Proceedings

of the

6th European Conference on
Information Management
and Evaluation

University College Cork
Ireland

13-14 September 2012

Edited by

Dr Tadgh Nagle
University College Cork
Ireland
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Preface

The 6th European Conference on Information Management and Evaluation (ECIME) is hosted this year by University College Cork in Ireland. The Conference Chair is Dr David Sammon and the Programme Chair is Dr Tadhg Nagle, both from University College Cork.

ECIME provides an opportunity for individuals researching and working in the broad field of information management, including information technology evaluation to come together to exchange ideas and discuss current research in the field. We hope that this year’s conference will provide you with plenty of opportunities to share your expertise with colleagues from around the world.

The opening keynote address will be delivered by Professor Patrick Finnegam, University of New South Wales, Sydney, Australia on the topic ProSIS: An exploration of potential Pro-Social and Pro-Societal impact through Information Systems.

ECIME 2012 received an initial submission of 125 abstracts. After the double-blind peer review process 43 academic papers, 1 non-academic paper, 6 PhD papers and 2 short work in progress papers have been accepted for these Conference Proceedings. These papers represent research from around the world, including Austria, Belgium, Brazil, Canada, Czech Republic, Finland, Germany, Ireland, Israel, Kingdom of Saudi Arabia, Lebanon, Netherlands, New Zealand, Poland, Portugal, Romania, Russia, South Africa, Sweden, Switzerland, UK, USA.

We wish you a most interesting conference.

Dr Tadhg Nagle
Programme Chair
Dr David Sammon
Conference Chair
September 2012
**Conference Executive**

Dr Frank Bannister Trinity College, Dublin  
Professor Egon Berghout, Groningen University, Netherlands  
Dr Ann Brown, City University Business School, London  
Dr Walter Castelnovo, University of Insubria, Como, Italy  
Dr Elena Ferrari, University of Insubria, Como, Italy  

**Mini Track chairs**  
Dr Maria Alaranta, Aalto University, Finland  
Dr Jorge Ferreira, Nova University, Lisbon, Portugal  
Dr Ciara Heavin, University College Cork, Ireland  
Dr Karen Neville, University College Cork, Ireland  
Leona O’Brien, University College Cork, Ireland  
Ian Owens, Cranfield University, UK  
Isa Santos, University of Porto, Portugal  
Dr Elena Serova, St. Petersburg State University of Economics and Finance, Russia  
Dr João Manuel R. S. Tavares, University of Porto, Portugal

**Conference Committee**  
The conference programme committee consists of key people in the information systems community. The following people have confirmed their participation:

Ademola Adesina (University of Western Cape, South Africa); Maria Alaranta (Helsinki University of Technology TKK, Finland); Saheer Al-Jaghoub (Al-Ahliyya Amman University, Jordan); Maria Ceu Alves (University of Beira Interior, Portugal); Hussein Al-Yaseen (Amman University, Jordan); Karen Anderson (Mid Sweden University, Sweden); Joan Ballantine (University of Ulster, UK); Frank Bannister (Trinity College Dublin, Ireland); Ofer Barkai (SCE - Sami Shamoon College of Engineering, Israel); David Barnes (Westminster Business School, University of Westminster, London, UK); Peter Bednar (Department of ISCA, Portsmouth University, UK); Egon Berghout (University of Groningen, The Netherlands); Milena Bobeva (Bournemouth University, Poole, UK); Ann Brown (CASS Business School, London, UK); Giovanni Camponovo (University of Applied Sciences of Southern Switzerland, Switzerland); Sven Carlsson (School of Economics and Management, Lund University, Sweden); Fergal Carton (University
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public); John McAvoy (University College Cork, Ireland); Nor Laila Md Noor (Universiti Teknologi MARA, Malaysia); Annette Mills (University of Canterbury, Christchurch, New Zealand); Maria Mitre (Universidad de Oviedo, Spain); Mahmoud Moradi (University of Guilan, Rasht, Iran); Gunilla Myreteg (Uppsala University, Sweden); Mário Negas (Aberta University, Portugal); Karen Neville (University College Cork, Ireland); Emil Numminen (Blekinge Institute of Technology, Sweden); Tiago Oliveira (Universidade Nova de Lisboa, Portugal); Roslina Othman (International Islamic University Malaysia, Kuala Lumpur, Malaysia); Ian Owens (Cranfield University, Shrivenham, UK); Sevgi Özkan (Middle East Technical University, Ankara, Turkey); Shaun Pather (Cape Peninsula University of Technology, South Africa); Kalevi Pessi (IT University, Gothenburg, Sweden); Danilo Piaggesi (Fondazione Rosselli Americas, USA); Elias Pimenidis (University of East London, UK); Zijad Pita (RMIT University, Melbourne, Australia); Nayem Rahman (Intel Corporation, Aloha, USA); Hugo Rehesaar (NSW, Sydney, Australia); João Manuel Ribeiro da Silva Tavares (Faculdade de Engenharia da Universidade do Porto, Portugal); Dimitris Rigas (De Montfort University, UK); Narcyz Roztocki (State University of New York at New Paltz, USA); Hannu Salmela (Turku School of Economics and Business Administration, Finland); David Sammon (University College Cork, Ireland); Elsje Scott (University of Cape Town, Rondebosch, South Africa); Elena Serova (Graduate School of Management St. Petersburg State University, Russia); Yilun Shang (University of Texas at San Antonio, USA); Hossein Sharif (University of Portsmouth, UK); A.J. Gilbert Silvius (Utrecht University of Professional Education, The Netherlands); Riccardo Spinelli (Universita Di Genova, Italy); Darius Strasunskas (Norwegian University of Science and Technology, Trondheim, Norway); Reima Suomi (University of Turku, Finland); Lars Svensson (University West, Trollhättan, Sweden); Jarmo Täkhäpää (Turku School of Economics and Business Administration, Finland); Torben Tambo (Aarhus University, Denmark); Llewellyn Tang (University of Reading, UK); Claudine Toffolon (Université du Mans - IUT de Laval, France); Geert-Jan Van Bussel (HvA University of Applied Sciences, Amsterdam, The Netherlands); Minhong Wang (The University of Hong Kong, Hong Kong); Anna Wingkvist (School of Computer Science, Physics and Mathematics, Linnaeus University, Sweden); Les Worrall (University of Coventry, UK); Tuan Yu (Kent Business School, University of Kent, Canterbury, UK).
Biographies

Conference Chair

**Dr. David Sammon** is a researcher/lecturer in Business Information Systems at University College Cork. His current research interests focus on the areas of conceptual data modeling, data/information management, theory and theory-building, and redesigning organisational routines through mindfulness. David has published extensively in international journals and conferences. He is an Associate Editor of the ‘Journal of Decision Systems’ and co-author of the book ‘Enterprise Resource Planning Era: Lessons Learned and Issues for the Future’ (2004).

Programme Chair

**Dr. Tadgh Nagle** is a lecturer in Business Information Systems at University College Cork. Coming from an industry background in finance services he became a Business Analyst Lab Leader in the Digital Enterprise Research Institute (DERI). During this time his main focus was on researching innovation and the impact of emerging technologies on the Irish eLearning sector. From this he has continued his research in strategic innovation and the impact of disruptive technologies. Primarily exploring concepts such as ambidexterity, business models and emerging technologies (Web 2.0) he has published in numerous international journals and conferences.

Keynote Speaker

**Professor Patrick Finnegan** is Professor of Information Systems and Head of the School of Information Systems, Technology and Management at the University of New South Wales, Sydney. He is a Senior Editor of the Information Systems Journal and a Past-President of the Irish Chapter of the Association
for Information Systems. He was awarded the 2011 Stafford Beer Medal with Philip O'Reilly for their work on developing a theory of electronic marketplace performance. His research on inter-organisational systems, e-business and open strategies has been published in the proceedings of leading IS conferences and in a variety of journals (including Information Systems Research, the European Journal of Information Systems, the Information Systems Journal, the Journal of Information Technology, the Journal of Strategic Information Systems, Information Technology and People, the International Journal of Electronic Commerce, DATABASE, and Electronic Markets).

**Mini Track Chairs**

**Dr Maria Alaranta**, D.Sc. (Econ. & Bus. Adm.) is a Visiting Research Scholar at CEPRIN, Georgia State University, USA, and a Senior Researcher (on research leave) in the Department of Industrial Engineering and Management, Aalto University, Finland. She has published a number of articles in reputable international peer-refereed journals and conferences, including Information Systems Frontiers, the Hawaii International Conference on System Sciences and the Academy of Management Conference etc. Dr. Alaranta has also carried out several large consulting projects in the area of IS.

**Dr Jorge Ferreira** is an assistant professor at the Geography and Regional Planning Department, Faculty of Social Sciences and Humanities (FCSH), Nova University of Lisbon. He develops its main research activities in e-Geo, Research Centre for Geography and Regional Planning, an R&D unit with Government annual funding within the University. His main research interests focus on "Geography of Knowledge Society", "Geographical Information Technologies" and "Information Diffusion". Regional economy and innovation are also transversal research areas crossed by his research.
Dr Ciara Heavin is a College Lecturer in Business Information Systems at University College Cork, Ireland. She also holds a BSc and MSc in Information Systems from UCC. Her main research interests include the development of the ICT industry, primarily focusing on Ireland’s software industry and knowledge management in software SMEs.

Dr Karen Neville is a researcher and lecturer in Business Information Systems (BIS) at University College Cork (UCC), Ireland. Her current research interests focus on the areas of ISS and Compliance, Social Learning and Biometrics. Karen has published in international conferences and journals.

Leona O’Brien is a graduate of UCC completing a BCL and an LLM with honours. She also holds a BBus from Cork Institute of Technology. Her research interests are Financial Services Law and Policy, specifically banking law, corporate governance and regulatory frameworks. She has completed research for the Consumer Panel of the Central Bank of Ireland, Bank of Ireland, and ITPS amongst others.

Ian Owens is a lecturer and researcher at Cranfield University. His research interests include information systems evaluation, information systems development methodologies, sense making and mindfulness, enterprise architecture, and service oriented architecture. He is also researching Enterprise Architecture tools and techniques for the Defence Science and Technology Labs (DSTL).

Isa Santos has a BSc degree (5 years) in Mechanical Engineering and a MSc degree in Industrial Design by University of Porto. Currently, she is pursuing a PhD from the MIT | Portugal program. Her main area of interest is product development of medical devices.
Dr Elena G. Serova is an Associate Professor in the International School of Economics and Politics and also in the Informatics Department of St Petersburg State University of Economics and Finance, Russia. Her research interests include Business Models and Modelling; Information Management and Information Systems and Economics of Innovation and Project Management.

Dr João Manuel R. S. Tavares graduated in Mechanical Engineering from the University of Porto – Portugal in 1992. He obtained MSc and the PhD degrees in Electronic and Computer Engineering, in 1995 and 2001, respectively, also from the same University. Since 2001, he has been Assistant Professor in the Department of Mechanical Engineering of the Faculty of Engineering of the University of Porto, and senior researcher and project coordinator at the Institute of Mechanical Engineering and Industrial Management. His main research areas include Medical Imaging, Biomechanics, Biomedical Engineering and New Product Development.

Biographies of Presenting Authors

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Marian Carcary is a post-doctoral researcher working on an IT Capability Maturity Framework research project at the Innovation Value Institute, National University of Ireland, Maynooth. Marian previously worked as a member of Faculty in the University of Limerick and Limerick Institute of Technology. She has an MSc by research and a PhD in IT evaluation.

Sven Carlsson is Professor of Informatics at Lund University School of Economics and Management. His current research interests include: Business
Intelligence, KM, and enterprise 2.0. He has published more than 125 peer-reviewed journal articles, book chapters, and conference papers. His work has appeared in journals like JMIS, Decision Sciences, and Information Systems Journal.

**Dr Fergal Carton** is a College Lecturer at University College Cork. Fergal's research domain is the integration of information technologies into management decision making. With 15 years' experience as a management consultant, Fergal has a primary degree in Computer Science (University College Dublin), and an MSc in Management from the European School of Management Studies (ESCP-EAP) in Paris.

**Mercy Kesiena Clement-Okooboh** is a Doctoral researcher at the University of Bolton, United Kingdom. Her research is focused on the effectiveness of different types of learning in the organisation and her research interests include program and technology evaluation, action research methodology and inquiry-based learning. Currently, she is the Head of Learning of Development in Veolia Energy (Dalkia) Ireland.

**Mitch Cochran** has been the Information Systems Manager for the City of Monrovia for 14 years. He has also worked in the Court System and for IBM. He is currently working on his Information Systems PhD from Claremont Graduate University and has completed Masters Degrees in Administration and Homeland Security. He has a CISM certification.

**Paul Cragg** is Professor of Information Systems at the University of Canterbury, New Zealand. He received his PhD from Loughborough University, England. He teaches the management of IS across a range of courses from undergraduate through to PhD. His research is focused on IS in SMEs, and has published in numerous journals.

**Fred Creedon** is a PhD candidate in the Department of Business Information Systems at University College Cork. He received his B.Bs in BIS, and M.Bs in BIS. His primary areas of research include the introduction of IS based early warning systems in a clinical environment and their impact on decision making processes within the environment.

**Rita Cristóvão**, raised in Lisbon, Portugal, graduated in 2001 from Nova School of Business and Economics and post-graduated in 2004 from INDEG
Business School. In 2001 worked as management consultant at Deloitte in the healthcare sector. In 2004 started to work in SIGIC and nowadays is the assistant coordinator of SIGIC in the Central Administration of NHS.

**Jacek Cypryjanski**, Ph.D. is a associated professor in the Department of IT in Management, Faculty of Economics and Management at the University of Szczecin, Poland. His current research interest includes economic evaluation of information technology investments and multiple-criteria decision analysis methods.

**Aymeric de Valroger** has a MSc. degree in Industrial Engineering from the Georgia Institute of Technology in the US and a BSc. degree from the Ecole Centrale de Paris in France. Mr. A.d V. is an experienced process supply chain consultant and project manager. He has a proven track record of successful Supply Chain process improvement projects the last 10 years. He is director from a consulting firm on Supply Chain Management and Industrial Systems.

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**Denis Dennehy** is currently undertaking a PhD with the Business Information Systems department in UCC. His research explores the process of creating and sharing value in a mobile payment ecosystem by leveraging the business model concept and its associated processes. Prior to this he completed a research masters which was motivated by his work in a developing country and he also holds a BSc. in Business Information Systems.

**Jan Devos** is professor in Information Systems at Ghent University, faculty of Engineering and Architecture, campus West. Devos has a PhD in Engineering, Industrial Management. His current research interests are IT governance in SME’s, Cloud computing, E-Business and IT security. He has published several articles on IT and SMEs and was a speaker at international academic and business conferences.
**Cathal Doyle** is currently pursuing a PhD in Business Information Systems at University College of Cork (UCC), Ireland. His research focuses on the emerging phenomena of social media and the established area of learning, where he is attempting to develop the learning environments of 2020.

**David Freeme** is a lecturer at Rhodes University, Grahamstown, South Africa. He lectures IS Theory, eBusiness Strategy, Accounting Information Systems, and IS Management to graduate and under graduates.

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**Rhiannon Gainor** is a PhD candidate at McGill University’s School of Information Studies. A McConnell Foundation Fellow in 2010/2011, her research interests are knowledge management, competitive intelligence, and measurement. She has a Master’s of Library and Information Studies, and Master’s of Arts in Humanities Computing from the University of Alberta.

**Audrey Grace** has over twelve years of industry experience and is a lecturer with Business Information Systems at University College Cork. Her current research interests focus primarily on service innovation and the role of information systems in the delivery of complex services; collaborative systems; learning management systems and knowledge dissemination within an organisational context.

**Aida Hadzic** is a PhD student at the Department of Applied IT, IT University in Gothenburg. She has a systems science background and a second level education in the field of IT management. Aida is studying issues related to management and architectural design of both existing and future IT investments.

**Martin Hill** has twenty years’ experience building commercial information systems from Kenyan camel farmers to satellite operators. Five years developing these for disaster and frontline military operations have evolved
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**Dr Matthew Hinton** is Senior Lecturer in Information Management at the Open University Business School. His research covers the impact of e-commerce on operations and the evaluation of ICT investments. He has published more than 60 academic articles and two undergraduate teaching texts Introducing Information Management: the Business Approach and Information Management in Context (2009).

**Dr. Vered Holzmann**, MBA, is an experienced practicing project manager with a distinguished track record in managing computer software development teams, implementation of quality assurance programs and management of fast track construction projects. She is a faculty member in Holon Institute of Technology - H.I.T. and lectures at Tel-Aviv University.

**Björn Johansson** holds a PhD in Information Systems Development from the Department of Management & Engineering at Linköping University. Currently he works as Associate Senior Lecturer at Department of Informatics, Lund University. Previously he worked as a Post Doc at the Center for Applied ICT at Copenhagen Business School. He is a member of the IFIP Working Groups IFIP 8.6 and IFIP 8.9.

**Maroun Jneid** is a PhD candidate at Université Paris8 with 13 years of professional experience in software projects management and engineering process activities and 11 years of experience in software engineering activities lecturing in the Antonine University’s Faculty of Engineering as well as its North Campus director for the last 4 years.

**Kalimullah Khan** a young and energetic student with excellent communication skills has done MIT from Pakistan and an additional MSc (Thesis resulted awaited) from Blekinge Institute of Technology Sweden. He has an experience in teaching at university level and wants to pursue his carrier in research (PhD).

**Ranjan Kini**, Ph.D., is a Professor of Information Systems. He is an active member of IACIS ACM, DSI, and AIS. His current research interests include Electronic and Mobile Commerce, Ethics in Information Technology, and
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**Daryoush Daniel Vaziri** received his Bachelor degree from the University of Applied Science in Bonn-Rhine-Sieg. Afterwards he worked for Telekom AG. Since 2010 he has been employed at the university of Bonn-Rhine-Sieg as a research assistant and simultaneously participating at the Master program “Information and Innovation management”. His research fields cover the accessibility of ICT.

**Bartosz Wachnik** specializes in MIS implementation. He is a member of senior management in Alna Business Solutions in Poland, a branch of Lithuanian company, which is one of the largest IT companies in the Baltic area. He has published more than 20 articles in professional and academic journals. He has co-operated with University of Technology in Warsaw where he has PhD.

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**Dr Ryszard Zygala** is assistant professor at the Wroclaw University of Economics, Poland. His research interests include: information management, information systems economics, information systems modeling and architecture. He has authored a book: Essentials of Business Information Management (in Polish) and contributed chapters to several books.
Proposal of Adaptability Indexes to Support Management of Engineering and Marketing Systems

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Abstract: The Responsiveness of Productive Systems has become a prerequisite to meet the demands of high diversification of products being manufactured simultaneously, coupled with the reduction of lot sizes and the reduction of life cycle of those products. Organizations that have portfolios with large numbers of products and the ability to absorb shorter product life cycles become competitive against their competitors in the consumer market. This article proposes Adaptability Indexes to support the management of the Systems and Processes of Engineering in organizations, taking into account the need to reduce design time and the deployment of new products to meet market demand for these products with increased diversification and reduction of their useful life. The indexes of adaptability are defined by the relationship between time of development of a new product and the development time of the product immediately subsequent, taking into account a sequence of development of new products. The time of development of a new product comprises product design, development of the means of manufacture and construction of the initial pilot batches. From the definition of the adaptability index, engineering organizations can be classified by the following characteristics: a) regressive adaptability, when the engineering organization needs successively greater times in the development of successive products; b) neutral adaptability, when the engineering organization requires equivalent development times for the development of successive products; c) progressive adaptability, when the engineering organization successively needs shorter times in the development of successive products. Starting from these adaptability characteristics of engineering organizations, the paper discusses the methodologies and technologies to be applied to products and means of manufacturing development to increase the progressive indexes of adaptability and reverse engineering organizations from a regressive adaptability index to a progressive one. As a conclusion, it will propose that engineering organizations should have progressive
adaptability indexes in order to increase responsiveness of organizations that face competitiveness challenges in environments of high diversification of products and constant reduction of product life cycle in global markets in the 21st century. Paper relevance: Responsiveness becomes indispensable for organizations that compete in environments of products with high diversification and reduction of life cycles. This paper presents adaptability indexes to manage Engineering organizations, to increase their capacity of product and means of manufacturing design, providing competitiveness to attend the external conditions mentioned above.

Keywords: engineering systems, responsiveness, adaptability, products diversification

Knowledge Gaps in Post-Merger Integration of Software Maintenance Processes: A Case Study

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Abstract: The integration activities after a merger or an acquisition result in and are troubled by loss of knowledge that is critical for running the business. However, we know little of such knowledge gaps. We adapt the IS Body of Knowledge by livari et al., 2004 to form a framework for knowledge gaps in post-merger integration of software processes. The key knowledge types are: Context-of-use knowledge, software-engineering knowledge, organizational knowledge, transformation knowledge and operative knowledge. Our empirical data comes from the integration of the software maintenance processes after a megamerger in the ICT field. We explore what types of knowledge loss trouble the integration and when such losses are most prominent. In the case studied, all five types of knowledge gaps are present. Key findings include the variety and persistence of knowledge problems and their evolutionary nature. There are gaps in several types of knowledge at all integration phases and all types of knowledge during ramp-up. Gaps in transformation knowledge persist throughout the integration process. Knowledge gaps evolve over time both in terms of which gaps are prominent at each phase of the change, and in terms of the specific content of the gaps. The framework allows to system-
atically integrate insights provided by prior literature, and it can help re-
searchers of knowledge issues during turbulent times to focus their stud-
ies. Our analysis also reveals the emergent nature of knowledge-related
problems in post-merger process integration. Researchers would benefit
from including this evolutionary perspective in their studies, and thus be-
ing able to build more descriptive theories. Practitioners can use our re-
results to identify, understand and prepare for specific knowledge-loss prob-
lems, thus facilitating overcoming these problems and managing risks.
They may also benefit from engaging in on-going creation and transfer of
critical knowledge during all phases of integration.

**Keywords:** knowledge gap, M&A, merger, post-merger integration, soft-
ware maintenance

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**A Proposed Framework for Guiding the Effective Implementation of an Informal Communication System for Virtual Teams**

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**Abstract:** This research provides insight into the nature of informal com-
munication, and how it relates to virtual teams. It is shown that informal communication plays a critical role in the achievement of the production,
group maintenance and member support goals of a team. Given the dis-
persed nature of virtual teams, it is shown that the lack of access to face-
to-face communication results in challenges to effective teamwork. These challenges are (1) Trust building, (2) Information exchange, (3) Process gains and losses, (4) Feelings of isolation, (5) Participation, (6) Coordination and (7) Cohesion. In order to overcome these challenges, five functional needs of a virtual informal communication system are identified. These needs are (1) Co-presence, (2) Low behavioural cost, (3) Visual channel, (4) Document sharing and (5) Multiple complimentary systems. The proposed framework of an effective virtual communication system is intended to provide guidelines against which intended or existing virtual communication systems can be assessed. Given that the framework is theoretical, fur-
ther research will be required to determine its veracity.

**Keywords:** virtual teams, globalisation, communication, distributed teams
IS Consultants and SMEs: A Competence Perspective

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Abstract: Many small and medium-sized enterprises (SMEs) lack in-house resources, including IS knowledge and skills. As a result, they often turn to consultants for assistance with IS projects, eg, helping the firm select and implement a new system. While there is some evidence that this practice increases IS success, there has been no attempt to discover if SMEs gain anything other than a new system from such projects. Thus this study aimed to determine what SMEs gain from engaging IS consultants. In particular, the study aimed to identify any improvements to internal IS competences. In brief, did the consultant engagement help improve IS skills and abilities within the SME? A multiple case study approach was adopted. Data was collected from SMEs that had engaged consultants to implement an accounting information system. In addition, to provide a broader perspective, interviews were conducted with consultants who specialise in assisting SMEs with IS. Resource-based theory was used as a lens to help analyse the case evidence. Each case was examined to identify instances where consultants influenced a competence, ie, had an impact on the creation or use of any competences. The cases provide evidence that SMEs lack many IS abilities. The findings indicate that consultants compensate for a lack of IS competences rather than help build in-house competences. Consultants help many SMEs overcome their lack of IS competences. The study adds to our understanding of consultants acting as intermediaries to assist and advise firms. In this intermediary role as ‘conduits’, consultants provide advice to assist many SMEs by finding appropriate products, implementing the system, integrating software with existing systems, and training and support. Consultant attributes, eg, technical, soft skills and training skills, influence project success. The study provides new insights into a particularly significant relationship for SMEs and thus provides a step towards improving our understanding of IS success in SMEs.

Keywords: IS projects, IS consultants, SMEs, competences
Developing a Framework for Maturing IT Risk Management Capabilities

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Abstract: Understanding the value derived from IT investments and IT enabled operational improvements is difficult, and has been a subject of research and debate among ICT practitioners and academics for many years. This is particularly so because innovative technological developments have supported transformative changes in organizational operational activities. Research continues to investigate approaches to not only understanding the value derived by IT but also to optimizing this value. One of the key aspects of optimizing IT-driven value is the requirement to effectively manage risk. The continual evolution of the IT risk landscape requires effective Risk Management (RM) practices for all IT risk areas, such as, but not limited to security, investments, service contracts, data protection and information privacy. Effectively managing these risk areas pose specific concerns from the perspective of Chief Information Officers (CIOs) and Chief Risk Officers (CROs). Hence, significant considerations should be given to not only the processes involved in assessing, prioritizing, handling and monitoring these risks but also to ensuring the development of an appropriate risk culture and the establishment of effective RM governance structures, to support effective RM. This paper examines the maturity model/framework approach to improving an organization’s IT capabilities, with specific reference to effectively managing IT-related risks, and increasing value derived over time. A new IT Risk Management maturity model is presented; this framework is part of the IT Capability Maturity Framework (IT CMF) which supports value-driven IT management practices. It was developed by the Innovation Value Institute at the National University of Ireland Maynooth, following a design science and open innovation research approach. The IT CMF, consisting of 33 Critical Capabilities, focuses on maturing key activities of the IT organization. The Risk Management Critical Capability presented in this paper enables organizations to determine their IT RM maturity and identify key recommendations in specific areas to improve maturity overtime. Thereafter the paper presents an analysis of the maturity model approach to managing risk, to improving
an organization’s IT capabilities, and to deriving enterprise-wide value from more mature IT practices.

**Keywords:** IT risks, IT risk management, maturity model, IT CMF, critical capability

**IS Evaluation in the Fusion View: An Emergence Perspective**

_Sven Carlsson and Olgerta Tona_
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**Abstract:** Different theories have changed the way we address to technology. In the debate on the core of Information System (IS), El Sawy identified three faces of IS views: connection, immersion, and fusion. El Sawy contends that it may be time for a natural shift of emphasis from the connection view to the immersion view to the fusion view as IT continues to morph and augment its capabilities. In the fusion view, IT and IS are fused within the business environment, such that business and IT and IS are indistinguishable to standard time-space perception and form a unified fabric. There exist different traditional IS evaluation approaches, like experimental, pragmatic, constructivist, pluralist and realist IS evaluation research. These approaches evaluate IS when it is positioned either in the connection or immersion view. However, we believe that the fusion view will influence the way IS is evaluated. This paper uses the relational emergence theory, based on the philosophy of critical realism where emergence refers to an entity as a ‘whole’ whose parts are structured by the relations among each other. Emergent entities possess properties different from its individual parts’ properties. Considering the similarity to fusion concept, the emergence concept is used to theorize and operationalize the fusion view, as it lacks a theoretical grounding. Based on this, we present and discuss the implications for IS evaluation in terms of how to evaluate a process as well as the output of the process. The discussion on IS evaluation is illustrated through an empirical example, drawn on a research study within a police organization. This paper concludes that in the fusion view, the evaluation process shall embrace a holistic perspective. The focus of the evaluation process shall be the emergent entity which consist of IS,
users, task and processes structured by means of relationships among each other. The properties exhibited by this emergent entity shall be evaluated.

**Keywords**: IS evaluation, fusion view, emergence

### Where do Tablets fit in the Organization’s Workstation Inventory?

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**Abstract**: Tablets have become the new technology of choice for end users by end users. They are excited about the new technology and have the feeling that the tablets can replace other computing devices. Marketing studies demonstrate the significant user demand for tablets. Users are now questioning organizations’ IT operations as to why they can’t be used in daily business. It is the job of the IT operation to guide the incorporation of devices into the organizations computing device inventory. A critical issue is for the organization to demonstrate what ‘apps’ are appropriate and what business applications require a traditional platform. This paper will examine the strengths, weaknesses, and issues of incorporating tablets into the organization, to help put structure around the problem for organizations and their IT staffs, and to define a future research agenda. Tablets have some of the same attributes and limitations of both cell phones and workstations. Tablets have strong capabilities for content retrieval where more powerful laptops are better suited for content creation. Tablets provide easy access to Internet-based applications. Using the Internet use paradigm tablets can use touch or pen based input for easy navigation. But developing content is more than easy navigation around websites or using pre-determined ‘apps’. When users need more complex input tasks such as coding with advanced tools, they need the support of a laptop or workstation. Some functions just need additional screen space that tablets don’t offer. Organizations need to understand how the new technology format differs from cell phones, traditional workstations or laptops so governance procedures can be modified to incorporate appropriate controls. The paper explores various user business functions and the device types that best fit them. The paper then discusses issues regarding hardware
differences, security and application development. The organization will need to maintain security procedures similar to that needed of a laptop on topics such as antivirus, data leakage, and remote access. The organization will treat it similarly to a cell phone in governance on issues such as employee-provided technology or remote deletion capabilities. From a governance perspective, the distinctions among workstations, tablets and phones are less clear. We propose a research agenda to move the study of this topic forward.

**Keywords:** governance, tablets, workstations

**Classifying IT Investment Evaluation Methods According to Functional Criterion**

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**Abstract:** One of the main problems of IT investment evaluation is selection of adequate methods. The selection will be easier if we divide the methods into homogeneous groups. The paper presents a proposal of methods classification based on functionality criterion. As a starting point the system-situational approach has been adopted. Development of this approach resulted in three findings which form a theoretical basis of the proposed classification: (a) model of the evaluation system with three phases of the evaluation process and relationships between them; (b) synthetic approach to problems of evaluation in general and identification of problem sources typical for IT investments; (c) synthetic approach to requirements which the appraisal (result of the evaluation) should fulfil in a decision process. The proposed classification organizes the problem of evaluation method selection. It allows avoiding series of mistakes such as perceiving methods which are of different roles as alternative ones or underrating methods which could be of great importance in evaluation of IT investments.

**Keywords:** IT investment evaluation, evaluation methods classification, specificity of IT investments
Academic Group and Forum on Facebook: Social, Serious Studies or Synergy?

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Abstract: An academic group and discussion forum were established on Facebook for a cohort of postgraduate students studying the concepts and principles of eLearning. The Forum had a constructivist, student-centric ethos, in which students initiated topics for discussion, while the course leader and administrator facilitated. Previous research has been conducted, involving content analysis of the topics and academic discourse, but the present study focuses on social aspects, investigating social- and study-related pursuits and determining whether synergy can exist between them. A literature review shows how social networking by students, initially social, began to overlap with academia, leading to the use of groups for academic purposes and forums for subject-related discussions. In the present study, data was triangulated and two methods of data analysis were used. Qualitative analysis was done on free-text data from students’ reflective essays to extract socially-related themes. Heuristic evaluation was conducted by expert evaluators, who investigated forum discourse in line with contemporary learning theory and who considered the social culture of participation. Findings of the qualitative analysis of students’ perceptions and results of the heuristic evaluation of forum participation confirmed each other, indicating a warm social climate and a conducive, well-facilitated environment that supported individual participation styles. It fostered inter-personal relationships between distance learners, as well as study-related relationships due to peer teaching and insights acquired from social negotiation. The environment supported student-initiative, but was moderated by facilitators. The mixed-methods research approach of evaluating students’ essays and conducting expert analysis of forum discussions showed the advent of a virtual community with a synergy between social aspects and academia. Most participants experienced a sound balance of social- and study-related benefits, but with a stronger focus on academic matters.

Keywords: eLearning, evaluation, Facebook group, online discussion forums, qualitative analysis
Evaluating the Process of Delivering Compelling Value Propositions: The Case of Mobile Payments

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Abstract: The provision of mobile phoned based payments (m-payments) services to the general public requires the cooperation of a number of specific stakeholders, each contributing part of the overall solution, but also each with their different motives, resources and capabilities to deliver compelling value propositions to consumers. The need to combine these multiple perspectives makes exploring the requirements for the design and implementation of m-payment initiatives a complex activity. As a result, sustainable economic business models have yet to emerge for m-payment scenarios. The business model concept has been amply demonstrated to be a very useful tool to understand how to design commercially viable offerings over the last 15 years. The purpose of this research is to theorise the linkages between the numerous elements of an m-payment business model and to evaluate the process whereby stakeholders in an m-payments ecosystem create, exchange and deliver an m-payment solution. By leveraging the business model concept and the process modelling techniques associated with it, the research represents the various stakeholders, in an economic value context, by identifying the role played by each stakeholder and the share of the profit which they expect in return for their contribution. The study is unique in that it tracks the activities and decisions of stakeholders involved in a real-world m-payment initiative from concept stage through to launch stage. As a result, the study provides new insights into the complex and sensitive issues that need to be considered by practitioners, while also providing researchers with a balanced and holistic perspective to a complex phenomenon. It also leverages the business model concept to present detailed models of the m-payment solution implemented in the case study. The preliminary data which we abstracted from the case has validated the relevance of the research questions and will be a valuable contribution to the future creation of an m-payment consortium.

Keywords: mobile payments, M-payments, business model, business process, value networks, value webs
Using Bricolage to Facilitate Emergent Collectives in SMEs

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Abstract: Starting a new business is often done in a realm of improvisation if resources are scarce and the business horizon is far from clear. Strategic improvisation occurs when the design of novel activities unite. We conducted an investigation of so called ‘emergent collectives’ in the context of a small and medium-sized enterprise (SME). Emergent collectives are networks of information nodes with minimal central control and largely controlled by a protocol specification where people can add nodes to the network and have a social incentive to do so. We considered here emergent collectives around an enterprise resources planning (ERP) software and a customer relation management (CRM) software in two open source software (OSS) communities. We investigated how the use of bricolage in the context of a start-up microenterprise can facilitate the adoption of an information system (IS) based on emergent collectives. Bricolage is an improvisational approach that allows learning form concrete experience. In our case study we followed the inception of a new business initiative up to the implementation of an IS, during a period of two years. The case study covers both the usefulness of bricolage for strategic improvisation and for entrepreneurial activity in a knowledge-intensive new business. We adopted an interpretative research strategy and used participatory action research to conduct our inquiry. Our findings lead to the suggestion that emergent collectives can be moulded into a usable set of IS resources applicable in a microenterprise. However the success depends heavily on the ICT managerial and technological capabilities of the CEO and his individual commitment to the process of bricolage. Our findings also show that open ERP and CRM software are not passing delusions. These emergent collectives will not take over proprietary ERP and CRM software all of a sudden, but clearly the rules of the game are slowly changing due to the introduc-
tion of new business models. The study contributes to the research of OSS as emergent collectives, bricolage and IS adoption in SMEs.

**Keywords:** SMEs, bricolage, emergent collectives, open software, ERP, CRM, IS adoption

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**Determining the Maturity Level of eCommerce in South African SMEs**

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**Abstract:** According to the United Nations (2002: 14) report on eCommerce adoption and diffusion in South Africa, South Africa is one of 55 countries at stage 3 of the McKay, Prananto and Marshall’s (2000, 3) model, namely the interactive stage. This means that it hosts a more sophisticated level of formal interactions between users and service providers, via e-mail and post comments. (United Nations, 2002: 15). Molla and Licker (2004: 91, 92) found that 83% of the SMEs surveyed owned websites. According to the Global Diffusion of the Internet (GDI) criteria, these figures suggest that SA is at a medium stage of eCommerce maturity, neither immature nor fully mature (Molla and Licker, 2004: 91, 92). In an attempt to measure the maturity levels of South African SMEs a checklist, based on stages of development models, was developed using six relevant frameworks/models/classifications identified using a quantitative research methodology and positivist approach. The overall finding of the research was that South African SMEs are at stage 2 maturity of the McKay et al, (2000, 3) model, namely an experimental online presence stage.

**Keywords:** SME’s, eCommerce, stages of development, web site functionality, maturity, checklist
Advancing GeoMarketing Analyses with Improved Spatio-temporal Distribution of Population at High Resolution

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Abstract: Knowing the spatiotemporal distribution of population at the local level is fundamental for many applications, including risk management, health and environmental studies, territorial planning and management, and GeoMarketing. Census figures register where people reside and usually sleep, and are frequently the only data source available for such analyses. Currently, the analysis of service areas and population served is mostly made considering only census data as source of population distribution, while some businesses clearly serve mostly a daytime population. However, population density is not constant within census enumeration areas. Also, due to human activities, population counts and their distribution vary widely from nighttime to daytime, especially in metropolitan areas, and this variation is not captured by census data. Raster dasymetric mapping within geographic modeling allows transforming raw population counts to population density limited to specific areas where the variable is present, in more detailed temporal periods, by using ancillary data sets and zonal interpolation. In GeoMarketing, this information is especially useful for retail sales, banking, insurance, lodging, real estate, and franchising. These refined distributions can be used to improve such analyses as site selection, service area and population served, assessment of potential markets, routing activities, location-allocation, and gravity models. This study uses such a dasymetric mapping approach for detailed modeling and mapping of the spatiotemporal distribution of population in the daily cycle. These data sets are used to assess the location and the varying population contained in the service areas of existing and prospective commercial facilities in the daily cycle, for different types of businesses. Applications in GeoMarketing using spatial analysis are illustrated for three different scenarios involving private sector services where maximizing coverage of target population is paramount for success. The case studies show that when the spatiotemporal distribution of population is considered, the obtained set of solutions differs from the one produced by using census-based data.
The results demonstrate that enhancing population distribution data through geographical modeling can greatly benefit spatial analysis in GeoMarketing, resulting in the production of better information that ultimately allows improved decision-making.

**Keywords:** GeoMarketing, population distribution, dasymetric mapping, service area, maximum coverage, Oeiras

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**Activity Theory: A Useful Evaluation Methodology for the Role of Information Systems in Collaborative Activity**

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**Abstract:** The way in which information systems are used in organisations has evolved over time. While they were initially used primarily for information processing and for supporting company centric efficiencies, they are now extensively used to share information and to support collaboration both internally within an organization and with external customers, suppliers and partners. While much IS research heretofore has concentrated on how information systems facilitate information processing and the decision making of individuals in an organisation, there is a growing need within organisations to analyse and understand how information systems facilitate both internal and external information sharing and collaboration. This paper provides an overview of activity theory and argues that this theory provides a holistic and insightful evaluation methodology which will allow researchers to investigate how collaboration is achieved through all elements of IS (people, process, technology). The key characteristics of activity theory that underpin its suitability for researching collaboration through IS are outlined. Finally, a specific example of future research using this theory is described.

**Keywords:** activity theory, evaluation methodology, information systems, collaboration
Dealing With Uncertainty Through KM: Cases in Four Software SMEs

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Abstract: In the current climate, preparing for change is an issue for companies large and small. For a Small to Medium Sized Enterprises (SMEs) where resources are significantly limited, it is imperative that efficient practices are in place to leverage the wealth of knowledge available both inside and outside the firm. It is vital that these organisations are swift and flexible enough to survive in this dynamic environment, this includes developing the ability to take stock of the sources and types of knowledge that are valuable to them and understanding how it is accessed and integrated into the firm’s body of knowledge. Considering the economic turbulence, never has it been more important to focus on the knowledge capabilities of software SMEs, as it is on the back of these types of small high-tech organisations that innovation, growth and potential recovery will be achieved. Using a qualitative analysis approach in four Irish software SMEs, this study identifies sources of knowledge and occurrences of knowledge activities (KAs) as a means of understanding the firm’s approach to knowledge management (KM) and how this may be leveraged therefore providing them with the flexibility to deal with environmental uncertainty.

Keywords: knowledge, knowledge management (KM), small and medium sized enterprises (SMEs), knowledge activity (KA) and software

Analyzing Lessons Learned to Identify Potential Risks in new Product Development Projects

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Abstract: The paper presents a methodological implementation of the synergetic relation between past and future by utilizing analysis of past occurrences to mitigate future possible risks. When an organization undertakes
the development of a new product, it should prepare a risk management plan that can outline the guidelines to mitigate possible uncertainties with a negative impact on the development project or the expected product. This process can be performed by analyzing the information accumulated during previous projects executed by the organization during the processes of developing other deliverables. The method of transforming organizational information into applicable risk management guidelines is based on two research techniques: content analysis and cluster analysis. The content analysis approach requires a deep understanding of the lessons learned dataset collected from past projects while documenting undesired events or failures. This process integrates qualitative and quantitative procedures including a review of each record, a classification of relevant hazardous factors, and a computation of recurring factors in completed projects and processes. The cluster analysis approach uses the risk dataset to create a risk tree that represents relative weights for each risk factor, while considering the reoccurrence of similar events in similar circumstances. Implementation of the methodology in order to identify potential risks, in particular analyzing lessons learned in technological organizations, yielded interesting organizational risk tree that shows a substantial weight accumulation in the areas of miscommunications and misunderstanding of stakeholder responsibilities. The results emphasized the following susceptible items: responsibility definition, delivery method, communication and information needs and responsibilities, and change management. The findings exposed the 'soft skills' of project managers and project teams, rather than technical issues or engineering problems, as being the vulnerable areas that should be managed carefully in order to finish the project successfully. The study offers a generic validated methodology for risk identification based on analysis of lessons learned, supported by results of an implementation of the methodology in a high-tech company. The method of analysis can be applied by managers of new product development projects to identify risk issues, classify them into groups, and construct a risk tree that represents the project risk areas and their relative weights.

**Keywords:** risk management; lessons learned; project management; clustering; content analysis
Evaluating Determinants for ERP use and Value in Scandinavia: Exploring Differences Between Danish and Swedish SMEs

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Abstract: In the paper we present a research model for evaluating determinants of ERP value in small and medium-size enterprises (SMEs). The model is grounded in the diffusion of innovation (DOI) model and resource-based view of the firm (RBV) theory. The research model links six DOI determinants to explain ‘ERP use’ linked with two additional determinants to explain ‘ERP value’, on which nine hypotheses are postulated. The hypotheses were tested through structural equation modelling on a dataset from a web survey of 325 SMEs in Denmark (107) and Sweden (218). Through an empirical work we validate the theoretical arguments and provide insight into how SMEs use and value ERP, especially how perceived ERP use and perceived ERP value in Scandinavian SMEs can be explained. To our knowledge this is the first empirical research study on Scandinavian SMEs, thus adding a cross-country dimension to the innovation diffusion literature. Unlike the typical focus on ERP adoption in large firms found in the literature, this study focuses on post-adoption of ERP in SMEs. The main finding is that Danish and Swedish SMEs show different results despite the fact that they seem to be so similar. Our study reveals that while transactional efficiency, best-practices, and competitive pressure are important determinants of ‘ERP use’ in both Swedish and Danish SMEs, complexity is significant only among Danish firms. Compatibility has contrary effects, i.e., it is an inhibitor for Danish SMEs and a facilitator for Swedish SMEs to explain ERP use. Furthermore, while for Danish SMEs ‘ERP value’ is explained mainly by collaboration, for Swedish SMEs ‘ERP value’ is explained mainly by analytics. The facts that the research presents results focusing on SMEs makes it especially valuable since this is an under researched area, and that the research has 325 respondents also makes it important in exploring the differences and similarities between countries, adding an international dimension.

Keywords: ERP, SMEs, diffusion of innovation, resource-based view, use, value, post-adoption
User Experience in Mobile Phones by Using Semantic Differential Methodology

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Abstract: Measuring overall UX is a challenging process because of its versatile nature. Studies showed that hundreds of thousands of products are returned each year not because of its functional behaviour but because of its bad user experience. Researchers and practitioners use different techniques and methods to capture the customer psychological and behavioural aspects towards a product and to put it into design so that the future product form must be in according to his/her expectations. In this paper a research work is carried out to evaluate user experience evaluation methodologies and to identify a method which can be used efficiently to measure the overall user experience of a product use from user experience using mobile phone as a case. As overall user experience constitutes both the experiential as well as non-experiential aspects of a product. Hence semantic differential methodology is identified as a best suited method based on current user experience evaluation methodologies and later on used to measure preference from the overall user experience which can be used to improve product form to ensure customer loyalty.

Keywords: semantic differential (SD), user experience (UX), overall user experience, user preferences, UX metrics

Challenges in Building a Community Health Information Exchange in a Complex Environment

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Abstract: Economists are projecting that the single most important cost to the world economies in the future is the healthcare cost. Although more developed economies are projecting the healthcare cost growth rate higher than their gross domestic product (GDP) growth rate, the projections made for the US are dramatic enough to cause alarm and begin major na-
tional conversations. Unlike in Europe, the US healthcare has a larger share of its total healthcare costs privatized. Despite the fact that over half of US healthcare costs are borne by corporations and citizens, the government’s share, taking care of seniors, is projected to take a lion’s share of the GDP in the future and continue to grow. In the US, this initiated studies of successful European and Asian nationalized health care plans in identifying best practices. One of the first best practices that was pushed forward is to encourage establishment of national-level, or state, or regional or community-level health information exchanges (HIE.) Adopting appropriate information and communication technology (ICT) infrastructure and creating such HIEs was identified as a strategy to address healthcare cost reduction, quality gains, and safety in service provision. There are many HIEs that have been started in different regions of the US. Most of them, being early starters, were subsidized by federal agencies through grants. The objectives of supporting these exchanges were to identify the key ingredients necessary to develop and maintain sustainable HIEs. These reports from exchanges have identified many critical success factors that need to be addressed in building sustainable HIEs. However, these factors are influenced by the ICT infrastructure, community, competitive, and stakeholder characteristics of the region. Consequently, in many parts of the US, the adoption of HIE and subscribing to it has been slow. In this study, the challenges facing the establishment of a HIE in a region with three major competitive healthcare entities comprising of nine hospitals are studied. The research methodology that is used in this research to collect data is through semi-structured interviews with executives of three major healthcare providers (hospital groups). Although there are many stakeholders such as physicians, laboratories, pharmacies, etc., in making a HIE highly successful, this research is primarily focused on the central players of HIE, the hospitals. It is clear from the interview responses that they are skeptical of any regional HIE becoming sustainable, and they believe that even for most HIEs, sustainability in the long run is difficult unless it is made mandatory and cost of doing business for stakeholders to control the total healthcare costs. But, they do agree that there are opportunities for innovative HIEs to add business services to make them viable and sustainable.

**Keywords:** health information exchange; regional health information exchange; sustainability of health information exchange; HIE and quality of health; health information technology
Factors Inhibiting Recognition and Reporting of Losses From Cyber-Attacks: The Case of Government Departments in the Western Cape Province of South Africa

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Abstract: The South African government has invested substantially in IT to improve service delivery and benefit from the low cost of communication via e.g., the internet. However, cybercrime, lack of accountability and failure to evaluate e-developments remain a major concern to the society. The level of awareness of these risks in this sector appears to be low despite effort to address these challenges in government and private sector initiatives and conferences. The draft paper on information security (Dept of Public service and administration n.d. p2) and the CSIRT initiative clearly point to the fact that success in government electronic initiatives depends on effective information security management. The present study examined some of the factors inhibiting the recognition and reporting of losses from cyber-attacks on government departments in South Africa. A survey was conducted in the Western Cape Province. Forty responses were received and analysed using mixed methods. The results indicate that lack of clear guidance on how to calculate losses; lack of understanding of the legislation and knowledge of how it may assist in cubing cyber-crime; lack of training and creation of awareness of cyber-crime and lack of knowledge and capability to assess risks regularly are major factors inhibiting departments from recognising and reporting losses from cyber attacks.

Keywords: cybercrime, human behaviours, IT, information security, public sector, South Africa
The Overall Process Taken by Enterprises to Manage the IaaS Cloud Services

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Abstract: Small and medium-sized enterprises (SMEs) were the initial focus for cloud services and they are susceptible to a continuous adoption of cloud computing services, because of its strong advantages of accessing data from any place in the world over the Internet without concerning about the infrastructure used and the problems involved by the installation and maintenance processes. However, organizations need to consider simultaneously both risks and rewards within the decision making process, in order to assure an efficient expertise. SMEs represent the target group of this study concerned with the outsourcing process to Cloud Service Provider (CSP) considering the fact that the number of SMEs is greater than the number of large organizations, making SMEs the heart of economies worldwide (Sharma, et al., 2010; Van Hoecke, et al., 2011). The aim of the proposed research represents a qualitative analysis of the overall process taken by SMEs to manage the migration of their applications to Infrastructure-as-a-Service (IaaS). We conducted a literature analysis using papers released both by academic and practitioner bodies, in order to respond to the following two research questions: What are the steps involved in the migration process of the SMEs to cloud services? What are the stages required by each step of the outsourcing process? In this sense we produced a theoretical process, which includes a collection of the following interrelated activities: data analysis step, decision making step, migration step and management step. In an IaaS cloud service, the CSP supports the hardware related issues, whilst the software related issues should be identified by enterprises that want to migrate to cloud. Thus, this paper is first proposing to address an overview of the data analysis step. This constitutes the initial step of the overall process taken by organizations and it comprises: the analysis of cloud migration opportunities, the study of cloud adoption barriers and the examination of current infrastructure used by the organization.
Further, another objective of this paper is to address the decision making step, which implies the following decisions: what information should be moved into cloud and who will access the information, what CSP the organization will choose and how the organization will manage the cloud services. The decisions will be made based on the analysis step. We assumed that the cloud service type was chosen (i.e. IaaS) and the cloud deployment model was selected as well (i.e. public cloud). Furthermore, the effective moving stage of enterprise’s assets into cloud services is the migration step, which includes two activities: developing the Service Level Agreement (SLA) and implementing cloud. In addition, the last step of the overall process is the management step, which is realized using two management functions: business and operational.

**Keywords:** cloud management, outsourcing, IaaS, SME, cloud risks, cloud benefits, service level agreement

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**Sustainable Enterprise Architecture: A Three-Dimensional Framework for Management of Architectural Change**

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**Abstract:** Despite advances in information technology, the modern enterprise finds itself struggling to satisfy its need for pertinent information. Faced with the challenge of matching internal resources to external demands, more and more organizations turn to Enterprise Architecture (EA) for guidance. Yet all too often change efforts in relation to EA are approached with a simplistic- or technical perspective that limits future development. We must therefore seek a more appropriate means to facilitate purposeful change and ensure a sustainable EA that is able to accommodate the complexities that arise when dealing with complex change efforts. In response to the need for better understanding of sustainability in Enterprise Architecture, we propose a tentative three-dimensional framework for change consisting of three dimensions: Perspectives on change, levels of change and types of change. The perspective on change is a reflection of the paradigm upon which the change effort is based. Two extreme views are hard systems thinking and soft systems thinking. The
level of change describes its delineation. Depending on scope, the change effort may be considered local, structural or inter-organizational in nature. The nature of change signifies the extent to which an enterprise departs from existing practices. We may refer to changes as incremental, transformational or reorientation-based depending on their magnitude. The relevance and usefulness of these three dimensions has been validated through seminars, workshops or advanced courses held with over 30 healthcare professionals. While we feel that this framework is a step in the right direction, there is still much work to be done in this area. We therefore call for a deeper discourse and further research into sustainability in Enterprise Architecture.

**Keywords:** enterprise architecture, change, sustainability

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**Applying Structural Equation Modelling to Exploring the Relationship Between Organisational Trust and Quality of Work Life**

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**Abstract:** Dissatisfaction with working life is a problem affecting almost all employees during their working career, regardless of position or status. Although many managers seek to reduce job dissatisfaction at all organisational levels, they sometimes find it difficult to isolate and identify all of the attributes, which affect and influence the quality of working life. Some researchers proclaim that the success of Quality of Work Life programmes will depend on the ability of the organisation to reinforce high levels of trust. Quality of work life is assumed to affect various organisational factors such as job effort and performance, organisational identification, job satisfaction and job involvement. The aim of this quantitative research, based on theoretical and empirical research, is to determine the relationship between organisational trust and quality of work life. A validated organisational trust questionnaire (consisting of Big Five personality constructs, managerial practices and organisational trust dimensions) and a quality of work life questionnaire (11 dimensions) were used in the research. Two hundred sales representatives of a marketing company, participated in the research. An internet-based survey methodology was used to
collect primary data from a probability sample of 282 sales representatives’ respondents with a 72% response rate. Responses were analysed using quantitative techniques and Structural Equation Modelling. Results confirm a positive relationship between the Managerial Practices and Organisational Trust, and a lower relationship between the Personality dimensions and Organisational Trust. With regard to the Quality of Work Life, a positive relationship was noted with Managerial Practices but again lower relationship with the Personality constructs. The study strengthened and focused attention on the importance of building good trust relationships within an organisation, as it seems as though the Personality traits and Managerial Practices of managers will not only influence the trust relationship experienced by employees, but also their experience of a Quality of Work Life.

**Keywords:** quality of work life (QWL), organisational trust, structural equation modelling

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**Identification and Governance of Emerging Ethical Issues in Information Systems: Empirical and Theoretical Presuppositions**

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**Abstract:** Our paper addresses the topic of the conference, by a critical approach of the “Issues in IS design and development” and more generally, a critical point of view of the way Information Systems are created and managed, and especially how ethics is implemented in IS projects. We seek to address the presuppositions in IS ethical practice and how they are related to presuppositions in current theories of governance. IS are a growing part of the functioning of industries nowadays and the identification and governance of the ethical issues that it raises become a vital matter for society. This paper will describe a study among Information Systems professionals about how they perceive the emerging ethical issues that are present in new IS projects, how they acknowledge them and the strategies in place to address them. This is the first part of the research, and it is where most empirical studies stop. The originality of our research is that it
articulates to the empirical qualitative research (made by online questionnaires and follow-up Skype interviews) a theoretical critical perspective on the governance theories that determine ethical strategies in IS. We go back and forth between governance theories and IS practices to find the presuppositions that are going on in both sides. Most governance theories fail to address the problem of the actual implementation of their theories. Our diagnosis is that current and traditional governance theories (derived from Rawls, Habermas, etc.) fall into some presuppositions that doesn’t allow them to address implementation properly. For example, they assume that it is sufficient to come to a consensus between stakeholders during the construction of the norm (following strict procedures to ensure fairness), to reach legitimacy and to reach as a by-product the application of the norms. However, the last implication is not necessarily true. The reasons why people accept a norm as valid are not necessarily the reasons to accept its conclusion as a maxim for action. This presupposition comes from a more general rationalist background. To overcome presuppositions we propose a more comprehensive governance theory, which takes into account the context of application of the norms within the construction of the norms (presuppositions, values, ways of thinking, etc. found in the interview).

**Keywords**: ethics, information systems, emerging technologies, governance, interview, empirical and theoretical study, links between theory and practice

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**Breaking Consensus in IS Evaluations: The Agitation Workshop**

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**Abstract**: As researchers evaluate organisations, there is a desire for a consensus from those within the organisations who are participating in the research. A common consensual perspective from a team appears to reflect an optimal state where those being studied have a common understanding of the current state of events within the context of their environment. The question arises, though, whether an evaluation finding consensus reflects the reality: there are a variety of reasons why a common
understanding may be false consensus. This paper proposes an evaluation method where, when symptoms of problems such as groupthink are identified, a consensus of perspectives is challenged before they are considered valid. This is achieved in a workshop where participants reflect on their own perception of reality and represent this reality in a matrix of influencing and relevant factors. The individual matrices are then combined and used to highlight disparities in the participants’ perspectives through a single matrix visualisation. Discussion in the workshop then focuses on the areas, highlighted by the matrix, where differences of perspectives are identified. In effect, the common understanding presented by those being evaluated will be challenged, and a new common understanding will have to be created.

**Keywords:** common understanding, consensus, workshops, groupthink, evaluation

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**Drivers and Challenges for Biometrics in the Financial Services**

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**Abstract:** Mobile banking and biometrics are currently making profound changes to the Financial Services landscape. Anyone with access to a cell phone has a place to keep his or her savings without needing a traditional bank account. The Mobile payment value chain has various roles, all of which need to be addressed and managed. There is a potential for mobile operators, security technology organizations can target FS organizations and provide both the technical solution, business experience and collaborative forum necessary to solve barriers for banks such as security (biometric identity assurance), regulations/standards (collaborative forum) and partnerships. This opportunity for mobile payments has already been verified through preliminary analysis by blue chip FS organisations. Additionally there is the potential of “piggybacking” on the national ID in emerging markets to allow payments functionality. This would allow poorer countries without a FS infrastructure capability to “leapfrog” to financial inclusion. As The New York Times Magazine noted in a recent cover story, last year migrants across the globe sent home $300 billion. The potential of
tapping this market by Financial Services and Mobile operators is enormous. In addition to the risk of an un-standardised market, banks are at risk of not facilitating such a market in developing countries from new competitors siphoning potential customers. Therefore the remittance and unbanked markets are where m-Banking will be world-changing. The objective of this study is two-pronged: it is both to determine and highlight the potential of Biometrics for the Financial Services market.

**Keywords:** biometrics, financial services, banks, regulation

**Did you get Your Facebook Session Completed?**

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**Abstract:** Traditionally, most information systems were used at work. These systems offered means and tools for people that enabled them to perform their work more effectively, easily, or with higher quality outcome. One of the most important criteria of evaluation of such systems is derived from the contribution of the system to the work objectives of its users. Such evaluation can be started by embedding the IS actions and operations as inherent parts in the users’ work processes. This means that the ultimate criteria of the system come from the outside of the system itself. It is interesting that the absence of quality is easier to observe than its presence. Today, many users spend their time with surfing in the Internet, playing games, or attending at social media. Electronic services give one more use situation where this kind of traditional goal-oriented evaluation no longer seems to be sufficient. In all of these (and many other) use situations the objectives are not necessarily clearly or explicitly defined and therefore it is difficult to evaluate, to what extent the objectives have been fulfilled. Such activities are said to be weakly purposeful. The added value created cannot be observed in the external object of the work, the change is often likely to take place inside the actor him/herself, for example as a use experience or improvement of the competence through learning. This paper addresses the problem characterised above that goes deep to the core problems of evaluation. First the generic concept of purposeful activity will be discussed. Work lends itself to be analysed in terms of three modalities of work: individual work, collective work and services. Then the
electronic services and IT-services are analysed in terms of this generic concept, paying special attention to self-services. Finally, the main problem of evaluation of IT-artefacts used for weakly purposeful activities is discussed and some guidelines for evaluation are derived. The contribution of the paper is in its conceptual analysis, and it is only indirectly based on own empirical work and material.

**Keywords:** self-service, evaluation criteria, purposeful activity, added value, use experience

**Infusion of Mobile Health Systems in the NHS: An Empirical Study**

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**Abstract:** Frequently criticised as a technological laggard, the healthcare industry is now beginning to appreciate the benefits which can be obtained from adopting Mobile Health Systems at the point-of-care. As a result, healthcare organisations are investing heavily in mobile health initiatives with the expectation that individual users will employ the system to enhance performance. However, researchers argue that such benefits can only be fully realised if the technological innovation is infused within an individual’s work practice. A synopsis of the ‘state of the field’ in mobile system implementation research reveals that little is known on Mobile Health Systems infusion. Infusion is a distinctive feature in the Cooper and Zmud (1990) model, which reflects the extent to which a technological innovation is fully embedded in an individual’s work system through comprehensive and integrative use. However a review of extant literature reveals that infusion is inconsistently defined and under investigated with a lack of literature focusing on Mobile Health Systems infusion. This paper makes a number of contributions to the literature. It provides a comprehensive definition of infusion and presents a conceptual model exploring infusion of Mobile Health Systems. Through an exploratory study of Mobile Health Systems implementation in Britain’s National Health Service, the
presented model is empirically investigated. By identifying and highlighting issues affecting infusion, future research efforts can focus on how such issues can be overcome. The paper concludes with a checklist of critical success factors which healthcare organisations should consider in order to successfully infuse Mobile Health Systems within their organisation.

**Keywords:** mobile health, infusion, critical success factors, NHS

### An Exploratory Study of Innovation Intermediation in IS Education

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**Abstract:** The importance of innovation to economies across the world has been widely documented and this has been particularly true in Irish terms in the development of a knowledge-based economy (SSTI, 2006). One of the ways of facilitating an innovation culture is through third level education and students taking innovation and entrepreneurship programmes or modules. Innovation education is a central part of third level education globally (O’Gorman and Fitzsimons, 2007; Streeter and Jaquette, 2004) and manifests itself in different undergraduate and postgraduate levels and across different disciplines, such as, ICT, Engineering and Food. There is clear evidence of significant innovation and entrepreneurship activity in Ireland (Cooney and Murray, 2008) and worldwide (World Economic Forum, 2009), yet there is limited research into the organisation or process roles of participants in this area and even less cross disciplinary comparative reflection. The objective of this paper is to investigate the innovation intermediation role of IS student enterprise teams, identify the intermediation processes adopted, explore sources of innovation, examine the practice and effectiveness of the process and consider the comparative cross disciplinary implications in relation to the food sector. Innovation intermediation (Howells, 2006) is the theoretical sensitising lens that underpins this research study. This perspective is widely cited and has been applied to countless research areas, such as technology transfer, innovation and networks. Innovation intermediation can be viewed as organisational roles, such as bridge builders, technology brokering, surrogate ties and diffusion facilitation. It can also refer to a range of functions in innovation processes,
such as scanning, knowledge creation, testing, validation and commercialisation. The innovation intermediation model is therefore an ideal device for articulating this comparative case study research.

**Keywords:** innovation intermediation, IS education, entrepreneurship, student enterprise

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**Bringing Some Order to the ‘Black Art’ of Innovation Measurement**

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**Abstract:** Measurement of innovation is critical to management but unfortunately it is an extremely tall order, which results in it being referred to as a ‘black art’. It is particularly troublesome for firms, which operate in highly complex and turbulent environments. Extant literature is characterized by a diversity of approaches, prescriptions, and practices that are more often than not confusing and contradictory. We require good theory both to suggest which metrics are needed and to interpret the resulting data. In this paper we return to the literature in order to build a conceptual framework to guide the measurement of innovation. In addition we perform an initial validation of the framework against an online repository of content on innovation measurement and in so doing we arrive at a taxonomy of innovation metrics. While useful in its own right, the taxonomy also highlights both the strengths and weaknesses in the current approach to innovation measurement. Finally we use the framework to draw out four key questions that should be addressed by management before choosing appropriate metrics. We foresee management using both the taxonomy and the guiding questions to evaluate their own measurement activities.

**Keywords:** innovation, innovation measurement, innovation metrics, innovation model

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**Using Focus Groups to Evaluate Artefacts in Design Research**

**Paidi O’Raghallaigh, David Sammon and Ciaran Murphy**
Abstract: Evaluation in design research continues to be ad hoc and poorly performed. It is one of the single biggest weaknesses in existing design research. Part of the problem is undoubtedly disagreement around the nature of design research and the highly complex process around evaluating its scientific claims. These issues demand our collective attention. This paper proposes that evaluation in design research must answer two key questions regarding the artefact under consideration - ‘*does the artefact work*’ and ‘*why does it work*’. This paper moves beyond the traditional approach to evaluation of artefacts and instead describes an *interactionist approach*. Focus groups are proposed as an appropriate method for answering the above questions. Guidelines for the use of focus groups as an interactionist approach to evaluation are provided. Up to now the use of focus group methods to evaluate and refine design artefacts has remained relatively new to the IS field.

Keywords: design science, design research, design, evaluation, focus groups

Realizing the Business Value of Service-Oriented Architecture: The Construction of a Theoretical Framework

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Abstract: Service-oriented computing (SOC) has emerged over the past decade as an alternative and powerful approach to application development and has sparked an increasing shift from inflexible proprietary software to more open service-oriented computing environments. These service-oriented environments focus on harnessing the power of the Internet and delivering business functionality through services. Organizations in many industries have turned to service-oriented computing environments through the adoption of service-oriented architecture (SOA). Services are the fundamental elements of SOA and are based on Internet standards and represent specific business functions. SOA is transporting organizations from the old world of inflexible and expensive traditional IT architecture to
a brave new world where applications are provided in the form of standardized services. Despite the increasing adoption of SOA within academia and practice, an analysis of the extant literature by this study reveals a clear lack of research on the business perspective of SOA and in particular on the business value of SOA. Indeed, the business value of IT (BVIT) research area - a fundamental area of research within the IS discipline - is considered by many as being under-researched and in need of an expanded research agenda. This study constructs a theoretical framework and develops a set of propositions and hypotheses to investigate how the business value of SOA is realized. It illustrates that the combination of a SOA implementation and complementary resources enable the creation of SOA-enabled resources via multiple enablers. These SOA-enabled resources produce emergent SOA capabilities which realize business value at the process level and at the level of the organization.

**Keywords**: service-oriented architecture, business value of IT, business value of SOA, dynamic capabilities, complementary resources

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The Identification of Service Oriented Architecture-Specific Critical Success Factors

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**Abstract**: This paper reports on a research project that sought to determine whether it is possible to identify Service Oriented Architecture (SOA) specific critical success factors (CSFs). SOA is an approach to designing interoperable information systems based on a set of design principles and the concept of loosely coupled services. In recent years SOA has become the de facto method for designing distributed interoperable information systems. Despite the widespread use of SOA design principles, it remains not only technically difficult to implement, but also presents a substantial challenge to systems architects and managers. Our hope is that SOA-specific CSFs will enable project managers involved in SOA implementations to best allocate resources to those areas that are critical to the success of SOA-based projects. We conducted a comprehensive systematic review of the SOA literature, and identified five SOA-specific CSFs which we believe may be critical for realizing the benefits of SOA. To externally vali-
date the CSFs identified from our literature review, we surveyed project managers and implementers in a department in a large defence-related world-wide organization which is currently implementing SOA-based systems. The results of our research confirmed the validity of the SOA specific CSFs identified through our literature review. We recommend that project managers use both our SOA-specific CSFs and generic project CSFs in combination to manage SOA projects.

**Keywords**: SOA, CSFs, project management, enterprise architectures

**Treasure Hunting in the 21st century: A Decade of Geocaching in Portugal**

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**Abstract**: The present study looks at geocaching, a popular location-based mobile game, where the goal is to use a Global Navigation Satellite System (GNSS), usually the Global Positioning System (GPS) to hide and seek containers placed anywhere in the field. People who engage in this activity, the geocachers, constitute a geographically distributed community that makes use of mobile and Web 2.0 technologies to coordinate and document their activities. Consequently, this treasure-hunting game, besides being a ludic activity, associated with a strong social networking element, also promotes new ways of exploring, interacting and communicating experiences and perceptions of the geographical environment where the activity occurs. The majority of existing literature analyzes geocaching from a social point of view, and little reference is made to the geographical context of this activity. The aim of this study is to fill that gap and thus characterize the phenomenon in terms of its temporal and spatial distribution. Observation instruments are proposed based on motorization indexes built from available data attributes. Such attributes reveal behaviors and patterns of geocachers (individuals) and geocaches (objects). The methodology is based on spatial data analysis; this can play an important role in exploring social phenomena that have a strong geographic component. Through the analysis of the freely available dataset that is voluntarily maintained by people engaged in the geocaching activity, a new dimension is
explored: the spatial dimension. When, where and why this activity occurs was used as the framework for the analysis in this paper. The final output is an overall picture of the geocaching activity in mainland Portugal in this decade. In a later stage, environmental characteristics are used as possible explanations for observed patterns. It is shown, using spatial model specifications, that a small number of regressors are able to highlight important characteristics in the data. A final discussion underlines the potential of geocaching to encourage social interaction, and promote cultural and natural heritage; in short, it has some paramount attributes of an economically sound and sustainable sector.

Keywords: geocaches, geocaching, GPS, Web 2.0, spatial analyses

Intelligent Decision Support Systems Development Based on Modern Modeling Methods

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Abstract: Agent based modeling (ABM) is a new modeling paradigm and one of the most advanced practical developments in modeling. ABM promises to have far-reaching effects on the way that business practitioners and academic researchers use information communication technologies to support decision making at different levels of management. Modern design models and architectural structures are opening up new possibilities and new application areas are coming to the foreground. Multi-agent systems as systems of distributed artificial intelligence are now having a significant influence on information systems design, simulation and analysis. This paper focuses on the various modeling methods and technologies that are employed in the development of intelligent decision support systems. Its goal is to evaluate the role of the agent based modeling in the design of management decision processes. The paper considers the main features of intellectual agent modeling methodology, and discusses the different types modelling categorization. It does so from research base that draws from theoretical underpinnings as well as international and domestic industry practices. The basic principles of agent-based modeling are first introduced and areas of application are then discussed from perspective of real-world
applications: flow simulation, organizational simulation, market simulation, and diffusion simulation. The classification of modeling types is discussed, together with and business application simulation frameworks.

**Keywords:** modeling, management, information systems, decision support systems, intellectual agent, multi-agent systems

### Integrating Sustainability Indicators in IT/IS Evaluation

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**Abstract:** This paper explores the integration of indicators that reflect the concepts of sustainability into IT/IS evaluation methods. It is based on the observations that sustainability is one of the most important challenges of our time and that IT/IS can make a contribution to sustainable development. IT/IS evaluation methods should reflect this contribution and include criteria for the assessment of sustainability aspects. Based on identification IT/IS evaluation methods and an overview of frameworks for sustainability indicators, an analysis is made of the inclusion of the indicators and principles of sustainability assessment in IT/IS evaluation methods. The analysis will conclude that integrating sustainability considerations in IT/IS evaluation requires far more than a set of additional criteria to be considered. Integrating sustainability considerations in IT/IS evaluation suggests a far more holistic and elaborated perspective on IT/IS evaluation than the infamous IT productivity paradox that is dominating the discussion on the value of IT/IS still today.

**Keywords:** sustainability, information technology, information systems

### The art of Shooting the Moving Goal – Explorative Study of EA Pilot

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Abstract: Enterprise Architecture (EA) has been recognised as an important tool in modern business management for closing the gap between strategy and its execution. The current literature implies that for EA to be successful, it should have clearly defined goals. However, the goals of different stakeholders are found to be different, even contradictory. In our explorative research, we seek an answer to the questions: What kind of goals are set for the EA implementation? How do the goals evolve during the time? Are the goals different among stakeholders? How do they affect the success of EA? We analysed an EA pilot conducted among eleven Finnish Higher Education Institutions (HEIs) in 2011. The goals of the pilot were gathered from three different stages of the pilot: before the pilot, during the pilot, and after the pilot, by means of a project plan, interviews during the pilot and a questionnaire after the pilot. The data was analysed using qualitative and quantitative methods. Eight distinct goals were recognised by the coding: Adopt EA Method, Build Information Systems, Business Development, Improve Reporting, Process Improvement, Quality Assurance, Reduce Complexity, and Understand the Big Picture. The success of the pilot was analysed statistically using the scale 1-5. Results revealed that goals set before the pilot were very different from those mentioned during the pilot, or after the pilot. Goals before the pilot were mostly related to expected benefits from the pilot, whereas the most important result was to adopt the EA method. Results can be explained by possibly different roles of respondents, which in turn were most likely caused by poor communication. Interestingly, goals mentioned by different stakeholders were not limited to their traditional areas of responsibility. For example, in some cases Chief Information Officers' goals were Quality Assurance and Process Improvement, whereas managers’ goals were Build Information Systems and Adopt EA Method. This could be a result of a good understanding of the meaning of EA, or stakeholders do not regard EA as their concern at all. It is also interesting to notice that regardless of the different perceptions of goals among stakeholders, all HEIs felt the pilot to be successful. Thus the research does not provide support to confirm the link between clear goals and success.

Keywords: enterprise architecture, stakeholders, goals, success
Information Interaction in Terms of eCommerce

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Abstract: This paper deals with some aspects of the information data resulting from the relationship between an Internet enterprise (e-shop) and the customer. Analyzing and evaluating information which is provided and required enables one to derive important recommendations for creating and managing a user-friendly and thus probably successful Internet business. There are many recommendations in Customer Relationship Management emphasizing the importance of maintaining post-purchase contact with customers; some businesses automatically accompany the purchase by a questionnaire concerning customer satisfaction. Are they sure customers welcome such a contact? Could some information interaction be annoying for the customers? There are three research questions to be answered: firstly how the after-purchase contact is perceived by customers. The second question relates to who the customers providing information to the business actually are; their description concerns both their demographic description and their purchase behaviour. Thirdly, how significant in reality the information provided by eCommerce businesses for the customers actually is? This research was undertaken and involved more than 500 respondents. The questionnaire consists of both qualitative and quantitative issues so that a large variety of results can be derived from it. The respondents are the only people having experience with using eCommerce enterprises for their shopping. In the survey, they provide information on their preferences, purchase behaviour, customs, perceived risk-taking and willingness to share information with the enterprises. In addition to a common dependence search, a factor analysis was also carried out in order to better understand and formulate the customer approach towards information interaction. Because this paper also provides results pertaining to the identification of some attributes of user-friendly eCommerce enterprises (examined from the customers’ point of view), its results should contribute to the general discussion concerning the usage of information in business-customer relations. Academics and researchers should be placed at an advantage by virtue of some of the conclusions aris-
ing out of a large survey among customers who are accustomed to executing purchases via eCommerce businesses. The specific findings of this paper should be helpful for marketing practitioners in their marketing and communication mix creation. It should help to establish a system of customer care in terms of information interchange which should be highly appreciated by customers as well as prove highly beneficial for enterprises.

**Keywords:** information interaction; eCommerce; customer relationship management; information sharing

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**Designing High Quality ICT for Altered Environmental Conditions**

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**Abstract:** This article concerns the design and development of Information-and Communication Technology, in particular computer systems in regard to the demographic transition which will influence user capabilities. It is questionable if current applied computer systems are able to meet the requirements of altered user groups with diversified capabilities. Such an enquiry is necessary based on actual forecasts leading to the assumption that the average age of employees in enterprises will increase significantly within the next 50-60 years, while the percentage of computer aided business tasks, operated by human individuals, rises from year to year. This progress will precipitate specific consequences for enterprises regarding the design and application of computer systems. If computer systems are not adapted to altered user requirements, efficient and productive utilisation could be negatively influenced. These consequences constitute the motivation to extend traditional design methodologies and thereby ensure the application of computer systems that are usable, independent of user capabilities. In theory as well as in practice several design and development concepts described are respectively applied. However, in most cases these concepts are considered as solitary independent solutions. Generally, theories contrast usability and accessibility as two different concepts. While the first provides possibilities for specific user groups to accomplish tasks efficiently, effectively and satisfactorily, the latter provides solutions taking into consideration people with a wide range of capabilities, such as
disabled people or people with an enduring health problem. Both concepts are quite extensive. Therefore developers tend to decide between these concepts, which always leads to failures. This article seeks to provide a universal design and development approach for computer systems, by combining these individually considered concepts into one common approach. This approach will not distinguish between user groups, but instead, will provide procedures and solutions to design computer systems, which consider all relevant user capabilities. The results of this article provide a theoretical approach for design and development cycles. Enterprises will be sensitised for the identification of relevant user requirements and the design of human-centred computer systems.

**Keywords:** universal design, usability, accessibility, information and communication technology, computer system, demographic transition

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**An Analysis of the Problems Linked to Economic Evaluation of Management Support Information Systems in Poland on the Example of ERP/CRM Class Applications - Problem Analysis**

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**Abstract:** Research shows that the expenditure of international companies on IS systems has been gradually growing. There is a common belief that IS development has a direct or indirect impact on the economic effectiveness of a company. ERP and CRM class systems constitute one of the most important groups of management support information systems in service and manufacturing companies. A lot of research is aimed at developing models that allow us to identify the correlation between expenditure on ERP and CRM systems and the economic benefits to a company. Nevertheless, we need to underline that the result of this research is not evident. The research is characterised by a lack of consensus between representatives of science, as well as professionals. The subject matter mentioned below is one of the priorities facing the further development of business informatics. The author of this article presents the result of research related to the economic effectiveness evaluation in IS investments in ERP and CRM systems implementation in Poland. The research conducted will help better
understand the logic predominant amongst Polish entrepreneurs and management in the realisation of IS investments and economic evaluation of performed investments in ERP and CRM systems.

**Keywords:** economic evaluation, effectiveness, IS investments, MIS, ERP, CRM

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**Towards an Understanding of Enterprise Architecture Analysis Activities**

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**Abstract:** The connotation of the term of Enterprise Architecture (EA) analysis varies from context to context. Aiming at, in part, promoting the understanding and reducing the possible misconception of EA analysis, in order to characterize, classify, and distinguish the connotations of EA analysis, six interrelated types of activities are identified: (I) System thinking; (II) Modeling; (III) Measuring; (IV) Satisfying; (V) Comparing with requirements, and (VI) Comparing alternatives. The paper starts with the EA lifecycle management, and then addresses the main tasks in different stages in the EA lifecycle process. After that, the meaning of each type of activities and their interrelationships are discussed. The usage of the six types of activities is illustrated through several scenarios of EA analysis. The main contribution of the paper is twofold: first, it articulates that there is a broader variety of understandings of the term EA analysis than we could imagine; second, it provides the possibility and feasibility for researchers to explain and customize, i.e. for authors to clarify and for audiences to grasp, the meaning of EA analysis using certain combinations of the six activities.

**Keywords:** enterprise architecture analysis, enterprise architecture, analysis and design, evaluation and assessment, validation and verification, enterprise analysis
Moving Towards a Sensor-Based Patient Monitoring System: Evaluating its Impact on Data and Information Quality

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Abstract: For future healthcare systems to take advantage of sensor-based patient monitoring devices, careful consideration must be taken in respect to the impact they can have on existing workflow processes. In association with this, data and information quality dimensions need to be incorporated to help ensure a successful outcome. This paper will explore the utilisation of a paper-based patient assessment scorecard and the transition to an electronic version with a view to the future adoption of sensor-based devices. To evaluate the transition from paper-based to sensor-based solutions, the Modified Early Warning Scorecard (MEWS) is the primary exemplar within this paper. MEWS has a defined set of protocols and guidelines that assist the healthcare providers in classifying a patient’s status of health in detecting patient deterioration. Paper-based MEWS are already deployed within Medical Assessment Units (MAU). Thus, the MAU is an ideal test bed for the evaluation of sensor-based solutions. The Socio-Technical Information Systems Design (STISD) science research framework is the methodology employed to address a practical problem (i.e. frequent capturing of patient vital signs) raised by the healthcare providers in relation to MEWS. In accordance with the STISD framework, a review of the extant theories, knowledge and data reveal an Event-driven Process Chain (EPC) diagram for the paper-based MEWS. Based on these findings an electronic version of the paper-based MEWS (eMEWS) is proposed and tested. Further refinements are required to explore the full capabilities of sensor-based solutions and the role they can play within MEWS. Presented is a conceptual model which examines the relationship between the content and system quality measures and their associated independent variables. Alpha and gamma tests are conducted to evaluate the eMEWS against the desired outcomes and provide the foundation for the development of the sensor-based eMEWS solution. Results show that the eMEWS prototype addresses key data quality dimensions, with sensor-based eMEWS indent-
ing potential enhancement to the timeliness and frequency of data capturing.

**Keywords:** sensor-based electronic modified early warning scorecard, data and information quality, socio-technical information systems design methodology

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**Using the REA Approach to Modeling of IT Process Evaluation**

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**Abstract:** For many businesses, Information Technology (IT) solutions play a strategic role in gaining and maintaining competitive advantage. For several decades, a business information system infrastructure has been persistently developed and hence it is increasingly more complex. Well organized IT processes have become more crucial than ever before. IT executives (CIOs) have to make decisions based on high quality information concerning various features, how IT processes are planned, managed and improved. In order to successfully evaluate and manage IT processes, CIOs are supported by dedicated software and hardware solutions, best practices and standards. The IT processes evaluation is much more effective when the source data comes from tailored solutions for given information needs. There are a lot of opportunities to develop an information system architecture for the IT process evaluation using various software tools. Today, we are facing the important question of whether or not it is possible to create software strictly dedicated to an IT management domain, which also would be an integral part of the ERP architecture and more suitable for SMEs. An attempt to give an answer to this question is the main goal of this paper. We propose to use the Resource-Event-Agent (REA) approach to modeling IT process evaluation. This is an important assumption because REA lets us see an IT management domain both as a set of mutually connected business activities and as a part of the interests of accounting records. Therefore, the REA modeling makes it possible to describe the IT realm to satisfy information needs, for both accountants and non-accountants.

**Keywords:** IT process evaluation, REA modeling, ITSM system
Non Academic Paper
A Process Model to Guarantee Information Quality in Elective Surgery Information Systems

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Abstract: This paper describes the system created by the Central Unit of National Waiting List for Surgery Management (UCGIC) to guarantee the quality of information extracted from National Health System (NHS) hospitals about elective surgery, covering the process of extraction, validation and qualification of data detail and indicators, to be carried out automatically by the information system that supports the waiting list for surgery management control – SIGLIC (Information System to Waiting List for Surgery Management). The need to build an appropriate process model has been growing since 2007. In 2010 the central database of SIGLIC had to receive data from nearly 164 hospital units, including public and private providers with conventions in the NHS for elective surgery, with a volume of nearly 1000GB and an annual increment approximately of 500GB. The data received was concerned to 881 different input variables and the volume of information transactions was nearly 5 million per year. Several problems concerning data quality in the central database started to arise once the data extraction and integration in SIGLIC involved the interface with several different hospital information systems and its volume started to increase fast. The solution found by UCGIC for addressing data quality and integrity received from hospital units was to build in 2011 a process model with automatic redundant system with different sources checking permanently data quality and interacting with all stakeholders involved with the same information sources. The model includes monthly data extractions submitted to a qualification process at the level of detail and indicators, against the defined standards and homologous variations, in order to provide accurate intelligence about national elective surgery. The validation process includes a management system of incidents, communications and escalation of problems, which reports the errors/incidents occurred, the communication to the stakeholder involved for correction and the escalation of the problem resolution if needed. The process management of data extraction and qualification is carried out through SIGLIC own screens/forms and reports. It has a dashboard and a procedure to ensure
process control. There were also built scorecards with data aggregated by week. Studies have been conducted to assess the impacts and outcomes of this new approach. By this new model, UCGIC was able to assure that SIGLIC information is reliable and its performance indicators are correct and reflect the actual care provided to patients, the hospital performance according to care provided, the accurate evaluation of demand and supply in elective surgery and the necessary funding for the NHS. Also this automatic process is considerably less time and resource consuming, by saving nearly 5 days to a process which took 10 days and by allowing automatic reports of errors, turning its resolution with the hospital units more efficient and effective.

**Keywords:** data quality, qualification process, data validation, data extraction, business intelligence
PhD Research Papers
Abstract: Risks can occur at any stage of the production process or the provision of mediation services. Information are then important basis for all decision-making processes that take place in companies. They represent one of the most scarce and important assets. Risks can be found at every step and the ability to recognize, describe and analyze them is (especially for managers and executives) very important. In order to be able to manage risks effectively, we use the help of risk analysis. It is divided into several parts, of which the first one, risk identification, represents a very difficult matter. Proper identification of risk is an essential component for the correct implementation of other parts of the risk analysis and the next steps in the process of risk management, and finally also for finding an appropriate method of risk management in conditions of a particular company. In practice, it is possible to meet many types of risks. They are usually not isolated. We can meet them as a complex of several types of risks. Among the risks that are currently often discussed (in connection with increasing importance of information and development of information technologies), are included information risks. This type of risk has been studied in relation to many areas of human activity. Accounting is a scientific discipline, whose faultless functioning in practice is significant for ensuring smooth running of the company. Better utilization and adaptation of existing information coming from managerial and financial accounting to the needs of risk management can be seen as a topic of future potential. Therefore, I believe that the analysis of including information risk management among other business activities being conducted within this area, is a topic which would be appropriate to continue to deal with in detail. This study describes the relationship between accounting and information management. The analysis is prepared more theoretically using deduction and literature review. The findings of proposed qualitative research may be used as a starting point for more extensive research.

Keywords: information, risks, information risks, risk analysis, risk management, accounting
A Methodology for Competitive Intelligence Metrics

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Abstract: The literature on competitive intelligence (CI) reveals that a significant challenge exists in measuring the outcomes and impact of intelligence. There are process measures in use, but little attention has been given to measure for outcomes and impact. This imbalance has been attributed to methodological and conceptual problems of measurement. This paper proposes a case study methodology by which a model may be developed for measuring the relationship between CI products and organizational outcomes. It examines a given decision, the intelligence products that informed it, and links those products through the decision to the outcomes, and their impact upon the organization. The methodology combines subjective assessments made by decision makers and other employees of past decisions and their outcomes with organizational data obtained through document analysis, to compare expert opinion to objective data. This triangulation of data seeks to link outcomes with three indicators (financial outputs, innovation, and client relationships) to an organization’s strategic plan to assess impact of CI.

Keywords: information management; decision making; intangibles measurement; competitive intelligence; impact measures

The use of Virtual Public Space and eCommunities to Kick-Start eParticipation – Timisoara, Romania

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Abstract: Romania passes through a period of administrative reorganization as it has to align itself to the regulations of the European Union. Top down decentralization and reorganization into regions and euro-regions must be coupled with a bottom up restructuring based on communities in order to near as much as possible the decision making process to the real problems. Even though for the European Union, as stated in the Bristol
Accord, 2005, citizens’ participation and sustainable communities are issues of major importance, in Romania these regulations are adopted but not appropriated. Citizens’ inquiries are thus carried on as to minimise the probability of appeals while “neighbourhood consulting councils” are political stepping stones with no power in the administrative decision making process, unknown to the public and uninterested in consulting it. Citizens’ participation and the spirit of community are closely related to public space, but in Romania public space is dying, increasingly being used only for transfer and transformed into parking space. As during the 50 years under communist leadership an intense state policy was carried out to abolish communities and discourage any participation unguided by the state, all forms of gatherings being prohibited for fear of uprising, public space was, and still is, viewed as belonging to the state and not the people. The younger generation, untainted by the communist induced disregard for public space abandons it instead of taking ownership, as it lives, an average of 4 hours a day, in a virtual, global community hardly rooted in its physical location. In order to attain a community based restructuring of the administration, in this context, it is necessary to double the physical public space by a virtual one and create a framework for public involvement. The use as incentive of a percentage of the city’s funds for citizen promoted projects to improve the quality of life in their communities, accessed through a competition on feasibility and public support is the only method of attracting interest and trust in the process.

**Keywords:** community, eParticipation, eGovernment, citizens' empowerment, virtual public space
Strategic Management and Information Evaluation Challenges Facing Entrepreneurs of SMEs in ICT

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Abstract: Achievements of young Entrepreneurs have impact on a country development, thus the governments are creating awareness about entrepreneurship to encourage young people to choose Entrepreneurship as a career path therefore number of entrepreneurs is growing continuously; while a start-up company exists in a world of uncertainties and needs two to four years to break even then another two years to become stable so the survival of the entrepreneurs in the early stage rely more on an efficient strategic management, competitive advantages and well organized internal knowledge management. The entrepreneurial process model for small and medium business in its related stages is based on activities, the efficiency of a stage-activity depends on the accuracy of the information evaluation and differs from an economy to another; a pertinent evaluation of the external environment influences the efficiency of strategic management in a start-up company. This paper presents the challenges in information evaluation and strategic management facing entrepreneurship since the early-stage, the important role of the Information System (IS) in the survival of the entrepreneur business; In addition, to the economic context elements to be considered when designing a Competitive Intelligence system solution. This study is based on a qualitative approach and will be of use for the entrepreneurs of SMEs that needs to stand on a competitive edge since their early stage but they have lack of awareness and limited capabilities to invest in the integration of a Competitive Intelligence and Information Evaluation process systems.

Keywords: competitive intelligence system, efficiency-driven economy, entrepreneurial process, information evaluation, strategic management
Method Engineering Approach to the Adoption of Information Technology Governance, Risk and Compliance in Swiss Hospitals

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Abstract: Against the background of the current reforms and an aftermath of increasing regulation in the health care sector, hospitals enhance and integrate concepts of IT Governance, Risk and Compliance (IT GRC). Based on experiences with isolated and often immature partial concepts in these fields, the major challenges for the adoption of IT GRC in hospitals are close-meshed organisational structures, legal restraints and over the years increased heterogeneous IT systems, which are just a few aspects that make hospitals a sensible field for the implementation and governance of IT. In this paper a method that supports the adoption of integrated IT GRC concepts is been developed. The proposed method is comprised of different method elements that support the relevant conceptual, organisational, technical, and cultural aspects of the hospital environment.

Keywords: method, design science research, health care, IT governance, risk, compliance
Collaborative Methodology for Supply Chain Quality Management: Framework and Integration With Strategic Decision Processes in Product Development

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Abstract: The new generation of network-based organizations has triggered the emergence of distributed and more complex contexts for the analysis of firms’ strategies. This gradual change in the way we understand enterprises has induced radical evolutions on the Quality Management domain. As a consequence, the Problem Solving Methodologies (PSM) widely used in industry and positioned up to now as one of the key elements for achieving continuous improvement efforts within local scopes are now insufficient to deal with major and distributed problems and requirements in this new environment. The definition of a generic and collaborative PSM well-adapted to supply chain contexts is one of the purposes of this paper. Additional requirements linked to specificities carried out by the introduction of a networked context within the methodology scope, the relational aspects of the supply chains, complexity and distribution of information, distributed decision-making processes and knowledge management challenges are some of the aspects being addressed by the proposed methodology. A special focus is made on benefits obtained through the integration of those elements across all problem-solving phases and particularly a proposal for multi-level root-cause analysis articulating both horizontal and vertical decision processes of supply chains is presented. In addition to laying out the expected benefits of such a methodology in the Quality Management area, the article studies the reuse of all the quality-related evidence capitalized in series phase as a driver for improving upstream phases of product development projects. This paper addresses this link between series and development activities in light of the proposed PSM and intends to encourage discussion on the definition of new approaches for Quality Management throughout the whole product lifecycle. Some enabling elements in the decision-making processes linked
to both the problem-solving in series phase and the roll-out of new products are introduced.

**Keywords**: problem solving methodology, supply chain quality management, product development, experience feedback, collaborative supply chains
Work In Progress Papers
Recording our Professional Development Just Became Easier: Using a Learning Management System

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Abstract: This study presents an evolutionary learning management system (LMS) that is used as a tool to record continuing professional development (CPD) data. It is a critical component of Company X initiative to promote the continuous improvement of its services to its internal and external clients through the enhanced skills, knowledge and competencies of its employees. The changes in the workplace learning challenged the learning and development practitioners to rethink new ways to improve the work based practices within the organization through the implementation of processes and procedures in place to capture and analyse CPD data across different sites of the multinational organization. The mode of recording this large amount of data is as important as the learning intervention itself and understanding the benefits of capturing large data sources in a central system is critical. The purpose of the LMS is toward consolidation and providing a single, common infrastructure to manage and track learning and development initiatives across the multiple organization sites.

Keywords: learning management system (LMS), continuing professional development (CPD), summative evaluation, formative evaluation, emerging technologies, learning technologies

Is More Data Better? Experiences From Measuring Academic Performance

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Abstract: At University of Music and Performing Arts Graz (Austria), we have developed and implemented a comprehensive online system to measure artistic and scientific performance in 2007. Since the roll-out in 2008, more than 20,000 entries are made by the staff members. The main
topic in the beginning was to make the staff members use the new tool. Now, we have deal with different topics: We have to keep them motivated to enter further data. We have to handle the big amount of data. And we have to increase benefits from collecting data for staff members, departments, and the university. The paper presents some of our approaches to generate these benefits and thereby also come up to the other requirements. For instance, an easy-to-handle reporting and exporting solution is now available for persons and departments. Indicators for quality management and evaluation purposes shall be derived from the tool in the upcoming future. Administrative work load analyses based on out tool influence the human resources’ allocation to departments. In any case, there is a strong need to reduce complexity and we must not spread the whole data set over different purposes. We conclude that more data might be better with regard to reporting, rankings, or funding, but also raise problems that have to be solved.

**Keywords:** online tool, evaluation, quality management system, artistic performance, research performance, practical experiences
Abstract: It has long been acknowledged that organisations adopt CRM initiatives on the basis of market response and other factors such as the development of specific organisational skills and capabilities. It is also recognised that effective CRM implementation requires coordination of customer-oriented strategies, customer channels, ICT (information and communication technologies) deployment, and employees. While an extensive body of research has covered the strategic, operational and technological aspects of CRM, little attention has been given to the participation of employees in the implementation of effective CRM initiatives and, more specifically, to the dynamics linking strategy, information systems, and staff capability aspects. What are the dynamics linking strategy, technology and human (staff) elements in the process of effective CRM implementation? Do they jointly impact responsiveness capabilities of an organisation? This research expands knowledge in the area by presenting a holistic perspective integrating aspects of customer-oriented strategies, system effectiveness, and staff empowerment initiatives, shedding light on the linkages between these fundamental elements of CRM implementation and the overall impact on organisational responsiveness. In this paper, we report the initial findings of an empirical study of CRM implementation by financial institutions in Brazil. The initial phase of the research collected quantitative data which have been analysed using structural equation modelling (SEM). The initial findings show that customer-oriented strategies influence the establishment of effective systems supporting CRM processes and staff empowerment capabilities. The SEM model highlights the sharing of CRM responsibility across different organisational functions, strong CRM champion at the top of the organisation, and the establishment of a strong mindset towards customer relationships as key strategies in the area. System effectiveness, by its turn, reinforces staff capabilities to develop effective relationships with customers. Important initiatives to improve the effectiveness of systems supporting CRM involve the integration of technology-based channels with traditional human-based channels, sharing of
detailed customer data between relevant staff, and continuous improvement and updating of CRM systems. Supported by established CRM strategies and equipped with effective systems, staff dealing with customer processes is empowered to conduct more proactive relationships with customers. The development of empowerment capabilities require full access to attitudinal behaviour data linked to customer life events, emphasis on using information for strategic rather than for transactional purposes, and coordination between back-office marketing specialists and front-line staff. The overall outcome yielded by the initiatives above highlighted is an improved organisational responsiveness performance. This is evidenced by organisational capability to explore and anticipate customer needs, improved ability to assess key uncertainties in the external environment, and higher responsiveness to changes in the external environment. An important finding is that the model points to a ‘strategy → technology → staff empowerment’ pathway to achieve effective CRM capability, rather than the usual ‘strategy → technology’ initiative adopted by many organisations.

**Keywords:** IT/IS development, Impact of new technologies on business processes, customer relationship management, structured equation modelling, conceptual modelling

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**Self-Evaluation System of IT Projects in Korean Central Government: Institution and Practices**

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**Abstract:** As one of the best information technology (IT) powerhouses in the world, Korea has undertaken systematic IT project evaluation since 1997 in order to maximize the performance of investment into public IT projects. Currently under the Korea’s IT project evaluation method under which one third of the whole projects are selected as evaluation targets every year, each organization performs self-evaluation based on logic model-based survey indicators on Program Assessment Rating Tool (PART), and the Ministry of Strategy and Finance verifies the result. This system
pursues outcome-oriented performance management by deducting performance achievement scores if indicators and goals are inappropriate. Moreover, it holds a strong feedback system, under which more than ten percent of the next-year budget is deducted if the final result of evaluation turns out ‘poor’.

The 2011 IT project evaluation shows high scores in the stages of planning and execution of IT projects. This reflects, in most part, a fair level of collecting opinions from stakeholders, recognizing laws and regulations, and securing connection with relevant projects during the planning stage. It also signifies that any problems in the execution process are responded to in an appropriate way and that time schedules are well maintained and followed. However, the performance indicators and goals were found to be very inappropriate; the reason being that a majority of projects used output or process indicators rather than outcome indicators which represent final project performance and that the performance goals were set in a way too passive compared to the budget and the past performance. Indeed, such lack of appropriateness in performance indicators and goals was reflected as a deduction factor in measuring the performance achievement. The IT project evaluation needs to be improved in the future. First, a methodology or a model that help setting of appropriate performance indicators for IT projects needs to be developed and a process needs to be adopted, which allows setting of performance indicators and goals in the stage of planning in advance. Second, the improved level of informatization raised interoperability, standardization and security issues as IT projects, which had been carried out by each ministry, are now being integrated. Therefore, it is required to establish an evaluation framework that reflects features of the IT projects in order to assess such issues in a comprehensive way. Third, it is recommended to establish and diffuse an evaluation method that can help not only evaluate the performance of IT projects that had been already invested but also develop new projects or strategy and directions. Lastly, besides the short-term performance evaluation, which takes place about once every three years and measures only the process from planning to execution, performance and feedback during the year, it is also necessary to deploy mid- and long-term impact evaluation.

**Keywords:** IT project evaluation, performance evaluation, PART, integration of evaluation and budget, Korean case study, self-evaluation
Inquiry Paradigms in IS Research: A Study of a Maturing Academic Area

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Abstract: The field of Information Systems (IS) research has changed significantly since its inception, with questions continuously being asked surrounding its core identity. Questions such as; should the research be aimed at academia or practice, what research methodologies are appropriate, and what field of science IS research should fall into have all been asked without a de facto general consensus being arrived at. One of the key factors contributing towards the successful acknowledgement of IS as an accepted field of scientific enquiry is the regard in which the field’s highest ranked journal MIS Quarterly (MISQ) is held. As the leading IS journal, it is reasonable to say that the standards upheld by the journal are also the standards that are aspired to by the academics who contribute or who aspire to contribute to the area. As such a study into the evolution of standards upheld by MISQ can help to contribute towards the understanding of how IS research has changed since its inception. Question such as whether research is aimed at academia or practice can be answered. From an ontological perspective it can be seen what is out there to know, and from an epistemological perspective it can show what and how we know about what there is to know. Identifying the use of differing research methodologies can also highlight how the area has matured. Based on Webster and Watson’s Concept Centric Matrix a literature review and analysis is performed on a selection of papers from MISQ. The papers spanning nearly 20 years were selected and analyzed based on their subject matter (theory or practice), the paper’s ontological perspective (realist, relativist, or critical realist), the paper’s epistemological perspective (interpretivist, positivist, or post-positivist), the methodology used (qualitative, quantitative, or mixed-method data gathering), and finally the method used. Based on the analysis of the concept centric matrix the evolution of the IS research field can be tracked. The results indicate a trend to move away from practice orientated research in the 1980s, towards academically orientated research with an emphasis being place on writing style aimed at an academic perspective. What was also evident was how from an ontological perspective IS research has moved towards a critical
realism philosophy and social theory. A further contribution that identifying the evolution of the IS research field and identifying what might be considered the core identity of the discipline would be to assist the novice IS research student. By identifying the acceptable ontological, epistemological and methodological perspectives for IS research, the novice student can benefit greatly from knowing relevant areas of research, appropriate styles of writing, and the research should also provide the student with a spring board from which they can begin their own research.

Keywords: IS identity crisis, research paradigms, ontology, epistemology, methodology

How to Evaluate Social Media Enabled Collaborative Learning Environments

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Abstract: Both IS practitioners and IS academics have identified social media as an emerging information technology, where it is argued that the platforms of social media are impacting organisations in different areas, such as learning, collaboration, and knowledge sharing. Academic IS conferences have confirmed this by publishing large amounts of research on the topic, with the AIS Senior Scholars’ Basket of (eight) Journals also publishing such research. However with this explosion of interest, and large pool of publications, there is still a lack of a collective understanding, with academics conducting their research without a unified understanding of what social media is. For example, the variety of platforms available include: blogs, micro-blogging, collaborative projects, social networking sites, livecasting, content communities, and virtual worlds, with each one of interest to organisations. But as users appropriate technology on their understanding of how it works, and what they wish to achieve, it can be difficult to understand what value these platforms can provide to organisations. The issue then arises that publications pertain to discuss social media and its platforms, but with a distinct failure to identify the core characteristics inherent of the phenomena, there is no common umbrella under which this research exists. Therefore the objective of this research is to identify and define these core characteristics. In order to achieve this ob-
jective, a concept-centric matrix is presented, considering literature that has been published on the topic of social media in the top IS Conferences. This has helped identify the core characteristics of social media, and given the practitioner and academic attention the topic is consistently receiving, this formal explication of core characteristics should progress the phenomena by providing a better understanding of it, and help in create a collective understanding. Further, while some academics have attempted to define social media, it is made difficult by this lack of understanding to provide a comprehensive definition. Therefore, with the core characteristics explained, a more comprehensive definition is offered.

**Keywords:** social media, core characteristics, emerging IT

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**Why are They Shooting my Pickup? Data Fusion Across Organisation Boundaries**

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**Abstract:** To understand the situation around us we need to not just gather observations about the world, but also evaluate the trustworthiness of those observations. This is particularly important when the reported observations contradict and combine, and when they are sparse and so tend to be heavily extrapolated from. In turn, to evaluate their trustworthiness we need to know their provenance: the characteristics about the observation, the observer, and the routes by which the report has travelled. The ways in which these various provenance factors affect the trustworthiness depends considerably on the operating environment. In military operations, training and exercises are used to establish mechanisms for reporting observations as reliably as possible. These include common contexts and clear lines and methods of communication so that reports can be made more concise and less ambiguous, and experience of working together so that reputations of both people and systems can be built up. Contemporary military peacekeeping operations however require situation awareness from observations made by people and systems outside the military organisation. This can cause problems not only because the provenance of observations are poorly recorded, but because the organisation may not even be aware of the importance of doing so. Communicating
across organisation boundaries is recognised as a problem in many disciplines. This paper is a review of research into and practice of data provenance that can be applied usefully to peacekeeping operations, using test cases based on actual past events. Initial findings suggest that, as usual in this environment, the trade-offs are not clear between audit and effort, confidence and agility, feasibility and efficacy, and so on. Nevertheless there appear to be reasonably ‘quick wins’ such as capturing certain metadata when the information enters the organisation, and these will be included in this paper. There are also some less concrete practices such as training with messy contradictory information feeds, and these will be pragmatically evaluated as candidates for future operations.

**Keywords:** data fusion, audit

### Evaluation People, Process and Technology Trends From 1997 to 2011

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**Abstract:** The aim of this paper is to perform an extant literature review on the ontological, epistemological and methodological concepts in philosophy of IS researches. According to a data collection between 1997 to 2011 through European Journal of Information System (EJIS), via an excel tool, this research investigates the answer of two research questions around the trends and changes of methodologies and also the most tendency about people, process and technology which has been concerned at those articles during the pointed time. Considering a clear view of the pointed three fundamental concepts; ontological, epistemological and methodological concepts, this paper has provided a brief and rigor evaluation through a number of IS research articles between a period of time in order to answer the following questions:

1) Trends or any change towards quantitative/qualitative or mixed methodologies at IS area?

2) Investigation about IS- Focus (people, process and technology) during the selected time?
To accomplish the above answers, the articles have been gathered and analyzed on European Journal of Information Systems between 1997 to 2011.

**Keywords:** people and process and technology trends, ontological, epistemological, methodological, IS-focus

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**A Reseach for the Pre-Inspection Model of the Multi-Agency IT Projects in Korea**

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**Abstract:** The needs for non-stop and integrated services which reflect the consumer’s life cycle has been high-lightened. To meet these needs, governments and enterprises have launched and operated IT projects which many agencies and sites are involved. In Korea, since the mid of 2000, we have faced some characterized obstacles, which contained the conflict of interests between multi-agencies and the vague responsibility-ownership of the vital decision, to implement Multi-agency IT projects. The importance of agreement and inspection before launching Multi-agency IT projects has recognized. This research focuses on how to minimize and to eliminate the possible problems. Through case studies and interviews, the pre-inspection model and check-list for the Multi-agency IT Projects are suggested. The accuracy of the project’s object, the suitability of the project for the Multi-agency project, the agreement between stake-holders, the adequacy of the governance and the existence of incentives for participants of these projects should be checked and modified in advances.

**Keywords:** multi-site IT project, multi-agency IT project

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**A Longitudinal Study of the Information Behaviour of Postmodern Women from Antenatal to Postnatal**

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**Abstract:** Ireland is currently experiencing the biggest baby boom ‘since records began’. Ireland not only has the highest annual birth rate in the EU,
but it also has the oldest average maternal age in the EU of 32 years. Despite the current recession, this boom has created a demand in the economy for a host of different services, and this study is focusing on the demand for information resources. This study will track 20 women from mid-pregnancy (3-6 months) for a period of 18 months to understand how they consume and process information. A key strength of this study is its longitudinal design, as a user-centred study, the level of richness and context provided will be key in understanding postmodern women’s information behaviour. An individual’s information behaviour includes ‘those activities a person may engage in when identifying his or her own needs for information, searching for such information in any way, and using or transferring that information’ (Wilson, 1999, p249). Extant research has illustrated that information resources can be used to inform people and to influence their decisions and health behaviours, for example, women have used information gathered from online sources to alter their views on how their pregnancy should be managed. Furthermore, certain characteristics of online information resources have been shown to be particularly valued by women during the antenatal period including, having a website which is reliable, updated by experts and which provides informal support from woman who are in similar situations. The proposed research questions for this project have evolved from Wilson’s definition of information behaviour:

1. Why do women feel the need to seek out information resources?

To truly understand information behaviour there must be an understanding of the drivers behind the seeking process; there is an acceptance that, in general information is not sought for information’s sake. Tailoring communication strategies based on demographics can be ineffective; however, if the basic needs of the target population are considered then there is the potential for a more focused set of offerings.

2. What information resources are women using during the period from antenatal to postnatal?

Information seeking can involve women using either official or unofficial sources of information to satisfy their information need. While women can access multiple sources of information from antenatal to postnatal, the
providers of the primary sources of their information will have a level of influence over their behaviour.

3. How do women process information resources and to what use do they put them?

The final two-stage section of our information behaviour model is the processing of the information and the decision on how to use the information. Processing of the information resource is essentially the assessment of its quality. The use of the information is influenced by the original need that drove the search; it may involve action, a continued search or sharing the information. The conclusion of this research will be to generate a set of prescriptive design guidelines enabling the development of an online information resource to empower postmodern women in their information behaviours.

**Keywords:** information, information behaviour, information resources, information quality, health information

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**Theorising the Relationship Between Pervasive Connectivity and Interruption Management**

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**Abstract:** Pervasive Connectivity – which we define as the communicative affordances accruing as a result of contemporary computer-mediated communication (CMC) tools that are facilitated by the increasing ubiquity of computing - is a phenomenon which is increasingly affecting activities in both social and organisational spheres in multiple and often disparate ways. For instance, research has described varying communication practices that are facilitated by the inherently flexibly, mobile, and “always on” contemporary communication media that is widely available to individuals both socially and professionally. Moreover, there is additional research which indicates the complex nature of associated consequences, such as, for example, the observation of positive consequences experienced at an individual level and negative consequences at the group level simultaneously. Therefore, Pervasive Connectivity presents us with significant theo-
retical and practical problems to be explored. Business processes constitute, at their very core, a series of activities that are connected together to facilitate the operation of a particular organisational outcome. Extant research conceptualises the coordination and effectiveness of business processes as an interruption management issue; coordination breakdowns are synonymous with interruptions. In essence, interruptions and how they are handled (or not handled) has significant consequences for the coordination of activities. Therefore, this research, leveraging a multidimensional interruption management (MDIM) model derived from a review of extant literature, explores the relationship between Pervasive Connectivity when enacted and interruption management. The management or handling of an interruption is determined by a personal decision making process (constituting the Personal Decision Making Process in the MDIM). In particular, the relationship between the independent variables of the MDIM model’s Personal Decision Making Process concept, namely (1) Context; (2) Primary Task; (3) Interruption; and (4) Strategy Repertoire, and Pervasive Connectivity are explored. Pervasive Connectivity is increasingly becoming imbued in patterns of action and, as such, it is suggested that the arena in which an individual makes decisions will be significantly altered. Appreciating the affective nature of Pervasive Connectivity (i.e. its affects are realised only when the communicative affordances become enacted) an appropriate theoretical lens suitable for comprehensively understanding this phenomenon in action is necessary. Towards this end, the suitability of employing Emirbayer & Mische’s (1998) temporal theory of human agency in future studies empirically observing Pervasive Connectivity imbued in patterns of action generally, and in particular when concerned with interruption management is forwarded. This temporal theory focuses upon independently accounting for human agents orientations towards the past, present, and future which each serve to determine enactments. Importantly, this theory is particularly suitable for both the evaluation of, and also to indicate, or at least postulate about, potential future patterns of activity necessary for understanding interruption management, a key constituent of business processes.

**Keywords:** interruption management, communicative affordances, pervasive connectivity, human agency
Evaluating the Business Value of Social Media

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Abstract: According to Gartner (2010) more than 50% of companies that had created an online environment failed to manage it correctly. Instead, they inadvertently drove their customers away. Therefore as IT has begun to illicit a stronger role in business performance in regards to social media, the need for business orientated metrics has increased. Measuring the business value, along with the return on investment in social networking is the fastest growing concern organisations are faced with. Despite the best efforts of the Association of National Advertisers, the American Marketing Association as well as academics, the solution remains elusive to most businesses. As such, organisations are trying to figure out how to use social media to enhance profitable growth without even having the ability to measure ROI appropriately for traditional media. This leads to a significant degree of uncertainty among executives with respect to allocating effort and budget to the realm of social media. However, thus far there has been little research into providing a framework allowing organisations to gauge how their social media presence is being measured and utilised. Therefore this research shall propose a framework that would be of great importance to both managers and marketers alike, with the potential for further study from the academic community. We seek to address these issues by identifying the various platforms available to organisations based on their respective criteria and outline a framework for the successful utilisation and monitoring of their social strategy lifecycle. This framework shall incorporate numerous dimensions of IT performance including expenditure, performance, business process efficiency, extent of utilisation, strategic value as well as customer satisfaction. A particular subset of criteria relating to the organisations key targets of supervision shall be derived in part from that of Porter’s Five Forces as in itself it is a powerful method for understanding where power lies in any given business situation. We believe these features could be readily identified with the correct social media measurements to complement it. With a clear understanding of where the power lies, one shall be able to take fair advantage of a situation of strength, improve a situation of weakness and avoid taking the wrong steps, thereby making it an important decision support tool. We outline
that organisations must also realise that in order to obtain true business value from their strategy, success does not solely rely on merely measuring their key targets, but also by identifying the goals of their strategy along with engaging proactively with the consumer which shall play a crucial role in the successful implementation and adoption. The overall aim shall be to incorporate these elements into a framework whereby organisations would be able to visualise with relative ease where they currently stand in their online strategy, as well as utilizing this framework to monitor other external forces that could impede their organisation.

**Keywords:** value, strategy, social media, R.O
Round Table
The aim of the project that is presented in this round table is to disseminate software supply chain risk management (SCRM) knowledge into traditional academic, as well as organizational training organizations. The strategies presented by this roundtable will represent the initial planned approach to dissemination of the knowledge for SCRM into common use in these settings. The roundtable will describe the thinking that underlies the effort to create a more secure national software infrastructure. The traditional means of disseminating knowledge into any society is through formally constituted education, training and awareness programs. Nevertheless, in the case of secure software supply chain risk management, the problem is that there is no single, commonly accepted point of reference to “guide the development and integration of education and training content relevant to SCRM”. The dilemma with SCRM is that its knowledge elements appear to be crosscutting rather than disciplinary. In essence, the knowledge base for SCRM is located in a range of traditional studies. That includes such dissimilar areas as “software engineering, systems engineering, information systems security engineering, safety, security, testing, information assurance, law and project management”. As a result, potentially meaningful SCRM content appears in many different places and is taught in many different ways in conventional education settings. A formal effort is needed to integrate “SCRM content ... into the body of knowledge of each contributing discipline”. There are two practical barriers to achieving that level of integration. First, it is not clear what specific knowledge and skills should be taught in each area. Second, there are no validated methods for delivering that knowledge once it has been identified. However there are accepted methods for content development for any new subject and these will be outlined. Thus the Roundtable will present:

A preliminary strategy for dissemination of the topic into academic and training settings. -A preliminary body of knowledge along with a repository for that BOK, -An outline of a potential one semester course in the topic of SCRM.
Workshop
Strategy-Technology Alignment: Deriving Business Value from ICT Projects

Paul Griffiths
The Birchman Group, Santiago, Chile

1. **Presentation**: Strategy-Technology Alignment: Deriving Business Value from ICT Projects
   
   **Content**: The theory of departure; the classification of projects into “Market-power-driven” or “efficiency-driven”; the method followed (building theory through the use of published case-studies); adopting and extending a new classification of projects (according to their strategic value, in 4 categories); linking the project categories to the value proposition of the organisation; the role of change management in delivering ICT projects; presenting the model that brings it all together; and, finally, expressing the theory based on the model.

2. **Discussion**: Is building theory through the analysis of published case-studies a valid approach?
   
   **Content**: What are the limitations vs. researching the cases oneself? What are the advantages, for example in terms of introduction of biases?

3. **Discussion**: Criticism on the classification of projects according to their strategic value (i.e., ‘Infrastructure’, ‘Long Term Value’, ‘Platform for Change’, and ‘Platform for Innovation’).
   
   **Content**: Can the participants detect types of projects that are not represented in this classification? If so, what new categories should be introduced? Would there be benefits from disaggregating these categories into more granular ones? Can we think of radically different classifications?

4. **Discussion**: What do we really mean by Change Management (CM) in ICT Projects?
   
   **Content**: CM is a very generic term, seldom defined. In theory, if an organisation is perfectly tuned-in with its business environment it is in permanent evolution and we need not speak of CM; adaptation happens naturally. When we speak of the need for CM it is because there...
is an obvious disengagement of the organisation with its context: either there has been a tipping-point in the outside world (such as the advent of a revolutionising technology or the apparition of a disruptive competitor) or the organisation has become set in its ways (thus losing synch with the outside world). ICT projects are often approached as a vehicle for putting the organisation back in synch with its business context, but as the Productivity Paradox of the 1980s and 1990s showed, it needs to be accompanied by changes in the way of doing business. From the analysis of the cases, emerged the following ‘streams’ of CM: ‘Stakeholder Management’, ‘End-user engagement’, ‘User training’, ‘Organisational impact’, ‘Project Risk management’ – is this list exhaustive? In the experience of the participants, are any of these just nonsense? Or should other dimensions of CM be considered?

5. **Wrap-up**: Summarising the lessons learnt.