthias Kaiser, Anna-Luisa Müller

Economic Evaluation and Optimization of the Degree of Automation in Insurance Processes

In the context of value and customer orientation there are various requirements concerning the process – especially in insurance companies: processes are meant to be standardized, automated, and flexible. It is in question whether a fast and cheap automated processing is preferred to manual handling. For which claims and which process steps is it of economic value to have the flexibility and the competence and ability to solve problems of human operators at your disposal? Various combinations, representing different degrees of automation, are possible. The different degrees of automation for the processing of an insurance claims are compared and resulting cash flows are determined. It is essential to include all consequences that can be attributed to a single process and to consider customer reactions and restrictions to the capacity of processing. Instead of using heuristic rules to decide on automation in practice, here the decision is flexible and depends on the given situation. Viewing an aggregated number of insurance claims it is possible to deduce information about the performance of the process. The model is exemplarily illustrated with help of a part of the process for handling own damage glass claims.

Keywords: Insurance, Business process, Automation, Capacity restriction, Degree of automation
Citation: Braunwarth KS, Kaiser M, Müller A-L (2010) Economic evaluation and optimization of the degree of automation in insurance processes. Bus Inf Syst Eng 2(1):29–39

Abstracts of Issue 2/2010

Oliver Hinz, Jochen Eckert

The Impact of Search and Recommendation Systems on Sales in Electronic Commerce

The Internet and related technologies have vastly expanded the variety of products that can be profitably promoted and sold by online retailers. Furthermore, search and recommendation tools reduce consumers' search costs in the Internet and enable them to extend their search from a few easily found best-selling products (blockbusters) to a large number of less frequently selling items (niches). As a result, Long Tail sales distribution patterns emerge that illustrate an increasing demand in niches. We show in this article how different classes of search and recommendation tools affect the distribution of sales across products, total sales, and consumer surplus. We hereby use an agent-based simulation which is calibrated based on real purchase data of a video-on-demand retailer. We find that a decrease in search costs through improved search technology can either shift demand from blockbusters to niches (search filters and recommendation systems) or from niches to blockbusters (charts and top lists). We break down demand changes into substitution and additional consumption and show that search and recommendation technologies can lead to substantial profit increases for retailers. We also illustrate that decreasing search costs through search and recommendation technologies always lead to an increase in consumer surplus, suggesting that retailers can use these technologies as competitive advantage.

Keywords: Long tail phenomenon, Search costs, Search and recommendation systems, Electronic commerce
Citation: Hinz O, Eckert J (2010) The impact of search and recommendation systems on sales in electronic commerce. Bus Inf Syst Eng 2(2):67–77

Stefan Lessmann, Stefan Voß

Customer-Centric Decision Support – A Benchmarking Study of Novel Versus Established Classification Models

Classification analysis is an important tool to support decision making in customer-centric applications like, e.g., proactively identifying churners or selecting responsive customers for direct-marketing campaigns. Whereas the development of novel classification algorithms is a popular avenue for research, corresponding advancements are rarely adopted in corporate practice. This lack of diffusion may be explained by a high degree of uncertainty regarding the superiority of novel classifiers over well established counterparts in customer-centric settings. To overcome this obstacle, an empirical study is undertaken to assess the ability of several novel as well as traditional classifiers to form accurate predictions and effectively support decision making. The results provide strong evidence for the appropriateness of novel methods and indicate that they offer economic benefits under a variety of conditions. Therefore, an increase in use of respective procedures can be recommended.

Keywords: Data mining, Customer relationship management, Decision support, Classification models
Citation: Lessmann S, Voß S (2010) Customer-centric decision support – a benchmarking study of novel versus established classification models. Bus Inf Syst Eng 2(2):79–93

Martin S. Gneiser

Value-Based CRM – The Interaction of the Triad of Marketing, Financial Management, and IT

One major development within business practice is the increasing interest in customer relationship management (CRM) in recent years. CRM thereby focuses on establishing and maintaining profitable relationships with the customer using modern information technology (IT) and has emerged as a major research field in business and information systems engineering. However, despite huge investments many CRM projects fail to achieve their objectives as the complex and interdisciplinary nature of CRM is not addressed adequately. In fact an adoption of a customer-centric orientation within a value-based management requires not only a cross-functional integration of different business departments but also a selectively adjusted collaboration of those departments.
The paper provides an overview of the state of the art of CRM in literature as well as current practices in companies. Furthermore it outlines the specific challenges of a value-based CRM for the cross-functional integration and collaboration of marketing, financial management, and IT. Thus, in addition to a mutual alignment of marketing and IT, a value-based analysis, planning, and controlling of CRM-activities requires the development and implementation of standardized performance measurements and their adequate IT-support.

Keywords: CRM, CRM-systems, Value-based management
Citation: Gneiser MS (2010) Value-based CRM – the interaction of the triad of marketing, financial management, and IT. Bus Inf Syst Eng 2(2):95–103

Abstracts of Issue 3/2010

Julio Cesar Sampaio do Prado Leite, Claudia Cappelli

Software Transparency

Software transparency is a new and important concern that software developers must deal with. As society moves towards increased automation, if citizens wish to exercise their right to know, the transparency of public services and processes acquires fundamental importance. Informed discourse is only possible if processes affecting the public are open to evaluation. Achieving software transparency to this level of openness faces several roadblocks. The paper reports on initial findings on exploring the obstacles for enabling software transparency.

Keywords: Software, Transparency, Information transparency, Open society, Requirements engineering
Citation: Leite JCSP, Cappelli C (2010) Software transparency. Bus Inf Syst Eng 2(3):127–139

Martin Wiener, Rolf Stephan

Reverse Presentations – A Client-Driven Method for Requirements Engineering in Offshore Software Development

Reverse Presentations is a method for requirements validation in offshore software development. In this paper, the authors present and conceptually refine this method and carry out an initial evaluation. The method provides cross-phase support and is characterized by a structured and iterative validation process. In contrast to existing methods, it focuses on the client perspective and takes into account social distance challenges. The method aims at creating a common understanding of the future system by means of "reverse presentations". This core element of the method facilitates the transfer of knowledge across social worlds for validation purposes. Case studies with clients confirm that the method fits well with the offshore software development context. The cases point to the method's positive impact on the interorganizational interaction and control.

Keywords: Offshore outsourcing, Software development, Requirements validation, Reverse presentations method, Knowledge transfer
Citation: Wiener M, Stephan R (2010) Reverse presentations – a client-driven method for requirements engineering in offshore software development. Bus Inf Syst Eng 2(3):141–153

Sven Overhage, Oliver Skroch, Klaus Turowski

A Method to Evaluate the Suitability of Requirements Specifications for Offshore Projects

Today, even the development of business information systems is subject to the global offshoring trend. With the division of development work in an inter-organizational and intercultural context, requirements specifications become the central means to communicate the development scope as explicitly as possible. The suitability of requirements specifications hence often is mission critical in offshore projects. To assess their suitability, we first present eight quality criteria for requirements specifications. We then discuss five critical compensating factors that may potentially balance out an insufficient specification quality during the offshore project. On this basis, we describe a method to rationally evaluate the suitability of requirements specifications for instantiating an offshore project. We illustrate the application of the method by elaborating on a large case study that has been conducted with an industry partner. The results achieved by applying our method were confirmed during the further course of the actual project.

Keywords: Application development, Requirements specification, Evaluation, Offshoring
Citation: Overhage S, Skroch O, Turowski K (2010) A method to evaluate the suitability of requirements specifications for offshore projects. Bus Inf Syst Eng 2(3):155–164

Frank Zickert, Roman Beck

Because Effort Matters! A Mapping Model for Assessing Project Effort in Requirements Engineering

Project effort is critical for the success of software development projects. It has a major impact on whether constraints in time and budget can be complied with. But although requirements affect project effort, requirements engineering (RE) methods are not capable of assessing project effort.

In this paper, we present our mapping model for assessing project effort (MMAPE). MMAPE incorporates into RE the assessment of project effort resulting from requirements for software development projects. It maps semantics of the RE method KAOS onto structures that are counted in function point analyses. We applied MMAPE in a case study on a software development project within a large financial institution. The validity of MMAPE is supported, since we found throughout consistent statements between information provided by MMAPE and data gathered from the case.

Keywords: Requirements engineering, Project effort, KAOS, Function point analysis

Citation: Zickert F, Beck R (2010) Because effort matters! A mapping model for assessing project effort in requirements engineering. Bus Inf Syst Eng 2(3):165–173

Matthias Goeken, Janusch Patas

Evidence-Based Structuring and Evaluation of Empirical Research in Requirements Engineering – Fundamentals, Framework, Research Map

The objective of the contribution is to develop and motivate an approach of structuring, evaluating, and representing empirical research results regarding requirements engineering. Therefore, the authors develop a framework in order to organize the area of interest. The use of this framework and an evidence-based classification system allows us to develop a research map which helps to structure identified empirical research while enabling the derivation of further research needs. Additionally, it supports the selection of methods, techniques, etc. in requirements engineering practice.

Keywords: Empirical research, Requirements engineering, Evidence-based research, Literature review, Overview

Citation: Goeken M, Patas J (2010) Evidence-based structuring and evaluation of empirical research in requirements engineering – fundamentals, framework, research map. Bus Inf Syst Eng 2(3):175–185

Abstracts of Issue 4/2010

Matthias Häsel, Tobias Kollmann, Nicola Breugst

IT Competence in Internet Founder Teams – An Analysis of Preferences and Product Innovativity

In the Net Economy, numerous start-ups relying on Internet-based business models have been founded in the recent years. In these ventures IT experts are confronted with different requirements to those of traditional software development. It can thus be assumed that founders in the Net Economy prefer IT experts with a different competence profile. Based on an elaborate competence model for IT experts in Internet-based ventures, founder preferences are empirically analyzed and related to the novelty of the venture's product. An adaptive conjoint analysis is applied to obtain utility values for single components of competence. Using cluster analysis, four different competence profiles are identified which correspond to prototypical IT experts bearing different core functions. Data analysis suggests that founders with more innovative products differ from founders with less innovative products in their perception of the optimal IT expert's competence profile. The results have implications both for career decisions of IT experts and for founders of Internet start-ups who are looking for co-founding IT experts. This study is one of the first to explicitly focus on IT competence in Internet-based ventures. It therefore extends existing research on IT competence to a new and dynamic industry.

Keywords: Competence profile, Preference, IT expert, Net Economy, Founder, E-entrepreneurship, Innovativity, Conjoint analysis, Cluster analysis

Citation: Häsel M, Kollmann T, Breugst N (2010) IT competence in Internet founder teams – an analysis of preferences and product innovativity. Bus Inf Syst Eng 2(4):209–217

Jon Sprenger, Marc Klages, Michael H. Breitner

Cost-Benefit Analysis for the Section, Migration, and Operation of a Campus Management System

An increasing number of students, together with organizational and technological requirements, pose new challenges for universities. For these reasons, Campus Management Systems provide a solution for the necessary IS-support in student administration. In order to ensure cost-effectiveness, an extensive cost-utility analysis of the campus management systems under consideration is required. The process model illustrated here facilitates a ten-step cost-utility analysis for the selection, migration and operation of a campus management System. The process-oriented approach addresses the challenges posed by cost and benefit allocation. The subsequent ten steps, using the case analysis of two large German universities, show that the implementation of an integrated campus management system can lead to significant cost saving effects. The presented process model enables comparative calculations of differences with regard to the alternatives. The approach enables a comprehensive decision-support system for the selection of a university-specific and individually applicable campus management system.

Keywords: Campus management, Campus management system, Student administration system, Cost-utility analysis, Process model

Citation: Sprenger J, Klages M, Breitner MH (2010) Cost-benefit analysis for the section, migration, and operation of a campus management system. Bus Inf Syst Eng 2(4):219–231

Guido Schryen

Preserving Knowledge on IS Business Value – What Literature Reviews Have Done

The economic relevance of information systems has been studied for many years and has attracted an abundance of research papers. However, the "productivity paradoxon" of the 1990s, Carr's widely recognized paper "IT doesn't matter", and several studies that do not find a positive correlation between IS investments and economic performance reveal long-lasting difficulties for IS researchers to explain "IS business value". Business executives and researchers also continue to question the value of IS investments. This raises the question of whether literature reviews have tapped their potential to address the concerns by covering key research areas of IS business value and preserving their key findings. In order to address this question, this paper identifies and describes 12 key research areas, and synthesizes what literature reviews published in pertinent academic outlets have done to preserve knowledge. The analysis of 22 literature reviews shows that some crucial areas have not been (sufficiently) covered. They provide fertile areas for future literature reviews. As this work is based on the results of more than 200 research papers, it is capable of drawing a comprehensive picture of the current state-of-the-art in IS business value research.

Keywords: Business value, Information systems, Literature review, Meta review

Citation: Schryen G (2010) Preserving knowledge on IS business value – what literature reviews have done. Bus Inf Syst Eng 2(4):233–244

Abstracts of Issue 5/2010

Richard Baskerville, Jan Pries-Heje

Explanatory Design Theory

Design, design research, and design science have received increasing attention lately. This has led to a more scientific focus on design that then has made it timely to reconsider our definitions of the design theory concept. Many scholars in Information Systems assume a design theory requires a complex and elaborate structure. While this structure has appeal for its completeness and complexity, it has led scholars to criticize simplicity and elegance in design science theories that fail to demonstrate the "required" elements. Such criticisms lead to questions about whether design theory can be considered theory at all. Based on a study of notable design writing in architecture, finance, management, cognitive psychology, computer science as well as information systems and the philosophy of science, the authors demonstrate that design theory consists of two parts: a design practice theory and an explanatory design theory. An explanatory design theory provides a functional explanation as to why a solution has certain components in terms of the requirements stated in the design. For explanatory design theory, only two elements are essentially necessary for a complete design theory: requirements and solution components. The argument is logical as well as empirical; the authors give examples of design theory drawing from IS as well as other design-related fields show how design theory can be both simple and complete. The paper concludes with a proposal for explanatory design theory.

Keywords: Design theory, Design science, Design research, Research method
Citation: Baskerville R, Pries-Heje J (2010) Explanatory design theory. Bus Inf Syst Eng 2(5):271–282

Hubert Österle, Boris Otto

Consortium Research – A Method for Researcher-Practitioner Collaboration in Design-Oriented IS Research

Design-oriented research in the Information Systems (IS) domain aims at delivering results which are both of scientific rigor and of relevance for practitioners. Today, however, academic researchers are facing the challenge of gaining access to and capturing knowledge from the practitioner community. Against this background, the paper proposes a method for Consortium Research, which is supposed to facilitate multilateral collaboration of researchers and practitioners during the research process. The method's design is based on a self-evaluating design process which was carried out over a period of 20 years. The paper's contribution is twofold. First, it addresses the science of design, since it proposes guidance to researchers for practitioner collaboration during the process of artifact design. Second, the method is an artifact itself, hence, the result of a design-oriented research process.

Keywords: Consortium research, Research method, Design science research
Citation: Österle H, Otto B (2010) Consortium research – a method for researcher-practitioner collaboration in design-oriented IS research. Bus Inf Syst Eng 2(5):283–293

Philipp Offermann, Sören Blom, Olga Levina, Udo Bub

Proposal for Components of Method Design Theories – Increasing the Utility of Method Design Artefacts

Gregor and Jones have proposed components for design theories, building on theory concepts from behavioural sciences and prior publications. Their design theory structure addresses IT artefacts in general, not specific to any type, such as constructs, models, methods or instantiations. Their work is an important contribution to the academic discussion of design theories. The authors are building on this and believe that specialised design theory structures for different types of artefacts further increases utility, usability and acceptance of the components for both academia and practice. They have analysed each of the components published by Gregor and Jones and proposed refinements specific to method design artefacts wherever applicable. For each component, they derive evaluation criteria and present examples of method publications fulfilling the criteria. They argue that by presenting method design theories according to this structure the contribution of method design artefacts to the body of knowledge will increase.

Keywords: Methods, Method engineering, Method construction, Theory, Design theory, Methodology
Citation: Offermann P, Blom S, Levina O, Bub U (2010) Proposal for components of method design theories – increasing the utility of method design artefacts. Bus Inf Syst Eng 2(5):295–304

Immanuel Pahlke, Roman Beck, Martin Wolf

Enterprise Mashup Systems as Platform for Situational Applications – Benefits and Challenges in the Business Domain

Currently, several Enterprise 2.0 platforms are beginning to emerge. This paper introduces Enterprise Mashup technology as a means to improve IT alignment of individual work processes and changing business needs. Enterprise Mashups enable users to create customized applications to easily find and transform business information and functionalities, as well as collaboratively share pre-built Mashup applications. Therefore, the concept of Enterprise Mashups integrates Web 2.0 technologies and principles with well-established paradigms such as Enterprise Information Integration, Business Intelligence, and Business Process Management. Involved organizational key drivers, technical challenges and inhibitors are discussed to assess the potential business value and explain the emerging expansion of Mashup platforms in companies.

Keywords: Enterprise mashups, Business agility, Enterprise integration infrastructure, Business intelligence

Citation: Pahlke I, Beck R, Wolf M (2010) Enterprise mashup systems as platform for situational applications – benefits and challenges in the business domain. Bus Inf Syst Eng 2(5):305–315

Abstracts of Issue 6/2010

Bernd Simon

A Discussion on Competency Management Systems from a Design Theory Perspective

The competencies of employees are a critical success factor for any organization. Competency Management Systems help to develop competencies by supporting processes such as needs identification, intervention planning and implementation, and evaluation. However, the design of Competency Management Systems comes with a broad range of technical and organizational challenges. This study addresses these challenges and discusses the development of Competency Management Systems from a design theory perspective. The prototype evaluation, conducted as part of an action research initiative, involved fifteen companies and identified design recommendations in the areas of organization, user, resources and competency management software.

Keywords: Competency management systems, Resource-based view of the firm, Human resource development, Learning management, Design sciences, Prototype evaluation, Action research

Citation: Simon B (2010) A discussion on competency management systems from a design theory perspective. Bus Inf Syst Eng 2(6):337–346

Peter Fettke, Constantin Houy, Peter Loos

On the Relevance of Design Knowledge for Design-Oriented Business and Information Systems Engineering – Conceptual Foundations, Application Example, and Implications

In general, research in business and information systems engineering (BISE) focuses on the design of business information systems. So far, the prevailing design-oriented research has taken a technique-oriented perspective, which focuses on the creation and application of innovative techniques such as methods, models, software prototypes, and similar artifacts for system design. In this paper we argue that design knowledge is of considerable importance for system design. Relevant design knowledge includes, for example, knowledge about design objectives, design techniques, and effects resulting from the use of techniques. This design knowledge can be produced, evaluated, and used in a scientific way. In this paper we present necessary basics for conceptualizing design knowledge. We illustrate the applicability of the conceptual foundations and the relevance of design knowledge using the example of "event-driven process chains (EPC)". A discussion of implications of the presented results and future challenges for design-oriented BISE concludes the contribution.

Keywords: Design-oriented research, Design science, Business and information systems engineering

Citation: Fettke P, Houy C, Loos P (2010) On the relevance of design knowledge for design-oriented business and information systems engineering – conceptual foundations, application example, and implications. Bus Inf Syst Eng 2(6):347–358

Felix Köbler, Jens Fähling, Jan Marco Leimeister, Helmut Krcmar

The State of the Art of IT Governance and Types of IT Decision Makers in German Hospitals – An Empirical Study Among IT Decision Makers in German Hospitals

Growing expenses for health care services in hospitals stress the potential of a well applied IT governance for cost reduction, productivity gains and a possible source for competitive advantages. The underlying explorative study analyzes the current status of IT governance through a survey among 206 IT decision makers in German hospitals. The quantitative analyses show that the most important requirements of IT managers for IT are the optimization and standardization of processes, that IT investments shift from administrative to medical IT applications, and that private hospitals display relatively higher IT budgets than do non-profit or public hospitals based on financial turnover. Further, two types of future IT decision makers are empirically identified. The types differ regarding their future role as initiators for process optimization and regarding the degree of involvement in strategic decision making.

Keywords: IT governance, Hospital, Healthcare, IT decision makers, IT outsourcing

Citation: Köbler F, Fähling J, Leimeister JM, Krcmar H (2010) The state of the art of IT governance and types of IT decision makers in German hospitals – an empirical study among IT decision makers in German hospitals. Bus Inf Syst Eng 2(6):359–370

Andrea Landherr, Bettina Friedl, Julia Heidemann

A Critical Review of Centrality Measures in Social Networks

Social networks are currently gaining increasing impact in the light of the ongoing growth of web-based services like facebook.com. One major challenge for the economically successful implementation of selected management activities such as viral marketing is the identification of key persons with an outstanding structural position within the network. For this purpose, social network analysis provides a lot of measures for quantifying a member's interconnectedness within social networks. In this context, our paper shows the state of the art with regard to centrality measures for social networks. Due to strongly differing results with respect to the quality of different centrality measures, this paper also aims at illustrating the tremendous importance of a reflected utilization of existing centrality measures. For this purpose, the paper analyzes five centrality measures commonly discussed in literature on the basis of three simple requirements for the behavior of centrality measures.

Keywords: Social network, Interconnectedness, Centrality measures, Social network analysis

Citation: Landherr A, Friedl B, Heidemann J (2010) A critical review of centrality measures in social networks. Bus Inf Syst Eng 2(6):371–385

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Abstracts of Issue 1/2011

Mauricio Marrone, Lutz M. Kolbe

Impact of IT Service Management Frameworks on the IT Organization – An Empirical Study on Benefits, Challenges, and Processes

Over 90 percent of companies are estimated to use IT Service Management (ITSM) frameworks, yet there is little research on their benefits to the Information Technology (IT) department and the business units. An international survey of 491 firms was conducted to assess the benefits of the IT Infrastructure Library (ITIL), the de-facto ITSM framework, specifically on how these benefits evolve as companies increase their adoption of the ITIL model. Also studied are the perception of challenges of the implementation and the number of ITIL processes implemented in relation to the progress of the adoption of ITIL. Results indicate that as the maturity of implementation increases, the perception of challenges decreases. Findings also show that as the maturity of implementation increases, the number of realized benefits increases, as well as the number of implemented ITIL processes. Implications for practitioners and researchers are also discussed.

Keywords: IT infrastructure library, IT service management, Best practice, ITIL, ITSM, IT services

Citation: Marrone M, Kolbe L (2011) Impact of IT service management frameworks on the IT organization – an empirical study on benefits, challenges, and processes. Bus Inf Syst Eng 3(1):5–18

Arne Katzmarzik

Product Differentiation for Software-as-a-Service Providers

The market for the new provisioning type Software-as-a-Service (SaaS) has reached a significant size and still shows enormous growth rates. By varying size of SaaS products, providers can improve their market position and profits by successfully acting in the tension area of customer acquisition, pricing and costs. We first elaborate differences concerning product differentiation between classic software provisioning models and SaaS. Then, we introduce a micro-economic based decision model to maximize the return of a provider by finding an optimal granularity, i.e. by varying the size of services. This paper makes two contributions in this context: (1) it provides a conceptual foundation for product differentiation within the scope of SaaS and (2) it presents the first implementation of variable reproduction costs for web based software offers. The model is illustrated by a real world case with data from a SaaS provider.

Keywords: Software-as-a-Service, Product differentiation, Service granularity, Decision model

Citation: Katzmarzik A (2011) Product differentiation for software-as-a-service providers. Bus Inf Syst Eng 3(1):19–31

Florian Stroh, Robert Winter, Felix Wortmann

Method Support of Information Requirements Analysis for Analytical Information Systems – State of the Art, Practice Requirements, and Research Agenda

Due to specific characteristics of analytical information systems, their development varies significantly from transaction-oriented systems. Specific method support is particularly needed for requirements engineering and its information-related component, information requirements analysis. The paper at hand first evaluates the state of the art and identifies necessary method support extensions. On this basis, method support requirements for information requirements engineering are identified. The survey is structured along the five core activities of traditional requirements engineering. It reveals a need for further research especially on information requirements elicitation, validation, and management. It further contributes to a discussion of aspects that should be considered by any method support. Due to comparatively long life cycles of analytical information systems, the introduction of a process perspective is discussed in order to ensure the continuous elicitation, documentation, and management of information requirements.

Keywords: Information requirements analysis, Analytical information systems, Data warehousing, Business intelligence, Method engineering

Citation: Stroh F, Winter R, Wortmann F (2011) Method support of information requirements analysis for analytical information systems – state of the art, practice requirements, and research agenda. Bus Inf Syst Eng 3(1):33–43

Abstracts of Issue 2/2011

Harald Dyckhoff, Rainer Souren, Abdulla Elyas

Reference Data Models for the Strategic Controlling of Waste Management Firms – A New Methodology for Industry Solution Design

The paper depicts the development of reference data models for strategic key performance indicator systems specific to waste management firms providing a new comprehensive typology of generic models for data warehouse solutions. Additionally, a development methodology for industry solutions is applied, which, given the empirically founded typification process and the theoretically derived performance measurement systems, is characterized by a high degree of structure and transparency. The new approach thus systematically integrates both inductive-empirical and deductive-analytical elements.
Keywords: Reference data model, Design science research methodology, Strategic controlling, Case study, Typology, Balanced scorecard, Key performance indicators, Waste management
Citation: Dyckhoff H, Souren R, Elyas A (2011) Reference data models for the strategic controlling of waste management firms – a new methodology for industry solution design. Bus Inf Syst Eng 3(2):65–75

Stephan Aier, Tobias Bucher, Robert Winter

Critical Success Factors of Service Orientation in Information Systems Engineering – Derivation and Empirical Evaluation of a Causal Model

Service orientation has been a major buzz-word in recent years. While the buzz is on a decline, organizations are slowly, but steadily moving towards service oriented designs. However, service orientation turns out to be as much of a managerial challenge as of a technical one. The most important complexity drivers in the service oriented design of information systems seem to be (a) inconsistent design goals of stakeholders and (b) the pursuit of exhaustive service orientation coverage. This research focuses on the following two questions: (1) What are the characteristics of successful implementations of service oriented information systems, and (2) what are the critical success factors influencing, driving and/or, determining these characteristics? Data of an empirical analysis is used to test a set of cause-effect relationship hypotheses based on nine latent variables. In the core of this model we differentiate the variables "overall service orientation infrastructure success" and "service orientation project success". The hypothesized interrelationships between the nine variables lead to a causal model which is proven to hold.
Keywords: Critical success factors, Service orientation, Information systems integration, Structural equation model
Citation: Aier S, Bucher T, Winter R (2011) Critical success factors of service orientation in information systems engineering – derivation and empirical evaluation of a causal model. Bus Inf Syst Eng 3(2):77–88

Daniel Richter, Kai Riemer, Jan vom Brocke

Internet Social Networking – Research State of the Art and Implications for Enterprise 2.0

An overview of the literature on Internet social networking (ISN) is presented. The authors identify four dominant streams of research and review the key contributions to the field. The review reveals that the research field is fragmented and does not yet facilitate a general understanding of the phenomenon. In particular research is very much skewed towards certain user groups (e.g., students) and platforms (in particular Facebook). Further, implications for a corporate context are discussed. In doing so, three contexts of application are differentiated: Social network sites (SNSs) for (1) recruiting and professional career development, (2) relationship facilitation in distributed work contexts, and (3) interactions with end customers. The authors discuss SNS potentials, implications of existing ISN research and future research opportunities. In summary, they seek to contribute to a better understanding of the phenomenon of ISN and to making available the current state of ISN research for the wider Enterprise 2.0 community.
Keywords: Enterprise 2.0, Internet social networking, Social software
Citation: Richter D, Riemer K, vom Brocke J (2011) Internet social networking – research state of the art and implications for enterprise 2.0. Bus Inf Syst Eng 3(2):89–101

Abstracts of Issue 3/2011

Florian Kerschbaum

Secure and Sustainable Benchmarking in Clouds – A Multi-Party Cloud Application with an Untrusted Service Provider

Cloud computing entails a novel security threat: The cloud service provider is entrusted with the data of all its customers. This may not be sustainable for highly confidential data. Encryption, or more generally cryptography, may provide a solution by computing on data encrypted by the customers. While this solution is theoretically appealing, it raises a number of research questions in information system design. Using the example of collaborative benchmarking the author presents and evaluates an exemplary design and implementation of a cloud application that operates only on encrypted data, thus protecting the confidentiality of the customer's data against the cloud service provider. The cloud application computes common statistics for benchmarking without disclosing the individual key performance indicators. Benchmarking is an important process for companies to stay competitive in today's markets. It allows them to evaluate their performance against the statistics of their peers and implement targeted improvement measures.

Keywords: Cloud computing, Encryption, Cryptography, Homomorphic encryption, Secure multi-party computation, Benchmarking, Collaborative business applications

Citation: Kerschbaum F (2011) Secure and sustainable benchmarking in clouds – a multi-party cloud application with an untrusted service provider. Bus Inf Syst Eng 3(3):135–143

Rafael Accorsi, Lutz Lowis, Yoshinori Sato

Automated Certification for Compliant Cloud-Based Business Processes

A key problem in the deployment of large-scale, reliable cloud computing concerns the difficulty to certify the compliance of business processes operating in the cloud. Standard audit procedures such as SAS-70 and SAS-117 are hard to conduct for cloud-based processes. The paper proposes a novel approach to certify the compliance of business processes with regulatory requirements. The approach translates process models into their corresponding Petri net representations and checks them against requirements also expressed in this formalism. Being based on Petri nets, the approach provides well-founded evidence on adherence and, in case of noncompliance, indicates the possible vulnerabilities.

Keywords: Business process models, Cloud computing, Compliance certification, Audit, Petri nets

Citation: Accorsi R, Lowis L, Sato Y (2011) Automated certification for compliant cloud-based business processes. Bus Inf Syst Eng 3(3):145–154

Noboru Sonehara, Isao Echizen, Sven Wohlgemuth

Isolation in Cloud Computing and Privacy-Enhancing Technologies – Suitability of Privacy-Enhancing Technologies for Separating Data Usage in Business Processes

Cloud Computing lifts the borders between the access control domain of individuals' and companies' IT systems by processing their data within the application frameworks and virtualized runtime environments of Cloud service providers. A deployment of traditional security policies for enforcing confidentiality of Cloud users' data would lead to a conflict with the availability of the Cloud's software services: confidentiality of data would be assured but Cloud services would not be available for every user of a Cloud. This state-of-the-art contribution shows the analogy of the confidentiality of external data processing by Cloud services with mechanisms known and applied in privacy. Sustainability in Cloud is a matter of privacy, which in Cloud is called "isolation".

Keywords: Cloud computing, Disclosure of personal data to third parties, Isolation, Privacy, Usage control, Delegation of rights

Citation: Sonehara N, Echizen I, Wohlgemuth S (2011) Isolation in cloud computing and privacy-enhancing technologies – suitability of privacy-enhancing technologies for separating data usage in business processes. Bus Inf Syst Eng 3(3):155–162

Hans Ulrich Buhl, Maximilian Röglinger, Stefan Stöckl, Kathrin S. Braunwarth

Value Orientation in Process Management – Research Gap and Contribution to Economically Well-Founded Decisions in Process Management

There is no doubt that at least since the 1990s process orientation has evolved into one of the central paradigms of organizational design. Since then, all process management subtasks have matured. Process management decisions, however, lack economic foundation. They are usually based on qualitative or technical criteria or on plausibility considerations that do not necessarily comply with typical objectives in a market economy. Consequently, design alternatives are hardly comparable and an integrated valuation of a company's assets is impossible. The status quo is astonishing for several reasons: First, process management decisions usually imply investment projects with different risk/return positions and capital tie-up. Second, the need for designing processes according to their contribution to corporate objectives has been explicated repeatedly. Third, the paradigm of value-based management is an accepted theoretical framework from economic research that enables to consistently valuate the risk/return effects of decisions across functional areas, hierarchy levels, and asset classes. This suggests the hypothesis that process management in general as well as the goal orientation of process management decisions in particular have evolved almost independently of value-based management. In the paper at hand, this hypothesis is confirmed based on a sample of process management publications. We therefore explicate the research gap as regards value orientation in process management. In order to bridge the gap between value-based management and process-oriented organizational design, we transfer economically well-founded objective functions to process management decisions.

Keywords: Process management, Business process management, Value-based management, Value-oriented process management, Value orientation, Decision theory, Risk/return management

Citation: Buhl HU, Röglinger M, Stöckl S, Braunwarth KS (2011) Value orientation in process management – research gap and contribution to economically well-founded decisions in process management. Bus Inf Syst Eng 3(3):163–172

Abstracts of Issue 4/2011

Alexander Becker, Thomas Widjaja, Peter Buxmann

Value Potentials and Challenges of Service-Oriented Architectures – Results of an Empirical Survey from User and Vendor Perspective

This article summarizes the results of an empirical study among large German enterprises regarding the value potentials and challenges of service-oriented architectures (SOA). The 21 value potentials and 13 challenges examined were identified and structured based on an advancement of SOA value models already existing in literature as well as on a series of expert interviews. Key results regarding the implementation and evaluation of the SOA-Concept are: The majority of the users only run one or a few SOA-based applications and the share of services in their IT-landscape is on average about 10%. Among the design principles proposed in literature, especially loose coupling and good documentation of interfaces are implemented. Clear capsulation of functionality and the definition of Service Level Agreements (SLAs), however, are hardly applied. The interviewed companies assess the relation of the value of a SOA introduction compared to its cost currently as slightly negative, but with a positive trend for the upcoming years. It is shown that the assessment of the overall value positively correlates with the duration of SOA usage. Among the 21 examined value potentials, optimization of business processes, increased agility and cost reduction due to parallel re-use of services receive the highest ratings. According to the interviewed experts, the main challenges are operation (performance/security) and the management (governance) of the architecture. These challenges hinder value realization and lead to a moderately positive assessment of the overall concept.
Keywords: Service-oriented architecture (SOA), IT-architecture, Empirical study, Value assessment, Business value of IT
Citation: Becker A, Widjaja T, Buxmann P (2011) Value potentials and challenges of service-oriented architectures – results of an empirical survey from user and vendor perspective. Bus Inf Syst Eng 3(4):199–210

Peter Trkman, Andrej Kovačič, Aleš Popovič

SOA Adoption Phases – A Case Study

The paper argues that attitudes to SOA follow a typical hype cycle from Technological Trigger, Peak of Inflated Expectations, and a Trough of Disillusionment to the more recent realization that SOA is a concept that may offer certain benefits but has several limitations. The main research question studies how the attitude to SOA changes in various phases of the hype cycle, how the SOA implementation cycle and an increase in business process maturity (BPMa) are interconnected and which factors influence the transition between the hype cycle phases. The paper shows that an organization's success with implementing SOA depends on its ability to match the SOA implementation with an increase in BPMa. The dual purpose of implementing SOA is shown in the first framework: to assure the coherence of IT assets and to assure business/IT alignment. In the second framework, the interconnection of SOA and BPMa and its role in transiting through the hype cycle phases is outlined. The findings are analyzed using a longitudinal case study of a large Slovenian company.
Keywords: Service-oriented architecture, Business/IT alignment, Business process management, Business process maturity, Hype cycle, Case study
Citation: Trkman P, Kovačič A, Popovič A (2011) SOA adoption phases – a case study. Bus Inf Syst Eng 3(4):211–220

Daniel Gull

Valuation of Discount Options in Software License Agreements

Many companies increasingly rely on licensed standard software for system software and applications. In addition to the regulation of usage conditions, software licensing agreements increasingly include services, such as software upgrades and user training, as a part of the contract or these are optional for a fee, which can be made use of by the licensee during the term of the contract at a reduced price or as a free service. This benefit entitlement is called a discount option and must be valued during the selection and designing of a contract. This paper describes the basic valuation issues as well as some weaknesses of previous approaches, and subsequently presents a model which, on the basis of the real option theory, enables an assessment of the discount options using mathematical methods. As the value of discount options can in many cases only be estimated by using analytical methods under certain conditions, a practical solution method is explained on the basis of numeric backwards induction. The procedure for applying the model and the achieved advances in knowledge are illustrated with an example.
Keywords: Real options, Discount options, Software asset management, License management
Citation: Gull D(2011) Valuation of discount options in software license agreements. Bus Inf Syst Eng 3(4):221–230

André Gräning, Carsten Felden, Maciej Piechocki

Status Quo and Potential of XBRL for Business and Information Systems Engineering

The paper examines the current state of research as regards the eXtensible Business Reporting Language (XBRL) by using the literature review methodology. The results show that an empirical-quantitative research design is used most of the time. The contributions vary in substance in terms of research on XBRL and research with XBRL. Research with XBRL focuses on the development of conceptual XBRL extensions. Work on XBRL considers, for example, the changes in reporting as a result of XBRL as well as the acceptance and enforcement of financial reporting standards. The results point to open issues and are relevant for research and practice.

Keywords: XBRL, eBusiness standard, Financial reporting, Literature review

Citation: Gräning A, Felden C, Piechocki M (2011) Status quo and potential of XBRL for business and information systems engineering. Bus Inf Syst Eng 3(4):231–239

Abstracts of Issue 5/2011

Marcel Fritz, Christian Schlereth, Stefan Figge

Empirical Evaluation of Fair Use Flat Rate Strategies for Mobile Internet

The fair use flat rate is a promising tariff concept for the mobile telecommunication industry. Similar to classical flat rates it allows unlimited usage at a fixed monthly fee. Contrary to classical flat rates it limits the access speed once a certain usage threshold is exceeded. Due to the current global roll-out of the LTE (Long Term Evolution) technology and the related economic changes for telecommunication providers, the application of fair use flat rates needs a reassessment. We therefore propose a simulation model to evaluate different pricing strategies and their contribution margin impact. The key input element of the model is provided by so-called discrete choice experiments that allow the estimation of customer preferences. Based on this customer information and the simulation results, the article provides the following recommendations. Classical flat rates do not allow profitable provisioning of mobile Internet access. Instead, operators should apply fair use flat rates with a lower usage threshold of 1 or 3 GB which leads to an improved contribution margin. Bandwidth and speed are secondary and do merely impact customer preferences. The main motivation for new mobile technologies such as LTE should therefore be to improve the cost structure of an operator rather than using it to skim an assumed higher willingness to pay of mobile subscribers.

Keywords: Mobile Internet, Discrete choice experiments, Fair use flat rates
Citation: Fritz M, Schlereth C, Figge S (2011) Empirical evaluation of fair use flat rate strategies for mobile Internet. Bus Inf Syst Eng 3(5):269–277

Torsten J. Gerpott, Sabrina Berg

Determinants of the Willingness to Use Mobile Location-Based Services – An Empirical Analysis of Residential Mobile Phone Customers

This article develops 11 hypotheses on impacts of six customer characteristics on an individual's willingness to use mobile location based services (LBS). Hypotheses are tested in a sample of 217 mobile communications customers in Germany who participated in a standardized online-survey. PLS analysis suggests that reported frequency of "on the move" information needs, perceived assessment of LBS in a customer's social environment and extent of past use of other mobile data services have statistically as well as practically significant effects on adoption intentions for pull LBS. Data privacy risks and cost/bill size concerns are only weakly or not related to such intentions.

Keywords: Adoption, Consumer behavior, Intention to use, Location-based services, Mobile communications services, Partial Least Squares
Citation: Gerpott TJ, Berg S (2011) Determinants of the willingness to use mobile location-based services – an empirical analysis of residential mobile phone customers. Bus Inf Syst Eng 3(5):279–287

Jochen Wulf, Rüdiger Zarnekow

Cross-Sector Competition in Telecommunications – An Empirical Analysis of Diversification Activities

Cross-sector competition in the information and communications technology sectors (ICT sectors) constitutes a key strategic challenge for telecommunications companies. Due to increasing convergence, value creation is resulting in a greater degree of interaction. The diversification potential of telecommunications businesses is therefore changing with respect to associated ICT sectors, such as hardware, software and media. The article analyses cross-sector competition in the telecommunications industry on the basis of the diversification activities of ICT companies. A concentration of competitive interdependence in the ICT sectors is demonstrated using a cluster analysis of 34,142 companies. The cross-sector activities of telecommunications companies are investigated using contingency and dependency analyses, and the diversification-related competition in the telecommunications sector is also analysed. With regard to the telecommunications sector, particularly high level cross-sector competition with the media industry is identified, as well as strong diversification activities in the software sector. The results are used to derive the potentials and risks that have a significant bearing on the structure of the cross-sector competitive environment of telecommunications companies.

Keywords: Telecommunications sector, Cross-sector competition, Convergence, Vertical diversification, Horizontal diversification
Citation: Wulf J, Zarnekow R (2011) Cross-sector competition in telecommunications – an empirical analysis of diversification activities. Bus Inf Syst Eng 3(5):289–298

Key Pousttchi, Yvonne Hufenbach

Value Creation in the Mobile Market – A Reference Model for the Role(s) of the Future Mobile Network Operator

In recent years competitive pressure in mobile markets has increased remarkably. New business models and thus new actors have entered the market. This contribution analyzes the reconfiguration of value structures and strategies in mobile markets. For this purpose, mobile network operators' service portfolio is analyzed on the basis of a worldwide survey, and the relevant current and future value creation activities are identified with consideration of additional actors and influence factors. On that basis, roles are developed, linked with regard to value flows and combined to a reference model for the mobile market value net. Subsequently, scenario planning is used to develop a set of criteria for the construction of corresponding future scenarios and the application of the reference model is demonstrated with such a scenario.

Keywords: Mobile market, Value activities, Roles, Value net, Value exchanges, Reference model, Future scenarios
Citation: Pousttchi K, Hufenbach Y (2011) Value creation in the mobile market – a reference model for the role(s) of the future mobile network operator. Bus Inf Syst Eng 3(5):299–311

Rahul C. Basole, Jürgen Karla

On the Evolution of Mobile Platform Ecosystem Structure and Strategy

Platforms have become a core fundament of many technology industries. Platforms not only enable new products and services but have also been shown to influence strategies, shape business models, and even transform entire industries. Platforms play a particularly important role in the mobile ecosystem. The success of smartphones has led to an intense battle of mobile platforms, each looking for ways to become the system of choice for mobile device manufacturers, mobile network operators, and mobile application developers. Drawing on theories of platform markets, strategic networks, and business ecosystems, this paper uses a visualization approach to study the evolving global interfirm structure and examines strategies used in the mobile platform ecosystem over the past five years. We identify important differences between mobile platform strategies and discuss their implications for both mobile ecosystem participants and the future of the app economy.

Keywords: Mobile platform, Ecosystem, Visualization, Business model, Strategy, App economy
Citation: Basole RC, Karla J (2011) On the evolution of mobile platform ecosystem structure and strategy. Bus Inf Syst Eng 3(5):313–322

Abstracts of Issue 6/2011

Alexander Krammer, Bernd Heinrich, Matthias Henneberger, Florian Lautenbacher

Granularity of Services – An Economic Analysis

Service-oriented architectures are widely discussed as a design principle for application and enterprise architectures. Nevertheless, an adequate granularity of services has not yet been researched sufficiently from an economic perspective. The finer the granularity to realize the functions of a process, the higher the number of services is, and the more effort has to be directed towards composing them. In contrast, very coarse-grained services bear the disadvantages of higher implementation costs and lower reuse potential (e.g., in different processes). The aim of the decision model proposed in this paper is to determine an adequate granularity of services from an economical perspective. Thus, degrees of freedom, which often exist for the choice of granularity after a domain analysis, can be leveraged to realize a cost-efficient solution. We illustrate the applicability and practical benefits of the decision model with an example from the context of a financial services provider.

Keywords: Service-oriented architecture, Granularity, Metrics, Value-based software engineering

Citation: Krammer A, Heinrich B, Henneberger M, Lautenbacher F (2011) Granularity of services – an economic analysis. Bus Inf Syst Eng 3(6)

Jens Strüker, Thomas Koslowski

ERP on Demand Platform – Complementary Effects Using the Example of a Sustainability Benchmarking Service

Platforms for SaaS-based enterprise applications are prospering and the number of on-demand ERP vendors is increasing. We combine both phenomena for the first time and illustrate how the integration of a sustainability benchmarking service into an on-demand ERP platform provides added value beyond pure cost savings. By applying a qualitative system dynamics approach we identify self-reinforcing mechanisms which allow a faster and more comprehensive market penetration compared to providing these services separately.

Keywords: ERP on demand, Diffusion, Platform, Qualitative system dynamics, SaaS

Citation: Strüker J, Koslowski T (2011) ERP on demand platform – complementary effects using the example of a sustainability benchmarking service. Bus Inf Syst Eng 3(6)

Marina Berkovich, Jan Marco Leimeister, Helmut Krcmar

Requirements Engineering for Product Service Systems – A State of the Art Analysis

In recent years, manufacturing companies and service providers have moved towards offering customer-specific problem solutions. These integrated bundles usually consist of hardware, software, and service components and are called product service systems (PSS) or hybrid products. Developing PSS involves different domains, such as product, software, and service engineering, making the development of PSS very complex. Since the success of the resulting solution depends on the understanding of all requirements, requirements engineering (RE) has become a key factor. The article analyzes the state of the art of RE for PSS based on an extensive literature review. Criteria are derived from the characteristics of PSS and from the task area of RE in the life cycle of PSS. These criteria must be fulfilled by an RE approach in order to be applicable to PSS. Based on these criteria, we analyze the most established RE approaches. Furthermore, integrated development approaches for PSS are also included in the analysis. The objective of this is to evaluate the suitability of the existing RE approaches for PSS. An important finding is that integrated/interdisciplinary approaches for RE are missing. Moreover, the maturity of RE approaches in the three domains varies significantly. All analyzed approaches heavily rely on concepts and solution characteristics of their own domain so that a transfer to other domains is hardly possible. Therefore, a cross-domain RE does not exist until today, resulting in inefficiencies due to lacking knowledge of the interdependencies between the domains. This literature review lays the foundation for successful RE for PSS and especially for future research aiming at combining and integrating RE approaches and models of product-, software-, and service engineering. Such requirement models could connect concepts of single domains and enable an integrated and seamless RE for PSS.

Keywords: Requirements engineering, Product service system, Hybrid products, State of the art, Product engineering, Software engineering, Service engineering

Citation: Berkovich J, Leimeister JM, Krcmar H (2011) Requirements engineering for product service systems – a state of the art analysis. Bus Inf Syst Eng 3(6)

BISE – Call for Papers Issue 1/2013

Mobile and Ubiquitous Solutions for Health Care of the Future

Special Focus

The application of innovative, mobile, and ubiquitous technology is important not only for coordination, organization, and administration of medical processes, but may also be lifesaving in context of medical care. Imaginable for the future is the physician's access to a patient's health record directly at the scene of an accident, or an "App" warning an asthmatic, if his physical strain is too high. So-called "heart phones" are already in use today. Heart patients can record at any time an ECG with their mobile phone and send it to their cardiologist. With all these applications more safety for physicians and patients through a faster work flow can be achieved.

Besides medical applications, an improvement of coordination, organization, and administration of the processes are possible. Applications like patient tracking or the use of a mobile, rule-based anamnesis system help to get more transparency in patient treatment process, help to prevent unnecessary examinations, and help to provide data of high quality more quickly. From patients' view needless physical and mental stress caused by long waiting times or multiple examinations can be avoided. Furthermore it's possible to reduce loss of quality caused by avoidable additional work of physicians and nursing staff.

Meanwhile, these developments are tightly coupled with important trends like the Internet of things, teletrust, identity, reliable and trustworthy public telematics infrastructures and the creation of electronically interlocked processes within the healthcare sector, and between healthcare and public administration.

Against this background the use of mobile and ubiquitous applications is a basic instrument to increase process transparency and fasten the flow of information in order to improve patient care and reduce health care costs. But the users' willingness to accept and actively use these new and innovative solutions is required.

For stimulating and further deepen the discussion between science and practice, the journal Business & Information Systems Engineering (BISE) addresses a special focus about "mobile and ubiquitous solutions for health care of the future". Collecting present developments, new methods and technologies including their application in the field of mobile and ubiquitous applications and evaluating their suitability for the future is the aim.

Contributions from research and business practice on the following (and related) topics are welcome:

- Innovations and change management
- Acceptance of technology
- Health telematics
- Electronic health card and health professional card
- Data security and safety aspects
- Developments and Best Practices – both national and international
- Transfer of success strategies from industry to health care – Further issues in the field of mobile and ubiquitous applications

Submission

Please submit papers for the sections BISE – Research Paper and BISE – State of the Art by 2012-03-01 at the latest via the journal's online submission system (http://www.editorialmanager.com/buis/). Please observe the instructions regarding the format and size of contributions to Business & Information Systems Engineering (BISE)/WIRTSCHAFTSINFORMATIK. Papers should not exceed 50,000 characters including spaces, minus 5,000 characters per page for illustrations. Detailed authors' guidelines can be downloaded from http://www.bise-journal.org.

All papers will be reviewed anonymously (double-blind process) by several referees with regard to relevance, originality, and research quality. In addition to the editors of the journal, including those of this special focus, distinguished national and international professionals with scientific and practical backgrounds will be involved in the review process.

Complementary articles covering topics of this special focus are also more than welcome.

Accepted papers will appear identically in English and German. The English-language version will appear in Business & Information Systems Engineering (BISE), the German-language version will appear in WIRTSCHAFTSINFORMATIK.

Schedule

Submission deadline:	2012-03-01
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BISE – Call for Papers Issue 3/2013

BISE and Marketing

Special Focus

Electronic media have tremendously changed the opportunities and challenges of marketing. Advertising effectiveness and efficiency can be much better evaluated in electronic media compared to the offline world. Rich data and user interaction enable personalized products, advertising and the individualized management of the customer relationship. New forms of marketing in search engines, social networks and via mobile devices have emerged. Further, the interactive nature of information and communication technology (ICT) has promoted the use of interactive pricing mechanisms such as auctions. All these developments have been enabled by the recent developments in the area of information systems. Thus, business information systems not only enabled these new opportunities in digital marketing, but the intersection of marketing and BISE also provides very promising research opportunities. To highlight these research opportunities and to advance research on BISE and Marketing is the goal of this special focus.

Contributions from research and business practice on the following (and related) topics are welcome:

- Customer Relationship Management
- Search Engine Marketing
- Mobile Marketing
- Online Pricing
- Auctions
- Marketing in Social Networks
- User Generated Content
- Design of marketing-related information systems
- Search Engine Optimization
- Decision Support in Marketing Decision Making
- Design Science in Electronic Commerce
- Open Innovation and Crowd Sourcing
- Interplay between IT and Marketing Departments

Submission

Please submit papers for the sections BISE – Research Paper and BISE – State of the Art by 2012-07-01 at the latest via the journal's online submission system (http://www.editorialmanager.com/buis/). Please observe the instructions regarding the format and size of contributions to Business & Information Systems Engineering (BISE)/ WIRTSCHAFTSINFORMATIK. Papers should not exceed 50,000 characters including spaces, minus 5,000 characters per page for illustrations. Detailed authors' guidelines can be downloaded from http://www.bise-journal.org.

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Complementary articles covering topics of this special focus are also more than welcome.

Accepted papers will appear identically in English and German. The English-language version will appear in Business & Information Systems Engineering (BISE), the German-language version will appear in WIRTSCHAFTSINFORMATIK.

Schedule

Submission deadline:	2012-07-01
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BISE – Call for Papers Issue 5/2013

Green IS – Information Systems for Environmental Sustainability

Special Focus

While in the past information technology was mostly seen as a contributor to environmental degradation, recent studies suggest that information systems (IS) can indeed enable sustainable processes, products, and services. Specifically, information systems are expected to (1) create an impact on individual beliefs about environmental sustainability, (2) enable more sustainable work practices through virtualization and remote work, (3) enable organizations to meet compliance imperatives and societal norms, or (4) increase resource efficiency. In this context, notions such as energy informatics or green business process management have emerged. The IS discipline is thus challenged to explore the potential of information systems to contribute to the betterment of the natural environment by enabling more sustainable work practices at individual, organizational, and societal levels.

This special focus invites rigorous studies employing various research designs. The focus is on solution-oriented studies that show how the transformative power of IS can be leveraged in order to lessen our impact on the natural environment, which is under imminent pressure. Prospective studies thus range from the development and testing of new theory that explains how IS can support environmental to design-oriented studies on the development of solutions for environmental sustainability. We see a specific challenge in understanding how sustainability-related IS phenomena are different to 'conventional' areas of investigation, typically focusing on mere economic imperatives including time, cost, and quality.

Contributions from research and business practice on the following (and related) topics are welcome:

- Information systems designs for sustainable work practices
- IT-enabled sustainability transformation
- The application of IS theories to sustainability-related phenomena
- Research methods for the investigation of sustainability-related phenomena
- Information systems and beliefs about environmental sustainability
- Supply chain management and sustainability
- Business intelligence and performance management for sustainability
- Systems approaches towards IT-enabled environmental sustainability
- Sustainability solutions Energy informatics Green business process management

Submission

Please submit papers for the sections BISE – Research Paper and BISE – State of the Art by 2012-11-01 at the latest via the journal's online submission system (http://www.editorialmanager.com/buis/). Please observe the instructions regarding the format and size of contributions to Business & Information Systems Engineering (BISE)/WIRTSCHAFTSINFORMATIK. Papers should not exceed 50,000 characters including spaces, minus 5,000 characters per page for illustrations. Detailed authors' guidelines can be downloaded from http://www.bise-journal.org.

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Complementary articles covering topics of this special focus are also more than welcome.

Accepted papers will appear identically in English and German. The English-language version will appear in Business & Information Systems Engineering (BISE), the German-language version will appear in WIRTSCHAFTSINFORMATIK.

Schedule

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