A bibliometric study on authorship trends and research themes in knowledge management literature

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Industrial and Information Management, Research group: Business Data Research Group, Research group: Business Ecosystems, Networks and Innovations, Research group: Knowledge and Learning Research Center, University of Exeter, Lappeenranta University of Technology
Authors: Jussila, J. J., Mustafee, N., Aramo-Immonen, H., Menon, K., Hajikhani, A., Helander, N.
Keywords: (bibliometrics)
Number of pages: 9
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Host publication information
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Volume: 12
Place of publication: St. Petersburg, Russia
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http://www.ifkad.org/
Research output: Scientific - peer-review › Conference contribution

Explaining the challenges in ERP development networks with triggers, root causes, and consequences

General information
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Ministry of Education publication type: A1 Journal article-refereed
Organisations: Industrial and Information Management
Authors: Kähkönen, T., Alanne, A., Pekkola, S., Smolander, K.
Publication date: Apr 2017
Peer-reviewed: Yes

Publication information
Journal: Communications of the Association for Information Systems
Volume: 40
Issue number: 1
Article number: 11
ISSN (Print): 1529-3181
Ratings:
Publication Forum (2017): 2
Scopus rating (2016): 0.534 1.031
Publication Forum (2016): 2
Scopus rating (2015): 0.474 1.011
Publication Forum (2015): 2
Scopus rating (2014): 0.537 0.895
Publication Forum (2014): 1
Scopus rating (2013): 0.511 1.041
Publication Forum (2013): 1
Scopus rating (2012): 0.442 0.712
Publication Forum (2012): 1
Scopus rating (2011): 0.486 1.028
Scopus rating (2010): 0.239 0.401
Scopus rating (2009): 0.122 0.0
Scopus rating (2008): 0.122 0.0
Scopus rating (2007): 0.122 0.0
Original language: English
Links:
http://aisel.aisnet.org/cais/vol40/iss1/11/
Research output: Scientific - peer-review › Article
Master data management and its organizational implementation: an ethnographical study within the public sector

Purpose: Master data management (MDM) aims to improve the value of an organization’s most important data, such as customer data, by bridging the silos between organizational units and information systems. However, incorporating data management practices into an organization is not a simple task. The purpose of this paper is to provide a new understanding of the challenges in establishing and developing the MDM function within an organization.

Design/methodology/approach: This paper reports an ethnographic study within a municipality. The data were collected from two consecutive MDM development projects over the time period of 32 months by observing MDM-related activities and interviewing appropriate actors. Observations, interviews, and impressions were documented to a diary that was later qualitatively analyzed. Various project documentation were also used. Findings: In total 15 challenges were identified. Seven of these were not identified earlier in the literature. New challenges included legislation-driven challenges, mutual understanding of master data domains, and the level of granularity for those domains. Eight issues, such as data owner and data definitions, were MDM specific, others being more generic. All of the issues were identified as preconditions or as affecting factors for the others. Three of the issues were identified as pivotal. The issues emphasize strong alignment between the complex concept of MDM and the organization adopting it. Research limitations/implications: This research was based on a single qualitative case study, and caution should be exercised with regard to generalizations. The findings increase understanding about the complex organizational phenomena. The study offers public sector and private sector practitioners insights of the organizational issues that establishing a MDM function can encounter. Originality/value: The issues discovered in the research shed light on the strong alignment between the complex concept of MDM and the organization. The results of this study assist researchers in their endeavor to understand the organizational aspects of MDM, and to build theoretical models, frameworks, practices, and explanations.
MULTI-POS: Lessons Learnt from Fellows and Supervisors

The path to a successful and cooperative network is not always smooth. Marie Curie networks are, by definition, networks of people with various technical and cultural backgrounds and with different personalities, individual work and life targets, and personal ways of solving the challenges that each has to cope with. The larger a network is, the more likely it is that some conflicts or personality mismatches appear, but this is not necessarily a bad thing, and it can be used as a learning and growth lesson. This chapter addresses the various challenges that were encountered during the MULTI-POS implementation and it summarizes the lessons learnt by both the fellows and the supervisors. The goal of this chapter is to offer some generic guidelines in forming and running large international networks, such as the Marie Curie training networks, and to enable the people interested in such collaborations to pro-actively identify and tackle some of the inherent challenges in such networks.

Strengthening social ties via ICT in the organization

General information
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Industrial and Information Management
Authors: Torro, O., Pirkkalainen, H.
Keywords: (social ties, ICT-mediated interaction, information and communications technology)
Number of pages: 10
Pages: 5511-5520
Using enterprise architecture artefacts in an organisation

As a tool for management and planning, Enterprise Architecture (EA) can potentially align organisations' business processes, information, information systems and technology towards a common goal, and supply the information required within this journey. However, an explicit view on why, how, when and by whom EA artefacts are used in order to realise its full potential is not defined. Utilising the features of information systems use studies and data from a case study with 14 EA stakeholder interviews, we identify and describe 15 EA artefact use situations that are then reflected in the related literature. Their analysis enriches understanding of what are EA artefacts, how and why they are used and when are they used, and results in a theoretical framework for understanding their use in general.
Assessing business learning by analysing ERP simulation log files

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Research group: Novi
Authors: Nisula, K., Pekkola, S.
Publication date: 10 Dec 2016

Host publication information
Title of host publication: AIS SIGED 2016 Conference on IS education and Research. : Dublin, Ireland, December 10-11, 2016
Place of publication: Dublin
ISBN (Print): 978-0-692-81119-1
Links:
http://icis2016.aisnet.org/ais-siged-international-conference-education-research/
Research output: Scientific - peer-review › Conference contribution

Rakennetun ympäristön sähköinen asiointipalvelu kuntien tiedolla johtamisen vauhdittajana

General information
State: Published
Ministry of Education publication type: D1 Article in a trade journal
Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT), Solita Oy
Authors: Jussila, J., Sillanpää, V., Helander, N., Lehtonen, T., Krekola, L.
Pages: 22-23
Publication date: Dec 2016
Peer-reviewed: Unknown

Publication information
Journal: Tietoasiantuntija
Volume: 31
Issue number: 5
ISSN (Print): 1795-7338
Original language: Finnish
Research output: Professional › Article

The nexus between social media behaviour, negative consumer emotions and brand disloyalty

General information
State: Published
Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT)
Authors: Jalonen, H., Jussila, J.
Keywords: (social media, Electronic word of mouth, negative emotions, brand disloyalty)
Publication date: 11 Nov 2016
Peer-reviewed: Unknown
ASJC Scopus subject areas: Human-Computer Interaction
Links:
http://www.academic-conferences.org/conferences/ecmlg/ecmlg-future-and-past/
Research output: Scientific › Paper, poster or abstract

Perceived risks in social media use – a longitudinal study among university students.

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Pori Department, Research group: Business Ecosystems, Networks and Innovations, Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT)
Authors: Aramo-Immonen, H., Jussila, J. J., Ilvonen, I., Helander, N.
Keywords: (social media, social media risks, knowledge management, E-Learning)
Number of pages: 4
Pages: 777-780
Publication date: 2 Nov 2016

Host publication information
Title of host publication: Proceedings TEEM '16 Proceedings of the Fourth International Conference on Technological Ecosystems for Enhancing Multiculturality : Salamanca, Spain — November 02 - 04, 2016
Publisher: ACM
Editor: Jose Garcia-Penalvo, F.
ISBN (Electronic): 978-1-4503-4747-1
DOIs:
10.1145/3012430.3012606
Links:
https://2016.teemconference.eu/
Research output: Scientific - peer-review › Conference contribution

Can e-government solutions enhance the work in municipalities?: empirical evidence from case lupapiste

Digitalization and increasing demand of e-government services are not changing only the way the citizens can use public services, but also the nature of work of many municipality employees. At best this kind of digitalization can offer added value in the form of enhancing the work of the municipality personnel. In this paper, we study the effects of adopting an e-government service on work in municipalities. Based on an empirical investigation of five municipalities we propose flow efficiency as a key metric to grasp the added value of digitalization of a public service, as it reveals the most valuable activities as well as the potential bottlenecks. Flow efficiency measurement gives therefore a better indicator to be used in e-government process development than e.g. simple throughput time especially when evaluating the effects of digitalization on knowledge work productivity.

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT), Solita Oy
Authors: Jussila, J., Helander, N., Lehtonen, T., Kallio, J., Sillanpää, V.
Keywords: (E-Government, Efficiency, value assessment)
Number of pages: 6
Pages: 20-25
Identifying weak ties from publicly available social media data in an event

The concept of weak ties was introduced by Granovetter through the seminal paper titled "Strength of weak ties". Since then the role of weak ties in general and their specific role as occupying the structural hole has been explored in many different fields. In this study, we identify actual or potential weak ties using publicly available social media data in the context of an event. Our case study environment is community managers' online discussions in social media in connection to the yearly-organized Community Manager Appreciation Day (CMAD 2016) event in Finland. We were able to identify potential weak ties using the conversation based structural holes, making use of social network analysis methods (like clustering) and content analysis in the context of events. We add to the understanding of and useful data sources for the Strength of weak ties theory originated from Granovetter, and developed further by other researchers. Our approach may be used in future to make more sophisticated conference recommendation systems, and significantly automate the data extraction for making useful contact recommendations from them for conference participants.

The 5C categorization of social media tools

Social media can offer potential business benefits in the company context. However, successful social media initiative calls for careful strategic planning and approaching social media tools as enablers for reaching a purpose. A categorization of social media tools is called for to help the strategic choices and evaluation between the tools. To date, no coherent classification exists, and those suggested approach social media tools from a substantival perspective of what a tool is. From strategical planning viewpoint it is more practical to take the functional perspective of what a tool does. In this paper, we present a framework for categorizing social media tools by the actions they enable. The 5C categorization is based on the action s enabled by the social media tools: communicating, collaborating, connecting, completing, and combining. In order to demonstrate how the 5C categorization can be used as a framework to assess social media tools we conducted an empirical study of social media based crowdsourcing platforms in business-to-business setting. The 5C categorization can be utilized in planning a social media strategy as it forwards the understanding of which tools are
suitable for certain purpose and provides a scheme to evaluate and compare different social media tools and applications.

**General information**

State: Published

Ministry of Education publication type: A4 Article in a conference publication

Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT)

Authors: Vuori, V., Jussila, J.

Keywords: (Social Media)

Number of pages: 8

Pages: 26-33

Publication date: 17 Oct 2016

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Title of host publication: Proceedings of the 20th International Academic Mindtrek Conference: Oct. 17th-19th, 2016, Tampere, Finland

Publisher: ACM

ISBN (Electronic): 978-1-4503-4367-1

ASJC Scopus subject areas: Human-Computer Interaction

DOIs: 10.1145/2994310.2994367

Links:

http://www.mindtrek.org/2016/

Research output: Scientific - peer-review › Conference contribution

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**Sosiaalinen media brändi- ja asiakastiedon lähteänä**

**General information**

State: Published

Ministry of Education publication type: Not Eligible

Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT), University of Vaasa (UVA), University of Tampere

Authors: Jussila, J., Helander, N., Vuori, V., Okkonen, J.

Keywords: (sosiaalinen media, brändi, asiakastieto)

Number of pages: 2

Pages: 55-56

Publication date: 23 Sep 2016

**Host publication information**

Title of host publication: TiedeAreena 2016

Volume: 11

Place of publication: Pori

Publisher: Tampereen teknillinen yliopisto, Porin laitos

Editor: Tuomi, P.


Links:


http://www.ucpori.fi/tiedeareena-ohjelma

Research output: Scientific › Conference contribution

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**Developing a conceptual model for the relationship between social media behavior, negative consumer emotions and brand disloyalty**

Companies have been facing the dark side of social media. Particularly, the odds of customer complaints and brand insults have increased tremendously. Social media has given a voice to disappointed consumers. They use the voice when they feel negative emotions, for example, due to product failures, service problems or unethical behavior. It seems reasonable to expect that the more ubiquitous social media becomes, the more it persuades people to share also their negative experiences. However, although social media raises new challenges for companies, it also gives them new opportunities. Social media enables companies to trace disappointed customers, evaluate their impressiveness and communicate with them. The conceptual paper aims to develop a model for the relationship between social media behavior, negative consumer emotions and brand disloyalty. The argument of this paper is that although social media gives consumers more power which is manifested in sharing negative emotions related to the company, the effect this has on brand disloyalty depends on the company’s behavior.
Blogging as a virtual co-learning environment in the international course context

Co-learning, also known as collaborative learning, is a method of learning and teaching in which a team of learners together explore a significant question or create a meaningful project. A group of learners working together over the Internet on a shared assignment of creating a blog is an example of a virtual co-learning environment [1]. According to Järvenpää et al. [2], a virtual team member's trust in his/her team operates as a moderator, indirectly affecting the relationships between team communication and perceptual learning outcomes. Therefore, we first executed team-building exercises in virtual teams. Secondly, we instructed students to use blogging tools and create their own blog pages. Thirdly, we carried out a survey among students to assess the learning experiences in such a virtual co-learning environment. We have experimented with blogging as a co-learning environment among university students in the international course context. These experiments were conducted among a group of 39 students enrolled on an international knowledge management graduate course. We observed team building in virtual teams via team-building exercises [2]. We assessed the content of the blog pages and conducted a survey at the end of the course. In the paper, we discuss co-learning in virtual teams, introduce the results from the survey questionnaire and introduce live links to some sample blog pages.
Experienced risks in social media use – longitudinal study among university students

Several recent studies indicate that there is a need for increased use of ICT and social media in the Finnish education [1], [2]. This research was conducted in order to explore the attitude towards social media use among university students. The motivation for seeking answer to the research question: “What risks students experience in social media use?” derived from the need to discover learning barriers in social media based learning environments. In particular, there is a need for novel interaction means in order to co-create and learn informally [3] also beyond the traditional classroom. The assumptions, beliefs and attitudes towards social media are studied from the perspective of perceived risks of the students. The study was conducted among graduate students attending “Communities and Social Media in Knowledge Management” course between the years 2012-2016. A web-based survey was executed annually, with a total of 113 respondents. Based on the results we were able to categorize the perceived risks and derive implications on how to lower learning barriers of students in social media based learning environments.

Vastuullisuuksellinen kokouusprojekti henkilöliikenneyrityksissä

The Finnish Transport Safety Agency Trafi is developing a management and procedure model for road transport companies with the purpose of reinforcing the safety culture of commercial traffic and promoting environmentally sustainable practices.

The two previous trial studies concerning the responsibility model focused on goods traffic. This third stage moved the focus on passenger traffic.

The trial was participated in by nine public transport and taxi companies of different sizes from around the country. Nine
parties, both public and private, that order transports were interviewed to get an understanding of the views held by those who order such transports.

The study was commissioned by Trafi and implemented by the Verne Traffic Research Centre of the Tampere University of Technology. The project manager in charge was researcher Lasse Nykänen. In addition to Mr Nykänen, the research group consisted of his assistant Arttu Lauhkonen.

The steering group for the study met twice in the course of the project. The steering group was led by Sanna Ström. The other members were Juhani Intosalmi, Marke Lahtinen and Mikko Väistö from Trafi, and Lasse Nykänen and Arttu Lauhkonen from Traffic Research Centre Verne.

General information
State: Published
Ministry of Education publication type: D4 Published development or research report or study
Organisations: Department of Information Management and Logistics, Research group: Transport Research Centre Verne, Department of Information Management and Logistics
Authors: Nykänen, L., Lauhkonen, A.
Keywords: (responsibility, responsibility model, Safety, quality, Environment, road transport, passenger transport)
Publication date: Jun 2016

Publication information
Place of publication: Helsinki
Publisher: Liikenteen turvallisuusvirasto Trafi
Volume: 2016
Original language: Finnish
ASJC Scopus subject areas: Safety, Risk, Reliability and Quality

Visualizing informal learning behavior from conference participants' Twitter data with the Ostinato Model
Network analysis is a valuable method for investigating and mapping the phenomena driving the social structure and sharing the findings with others. This article contributes to an emerging field of 'smart data' research on Twitter by presenting a case study of how community managers in Finland used this social media platform to construct an informal learning environment around an annually organized conference. In this empirical study we explore informal learning behavior in the project context, especially by analyzing and visualizing informal learning behavior from Twitter data using the Ostinato Model introduced in this paper. Ostinato is an iterative, user-centric, process-automated model for data-driven visual network analytics.

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Pori Department, Research group: Business Ecosystems, Networks and Innovations, Department of Information Management and Logistics, Research group: Novi, Department of Mathematics, Research group: MAT Intelligent Information Systems Laboratory, Managing digital industrial transformation (mDIT), Bath University
Authors: Aramo-Immonen, H., Kärkkäinen, H., Jussila, J., Joel-Edgar, S., Huhtamäki, J.
Keywords: (learning, informal learning, memory aids, Communities of Practice, Social network analysis, Visual network analysis, Twitter)
Number of pages: 12
Pages: 584-595
Publication date: Feb 2016
Peer-reviewed: Yes

Publication information
Journal: Computers in Human Behavior
Volume: 55A
This article suggests a new methodological model for the study of hybrid media events with global appeal. This model, developed in the project on the 2015 Charlie Hebdo attacks in Paris, was created specifically for researching digital media—and in particular, Twitter. The article is structured as follows. Firstly, the methodological scope is discussed against the theoretical context, e.g. the theory of media events. In the theoretical discussion, special emphasis is given to i) disruptive, upsetting, or disintegrative media events and hybrid media events and ii) the conditions of today’s heterogeneous and globalised media communication landscape. Secondly, the article introduces a multi-method approach developed for the analysis of hybrid media events. In this model, computational social science—namely, automated content analysis (ACA) and social network analytics (SNA)—are combined with a qualitative approach—specifically, digital ethnography. The article outlines three key phases for research in which the interplay between quantitative and qualitative approaches is played out. In the first phase, preliminary digital ethnography is applied to provide the outline of the event. In the second phase, quantitative social network analytics are applied to construct the digital field for research. In this phase, it is necessary to map a) what is circulating on the websites and b) where this circulation takes place. The third and final phase applies a qualitative approach and digital ethnography to provide a more nuanced, in-depth interpretation of what (substance/content) is circulating and how this material connects with the ‘where’ in the digital landscape, hence constituting links and connections in the hybrid media landscape. In conclusion, the article reflects on how this multi-method approach contributes to understanding the workings of today’s hybrid media events: how they create and maintain symbolic battles over certain imagined constructs of social imaginaries of solidarity, belonging, contestation, and exclusion, a topic of core value for the theory of media events.
Social "media-based" value creation and business models

Purpose - The purpose of this paper is to create an organized picture of the current understanding of social media-based value creation and business models. Design/methodology/approach - Following the process model presented by Fink (2005), a systematic literature review of academic journal articles published between 2005 and 2014 was conducted. The research was grounded on the theoretical foundations of service-dominant logic. Findings - This study offers detailed descriptions and analyses of the major social media mechanisms affecting how value is created in social media-based value networks and the kinds of impact social media can have on present and future business models. Research limitations/implications - The study is limited to academic research literature on business organizations, excluding all studies related to public and non-profit organizations. Practical implications - Attention is given to developing an in-depth understanding of the functions and concrete value creation mechanisms of social media-based co-creation within the different organizational processes (e.g. in product and service development and customer services) and to updating the related practices and knowledge. Originality/value - This study provides new insight into the challenges related to research models and frameworks commonly used for observing value creation, thus highlighting the need for further studies and updates.

General information
State: Published
Ministry of Education publication type: A2 Review article in a scientific journal
Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT)
Authors: Ketonen-Oksi, S., Jussila, J. J., Kärkkäinen, H.
Keywords: (social media, business model, value creation, value co-creation)
Pages: 1820-1838
Publication date: 2016
Peer-reviewed: Yes
ASJC Scopus subject areas: Management of Technology and Innovation, Information Systems

Publication information
Journal: Industrial Management and Data Systems
Volume: 116
Issue number: 8

The purpose of this paper is to introduce a model to manage knowledge security risks in organizations. Knowledge security risk management is a sensemaking process that should be carried out by managers, and the proposed model works as a tool for the sensemaking process. The model is illustrated with an analytical case example. The process model helps to identify knowledge security risks and provides a comprehensive approach to evaluating and balancing the costs and benefits of knowledge sharing and knowledge risk management. The paper addresses calls for research on the emerging topic of knowledge security and the important topic of new knowledge sharing tools from the combined perspectives of business benefits and risk management. The results presented in this paper are preliminary and conceptual, and further research on the topic is suggested. The process model proposed in this paper can be a valuable tool for practitioners aiming to develop knowledge sharing practices in companies, and at the same time need to consider the security of knowledge.
Uusilla työvälineillä somen suomenkieliset tunnuslääliöt analyysin ja hyötykäyttöön

General information
State: Published
Ministry of Education publication type: D1 Article in a trade journal
Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT)
Authors: Jussila, J.
Number of pages: 3
Pages: 8-10
Publication date: 2016
Peer-reviewed: Unknown

Publication information
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Issue number: 2-3
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Electronic versions:
Uusilla_työvälineillä_JJ_TA_lehti_2_3_2016-2
Links:
Visualizing co-authorship networks for actionable insights: action design research experiment

Increasing interest has been expressed in lowering the barrier for research access. Several approaches exist, including more active communication on research, the use of social computing-oriented networking tools for researchers, parallel publishing of research publications, and the use of research management systems for collecting, managing, and publishing bibliographical data. In this paper, we target the first step of research access, namely the use of publication metadata available in current research information systems. More specifically, we will take an action design research approach to experiment how visual network analytics could be used to create additional value for bibliographical data. We will tap into the current research information system of a selected university to develop a prototype of a self-service co-authorship network visualization and engage with four researchers to identify the key requirements for taking such an approach and to explore the potential value that could be created with visual analytics of bibliographical data. We contribute a set of design guidelines to support the development of computational visual network analytics tools for research collaboration analyses using bibliographical data.

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Mathematics, Research group: MAT Intelligent Information Systems Laboratory
Authors: Huhtamäki, J.
Keywords: (action design research, human-in-the-loop analytics, ostinato model, scientometrics, social network analysis, Visual network analytics)
Number of pages: 8
Pages: 208-215
Publication date: 2016

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Title of host publication: Proceedings of the 20th International Academic Mindtrek Conference
Place of publication: New York, NY, USA
Publisher: ACM
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Name: AcademicMindtrek '16
Publisher: ACM
Electronic versions:
mindtrek-2016-visualizing-authorship-networks-huhtamaki-camera-ready
DOIs: 10.1145/2994310.2994340
Links:
http://urn.fi/URN:NBN:fi:tty-201610244630
http://www.mindtrek.org/academic/ (Conference website)
Source: Bibtex
Source-ID: urn:2bda9be30967f0017ab701e22409ae7b
Research output: Scientific › peer-review › Conference contribution

Technology Trees and Tools: Constructing Development Graphs for Digital Games

In the recent years, digital games have solidified their role as important parts of life for a considerable portion of the population. Game development has become an extremely important industrial branch with a great deal of competition between developers and publishers. There is only a limited amount of resources to put in the development of a game, but the modern customers expect high quality.

Taking these constraints into account, this dissertation focuses on developing implementations of a structure that is used widely in different games: technology trees (TTs). This term covers here also so-called skill trees, talent trees, perk trees, and other such structures used to limit and guide in-game development and define development possibilities. The aim is to propose methods and usage of tools helping to achieve high TT quality, simultaneously facilitating the actual development process and reducing human workload.

The main contributions of this dissertation consist of ideas, models, methods, and software tool prototypes constructed during the research work. The significance of the thesis is amplified by the fact that there are only very few previous academic studies focusing on TTs.

The thesis proposes a generic approach to implement TTs. The design and implementation work are facilitated by tool
support and automated code generation. The central prototype tool, Tech Tree Tool (TTT) is introduced, first in its core form and then as improved by TT measuring (and limited automatic adjusting) capabilities. The challenge of modifying TTs during runtime is addressed, also taking advantage of related improvements on TTT. Because TTs are often operated by artificially intelligent entities, discussion on a generic artificial intelligence approach and related tools is included. Moreover, contemporary real-life TTs are analyzed and generic TTs characterized.

**General information**
State: Published
Ministry of Education publication type: G5 Doctoral dissertation (article)
Organisations: Department of Mathematics, Research group: MAT Computer Science and Applied Logics
Authors: Heinimäki, T. J.
Number of pages: 100
Publication date: 27 Nov 2015

**Publication information**
Publisher: Tampere University of Technology
Original language: English

**Publication series**
Name: Tampere University of Technology. Publication
Publisher: Tampere University of Technology
Volume: 1349
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Links:

**Bibliographical note**
Awarding institution: Tampere University of Technology
Research output: Collection of articles › Doctoral Thesis

**SimpleTree: An Efficient Open Source Tool to Build Tree Models from TLS Clouds**
An open source tool named SimpleTree, capable of modelling highly accurate cylindrical tree models from terrestrial laser scan point clouds, is presented and evaluated. All important functionalities, accessible in the software via buttons and dialogues, are described including the explanation of all necessary input parameters. The method is validated utilizing 101 point clouds of six different tree species, in the main evergreen and coniferous trees. All scanned trees have been destructively harvested to get accurate estimates of above ground biomass with which we assess the accuracy of the SimpleTree-reconstructed cylinder models. The trees were grouped into four data sets and for each one a Concordance Correlation Coefficient of at least 0.92 (0.92, 0.97, 0.92, 0.94) and an total relative error at most ~8 % (2.42%, 3.59%, −4.59%, 8.27%) was achieved in the comparison of the model results to the ground truth data. A global statistical improvement of derived cylinder radii is presented as well as an efficient optimization approach to automatically improve user given input parameters. An additional check of the SimpleTree results is presented via comparison to the results of trees reconstructed using an alternative, published method.

**General information**
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Mathematics, Research group: MAT Inverse Problems, Mathematical modelling with wide societal impact (MathImpact)
Authors: Hackenberg, J., Spiecker, H., Calders, K., Disney, M., Raumonen, P.
Number of pages: 50
Pages: 4245-4294
Publication date: 23 Nov 2015
Peer-reviewed: Yes

**Publication information**
Journal: Forests: Open Access Journal
Volume: 6
Issue number: 11
ISSN (Print): 1999-4907
Ratings:
Publication Forum (2017): 1
MYSTERY SHOPPERS RECOGNISING KNOWLEDGE SHARING BARRIERS IN HIGHER EDUCATION

This study focuses on the knowledge sharing barriers in the space between learning and teaching in higher education as reported by mystery shoppers. There is surprisingly little context-specific research on learning and teaching in a knowledge intensive community like a university from the perspective of knowledge management (KM). Discussing learning and teaching within KM is based on considering students controversially as customers or stakeholders. Thus including them more meaningfully in assessing and developing teaching practices, or knowledge flow, seems justified. The specific aim of this paper is to first recognise possible knowledge sharing barriers and then categorize such barriers emerging from the material into three larger domains, namely, individual barriers, technological barriers and organisational barriers.

There were 45 students from all faculties participating in a mystery shopper project in a Finnish university of technology. They observed their learning experience for six weeks in order to supplement data from other sources, to add a student voice on the process of developing learning and teaching in higher education.

The research approach represents qualitative content analysis in which knowledge-sharing barriers were recognised from the qualitative mystery shopper data. The results identify teaching practises that contribute to creating knowledge sharing barriers. More detailed and almost real-time contextual activity sampling is suggested as a method for further study and also an avenue for instant feedback for teaching staff. The results will provide data on current knowledge practices and learning processes in a technical university in Finland.

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Ministry of Education publication type: A4 Article in a conference publication
Organisations: Language Centre, Department of Information Management and Logistics, Research group: Novi, University of Tampere
Authors: Tukiainen, M., Helander, N., Mäkinen, M.
Publication date: 16 Nov 2015

Host publication information
ISBN (Electronic): 978-84-608-2657-6
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https://iated.org/iceri/

Bibliographical note
ORG=kie,0.5
ORG=tlo,0.5
Research output: Scientific - peer-review » Conference contribution

University Students’ Perceptions of Academic Writing: An Academic Literacies Perspective
General information
Electromagnetic 3D subsurface imaging with source sparsity for a synthetic object

This paper concerns electromagnetic 3D subsurface imaging in connection with sparsity of signal sources. We explored an imaging approach that can be implemented in situations that allow one to obtain a large amount of data over a surface or a set of orbits but at the same time require sparsity of the signal sources. Characteristic to such a tomography scenario is that it necessitates the inversion technique to be genuinely three-dimensional: for example, slicing is not possible due to the low number of sources. Here, we primarily focused on astrophysical subsurface exploration purposes. As an example target of our numerical experiments we used a synthetic small planetary object containing three inclusions, e.g. voids, of the size of the wavelength. A tetrahedral arrangement of source positions was used, it being the simplest symmetric point configuration in 3D. Our results suggest that somewhat reliable inversion results can be produced within the present a priori assumptions, if the data can be recorded at a specific resolution. This is valuable early-stage knowledge especially for the design of future planetary missions in which the payload needs to be minimized, and potentially also for the development of other lightweight subsurface inspection systems.
A managerial view of the knowledge flows of a health-care system

A health system has various knowledge structures enabling its knowledge resources to be efficiently applied. The literature has covered the management of clinical health information fairly extensively, but less is known about managerial knowledge flows. To address this knowledge gap, a regional health system in Finland is studied and managerial knowledge flows categorized in order to provide a better understanding of the inter-organizational knowledge networks of a health system. The paper contributes by illustrating and concretizing the knowledge dynamics of a health system. The empirical examination reveals the complexity of managerial knowledge flows and identifies three main categories of these: (1) national information steering, (2) regional information steering, and (3) internal control information. These categories are further elaborated with the data gathered through observation, interviews, and process modelling. A better understanding and management of knowledge flows is expected to have a positive effect on the performance of the health system.

General information

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Organisations: Department of Information Management and Logistics, Research group: Novi
Authors: Laihonen, H.
Keywords: (knowledge transfer, knowledge flows, knowledge management, health management, STRATEGIC ALLIANCES, MULTINATIONAL-CORPORATIONS, FIRMS, ORGANIZATIONS, MANAGEMENT, NETWORKS, PERSPECTIVE, STICKINESS, INNOVATION, ADVANTAGE)
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Publication information

Journal: Knowledge Management Research and Practice
Volume: 13
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ISSN (Print): 1477-8238
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.724 0.894
Publication Forum (2016): 1
Scopus rating (2015): 0.5 1.105
Web of Science (2015): 0.595 0.994 6.7 0.05 3.3E-4 0.137
Publication Forum (2015): 1
A General Definition of the O-notation for Algorithm Analysis
We provide an extensive list of desirable properties for an O-notation — as used in algorithm analysis — and reduce them to 8 primitive properties. We prove that the primitive properties are equivalent to the definition of the O-notation as linear dominance.

Exploring co-learning behavior of conference participants with visual network analysis of Twitter data
Knowledge management has acknowledged organizational learning as a key factor for creating competitive advantage for companies already from early 1990. However, the studies of co-learning in this connection are in their infancy. This article contributes to an emerging field of 'smart data' research on Twitter by presenting a case study of how community managers in Finland used this social media platform to construct a co-learning environment around an annually organized conference. In this empirical study we explore the co-learning behavior in project contexts especially by analyzing and visualizing co-learning behavior from conference participants Twitter data.
VLT/SPHERE- and ALMA-based shape reconstruction of asteroid (3) Juno

We use the recently released Atacama Large Millimeter Array (ALMA) and VLT/SPHERE science verification data, together with earlier adaptive-optics images, stellar occultation, and lightcurve data to model the 3D shape and spin of the large asteroid (3) Juno with the all-data asteroid modelling (ADAM) procedure. These data set limits on the plausible range of shape models, yielding reconstructions suggesting that, despite its large size, Juno has sizable unrounded features moulded by non-gravitational processes such as impacts.

General information

State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Mathematics, Research group: MAT Inverse Problems, Mathematical modelling with wide societal impact (Mathimpact), Astronomical Institute, Faculty of Mathematics and Physics, Charles University in Prague, University of Latvia. Faculty of Physics and Mathematics, Charles University in Prague, ACME, IMCCE, Université de Lille 1, Laboratoire Lagrange, UMR 7293 CNRS, Observatoire de la Côte d'Azur, European Southern Observatory (ESO), Aix-Marseille University, CNRS, LAM (Laboratoire d'Astrophysique de Marseille) UMR 7326, ONERA - Optics Department, Southwest Research Institute, Unidad Mixta Internacional FCA (UMI 3386), CNRS/INSU, Universidad de Chile, LESIA (UMR 8109), Observatoire de Paris, Univ. Paris-Diderot
Authors: Viikinkoski, M., Kaasalainen, M., Durech, J., Carry, B., Marsset, M., Fusco, T., Dumas, C., Merline, W. J., Yang, B., Berthier, J., Kervella, P., Vernazza, P.
Keywords: (Instrumentation: adaptive optics, Instrumentation: interferometers, Methods: numerical, Minor planets, asteroids: individual: (3) Juno)
Number of pages: 5
Publication date: 1 Sep 2015
Peer-reviewed: Yes
ASJC Scopus subject areas: Astronomy and Astrophysics, Space and Planetary Science

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Scopus rating (2016): 2.246 1.16
Publication Forum (2016): 3
Scopus rating (2015): 2.543 1.189
Scopus rating (2014): 2.823 1.219
Web of Science (2014): 4.378 4.158 7.5 2.041 0.28018 1.889
Publication Forum (2014): 3
Scopus rating (2013): 2.544 1.058
Publication Forum (2013): 3
Scopus rating (2012): 2.585 1.295
Publication Forum (2012): 3
Scopus rating (2011): 2.373 1.231
Scopus rating (2010): 2.74 1.444
Scopus rating (2009): 2.879 1.404
Scopus rating (2008): 2.923 1.297
Scopus rating (2007): 2.816 1.34
Scopus rating (2005): 2.891 1.355
Scopus rating (2004): 2.633 1.462
Scopus rating (2003): 1.967 1.373
Scopus rating (2002): 1.742 1.346
Scopus rating (2001): 1.555 0.727
Scopus rating (2000): 2.178 1.039
Scopus rating (1999): 2.489 1.076
Original language: English
DOIs: 10.1051/0004-6361/201526626
Stop It, and Be Stubborn!
A system is always may-terminating, if and only if from every reachable state, a terminal state is reachable. This publication argues that it is beneficial for both catching non-progress errors and stubborn, ample, and persistent set state space reduction to try to make verification models always may-terminating. An incorrect mutual exclusion algorithm is
used as an example. The error does not manifest itself, unless the first action of the customers is modelled differently from other actions. An appropriate method is to add an alternative first action that models the customer stopping for good. This method typically makes the model always may-terminating. If the model is always may-terminating, then the basic strong stubborn set method preserves safety and some progress properties without any additional condition for solving the ignoring problem. Furthermore, whether the model is always may-terminating can be checked efficiently from the reduced state space.

Understanding business ecosystem dynamics: A data-driven approach

Business ecosystems consist of a heterogeneous and continuously evolving set of entities that are interconnected through a complex, global network of relationships. However, there is no well-established methodology to study the dynamics of this network. Traditional approaches have primarily utilized a single source of data of relatively established firms; however, these approaches ignore the vast number of relevant activities that often occur at the individual and entrepreneurial levels. We argue that a data-driven visualization approach, using both institutionally and socially curated datasets, can provide important complementary, triangulated explanatory insights into the dynamics of interorganizational networks in general and business ecosystems in particular. We develop novel visualization layouts to help decision makers systematically identify and compare ecosystems. Using traditionally disconnected data sources on deals and alliance relationships (DARs), executive and funding relationships (EFRs), and public opinion and discourse (POD), we empirically illustrate our data-driven method of data triangulation and visualization techniques through three cases in the mobile industry Google’s acquisition of Motorola Mobility, the coopetitive relation between Apple and Samsung, and the strategic partnership between Nokia and Microsoft. The article concludes with implications and future research opportunities.

General information
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Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Mathematics, Research group: MAT Intelligent Information Systems Laboratory, School of Interacting, Computing and Tennenbaum Institute, Georgia Institute of Technology, MediaX, Stanford University, Graduate School of Information Systems, University of Electro-Communications, VTT Technical Research Centre of Finland, School of Industrial and Systems Engineering, Tennenbaum Institute
Authors: Basole, R. C., Russell, M. G., Huhtamäki, J., Rubens, N., Still, K., Park, H.
Keywords: (Business ecosystem, Data triangulation, Information visualization, Interorganizational networks)
Publication date: 1 May 2015
Peer-reviewed: Yes
ASJC Scopus subject areas: Computer Science(all), Management Information Systems

Publication information
Journal: ACM Transactions on Management Information Systems
Volume: 6
Issue number: 2
Article number: 6
SmartWoW – constructing a tool for knowledge work performance analysis

Purpose – New Ways of Working (NewWoW) refers to a novel approach for improving the performance of knowledge work. The purpose of this paper is to seek innovative solutions concerning facilities, information technology tools and work practices in order to be able to "work smarter, not harder." In order to develop work practices toward the NewWoW mode there is a need for an analytical management tool that would help assess the status of the organization's current work practices and demonstrate the impacts of development initiatives. This paper introduces such a tool.

Design/methodology/approach – Constructive research approach was chosen to guide the development of the Smart ways of working (SmartWoW) tool. The tool was designed on the basis of previous knowledge work performance literature as well as on interviews in two knowledge-intensive organizations. The usefulness of the tool was verified by applying it in four organizations. Findings – SmartWoW is a compact questionnaire tool for analyzing and measuring knowledge work at the individual level. The questionnaire consists of four areas: work environment, personal work practices, well-being at work and productivity. As SmartWoW is a standardized tool its results are comparable between organizations.

Limitations/implications – SmartWoW was designed a pragmatic managerial tool. It is considered possible that it can be valuable as a research instrument as well but the current limited amount of collected data does not yet facilitate determining its usefulness from that perspective. Originality/value – This paper makes a contribution to the existing literature on knowledge work measurement and management by introducing an analytical tool which takes into account the NewWoW perspective.
ADAM: A general method for using various data types in asteroid reconstruction

We introduce ADAM, the All-Data Asteroid Modelling algorithm. ADAM is simple and universal since it handles all disk-resolved data types (adaptive optics or other images, interferometry, and range-Doppler radar data) in a uniform manner via the 2D Fourier transform, enabling fast convergence in model optimization. The resolved data can be combined with disk-integrated data (photometry). In the reconstruction process, the difference between each data type is only a few code lines defining the particular generalized projection from 3D onto a 2D image plane. Occultation timings can be included as sparse silhouettes, and thermal infrared data are efficiently handled with an approximate algorithm that is sufficient in practice because of the dominance of the high-contrast (boundary) pixels over the low-contrast (interior) pixels. This is of particular importance to the raw ALMA data that can be directly handled by ADAM without having to construct the standard image. We study the reliability of the inversion, using the independent shape supports of function series and control-point surfaces. When other data are lacking, one can carry out fast non-convex lightcurve-only inversions, but any shape models resulting from it should only be taken as illustrative large-scale models.
‘They do not get along without us and we do not get along without them...’: Uncertainty in information system development

This paper discusses about issues related to uncertainties when developing information systems in inter-organizational relationships (IORs). The study is a part of a longitudinal grounded theory study where a business critical information system development (ISD) project is retrospectively followed over a time period of a one and half year. The main actors are two private sector organizations that share a long common ISD history and mutual trust. In the course of the project, prevailing optimism among actors generated uncertainties about the outcome and overall success of the project. The paper presents sources and consequences of those uncertainties from the IOR viewpoint. The findings provide new insights on the earlier studies of a dynamic nature of trust and uncertainties in ISD cooperation.
Designing a performance measurement system to support outsourcing decisions in a Finnish university

In recent years, the role and importance of performance measurement in public organisations has been much emphasised. However, the discussion on the issue so far has been on a rather general level. This paper aims to understand the challenges faced by public organisations in developing performance measurement systems (PMSs) for a specific managerial purpose, to support outsourcing decisions. The objective of the paper is approached with a literature review and a single qualitative case study carried out as an action research. The case study introduces a detailed description of a PMS development project carried out in the support services of a Finnish university. A framework developed in prior research is utilised to analyse the impacts of two typical characteristics (conflicting stakeholder needs...
and undefined objectives) of public organisations in a PMS design project. The contribution of the paper is to extend the existing understanding about public sector PMS especially regarding two key points: 1) to understand the impact of different purposes for measurement (in this case the outsourcing context) on the PMS development process; 2) to understand the need to align the PMS system with the organisational culture and other managerial control systems in order to achieve desired performance outcomes.

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Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services, Department of Information Management and Logistics, Managing digital industrial transformation (mDiT), Lappeenranta University of Technology
Authors: Jääskeläinen, A., Lönnqvist, A., Kulmala, H. I.
Keywords: (Decision-making, Finland, Outsourcing, Performance management, Performance measurement system, PMS, Productivity, Public sector, Support services, University)
Number of pages: 16
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Peer-reviewed: Yes
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Publication Forum (2016): 1
Scopus rating (2015): 0.116 0.685
Publication Forum (2015): 1
Scopus rating (2014): 0.102 0.0
Publication Forum (2014): 1
Scopus rating (2013): 0.102 0.0
Publication Forum (2013): 1
Scopus rating (2012): 0.15 0.044
Publication Forum (2012): 1
Scopus rating (2011): 0.17 0.063
Scopus rating (2010): 0.126 0.063
Scopus rating (2009): 0.103 0.078
Scopus rating (2008): 0.104 0.586
Original language: English
DOIs: 10.1504/IJPSPM.2015.067814
Links:
http://www.scopus.com/inward/record.url?scp=84924369881&partnerID=8YFLogxK (Link to publication in Scopus)

Bibliographical note
ORG=tta,0.6
ORG=tlo,0.4
Source: Scopus
Source-ID: 84924369881
Research output: Scientific - peer-review › Article

The connection between cycling safety and volume

General information
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Ministry of Education publication type: A3 Part of a book or another research book
Organisations: Department of Information Management and Logistics, Research group: Transport Research Centre Verne
Winner-Does-Not-Take-All: Selective Attention and Local Bias in Platform-Based Markets

We examine competition between platforms in platform-based markets with agent-based modeling. In our proposed model, a consumer adopts a platform that offers the most relative utility of competing platforms. More specifically, the utility is derived from the local direct network effects arising from the social network of the consumer and the indirect network effects arising from complementary products of the platform. We portray the consumer as selectively attentive and locally biased. We contrast the proposed model to several alternative models with empirical data from the competition between Sony’s PlayStation 3 and Microsoft’s Xbox 360 and show that the proposed model, where the aforementioned consumer characteristics, and platform pricing, explain the adoption decisions of consumers and thus the division of the market between platforms. We offer important insights on how the dynamics of competition on the macro-level emerge from micro-level interactions between consumers.

An Initial Homophily Indicator to Reinforce Context-Aware Semantic Computing

The vast increase of personal sensor information is driving the rise in popularity of context-aware applications. Users crave and very often expect tailored services that are based on the users’ context or personal preferences. The users themselves, using forms, often provide such information. An inference solution typically addresses this problem. In this paper, we present and show by way of a real-world example, the first step towards incorporating information of the user’s social networking behavior in the inference task. We define an initial indicator of a particular social phenomenon, called Homophily, and describe how the indicator measures the presence of homophily at certain moments, also capturing the degree to which it is present. Different from existing indicators, ours lends itself to indicating the presence of homophily in a way that is easier to comprehend, so that it may be easily integrated into and reinforce context-aware semantic computing.
Crowdfunding via the internet is a relatively new phenomenon in research and gaining momentum currently. While taking a data-driven approach into investigating the properties and dynamics of crowdfunding campaigns would allow the use of computational social science in investigations on crowdfunding, existing data-driven research on crowdfunding remains very limited. This is particularly true on the level of individual funder data. In this study, we contribute to the empirical body of knowledge on crowdfunding by introducing Indiegogo as a data source and, more specifically, the development and implementation of a crawler and scraper for accessing Indiegogo campaign data, and sharing this openly for other researchers. Due to the extremely dynamic and rapidly increasing amount of crowdfunding data in terms of the number of crowdfunding campaigns and the available investment and individual investor data, we believe our approach is useful for supporting public and open data-driven research, instead of providing merely a static data set.
Research output: Scientific - peer-review › Conference contribution

**Associating Event Logs with Ontologies for Semantic Process Mining and Analysis**

Process mining uses various forms of event logs to extract process-related information, in order to discover, analyze conformance, or to enhance (business) processes. The vast majority of process mining applications are based on event logs with flat, keyword-based activity and resource descriptions. Many human-designed processes, however, are based on explicit workflow or lifecycle models with associated product models, both of which can be described using taxonomies or more complicated ontologies. This additional information can be used to analyze and visualize the processes with better insight of and improved formal access to the data. In this paper, we introduce a generic approach for enriching process mining using events logs with associated ontology structures. The main contribution and benefit of this approach lies in the ability to analyze the models in different abstraction levels, which greatly helps understanding complicated processes. Our main application areas are related to engineering and documentation processes.

**General information**
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- **Ministry of Education publication type:** A4 Article in a conference publication
- **Organisations:** Department of Mathematics, Research group: MAT Intelligent Information Systems Laboratory
- **Authors:** Nykänen, O., Rivero-Rodriguez, A., Pileggi, P., Ranta, P. A., Kailanto, M., Koro, J.
- **Keywords:** (event logs, maintenance analysis, ontologies, process mining)
- **Number of pages:** 6
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- **Publication date:** 2015

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- **Publisher:** ACM
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- **Electronic versions:** Ontologies_Semantic_Process_Mining
- **DOIs:** 10.1145/2818187.2818273
- **Links:**

**Bibliographical note**
- AUX=orc,"Koro, Juho"
- **Source:** Bibtex
- **Source-ID:** urn:cd7f409f8f01e4c75528f8c2b3615095

**Comparison of Functional, Structural, and Dynamic Business-IT Alignment Models: A Case Study**

In order to understand and manage how emotions affect knowledge work, organizations need proper tools to become aware of emotions. Measuring emotions is an approach to consider. In this paper, three different emotion measurement services are tested: daily experience survey, electrodermal activity ring and self-tracking of emotions. The paper provides
new insights and user experiences of emotion measurement services and their applicability in daily knowledge work. Managerial guidelines are drawn up for planning and executing emotion measurement services in an organization for two purposes – self-development and measuring company pulse.

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Ministry of Education publication type: B3 Non-refereed article in conference proceedings
Organisations: Department of Information Management and Logistics, Research group: Novi, Department of Information Management and Logistics, Intopalo Oy
Authors: Vuolle, M., Salonius, H., Lintinen, J., Mäkinen, J.
Keywords: (Knowledge work, Emotions, Measurement, self-management)
Number of pages: 20
Publication date: 2015

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Place of publication: Copenhagen
Publisher: RESER European Association for Research on Services
ISBN (Electronic): 978-87-7349-921-4

**Bibliographical note**
AUX=tlo,"Lintinen, Johanna"
Research output: Scientific › Conference contribution

**Knowledge security risk management in contemporary companies – toward a proactive approach**

**General information**
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT), Luleå University of Technology
Authors: Ilvonen, I., Jussila, J., Kärkkäinen, H., Päivärinta, T.
Number of pages: 10
Pages: 3941-3950
Publication date: 2015

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Research output: Scientific › peer-review › Conference contribution

"New Ways of Working" as a tool for improving the performance of a knowledge-intensive company

This paper explores ‘New Ways of Working’ (NewWoW) – that is, non-traditional mobile and flexible work practices, settings and locations using sufficient ICT tools – as a novel approach to improve the performance of a knowledge-intensive organization. This paper makes a contribution by illustrating how the measurement of the impacts of NewWoW can be done and by producing empirical evidence of the benefits of NewWoW. The conceptual background of the study is anchored in the literature on knowledge work productivity and performance as well as on NewWoW. The empirical section reports a longitudinal case study of a change process during which the case company, Rapal, went through a NewWoW project. The impacts of the change are evaluated based on the results of both objective and subjective performance measures. The project was successful and resulted in significant cost savings as well as improvements in environmental performance (CO2 emissions).

**General information**
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Information Management and Logistics, Managing digital industrial transformation (mDIT)
Authors: Ruostela, J., Lönnqvist, A., Palvain, M., Vuolle, M., Patjas, M., Raij, A.
Number of pages: 9
Pages: 382-390
Publication date: 2015
Organisational knowledge flows and structural change the case of dispersed education organisations

The paper studies the implications of structural change for organisational knowledge flows. A qualitative case study was carried out in two vocational education and training organisations in Finland in order to recognise how the system-level structural change has been perceived by the education managers. The paper aims to bridge a research gap in knowledge management in situations of changing organisation structures. The results reveal that the externally driven structural change has led to concurrent and somewhat conflicting organisation structures leading to distortion of knowledge flows. Administrative Bureaucracies, team adhocracies and professional autonomies favour different structures and knowledge flows. The results also show that the integration of smaller organisations into large administrative entities further complicates the flow of knowledge and amplifies management challenges relating to concurrent structures. The paper calls for better integration of knowledge management into the strategic management of knowledge-intensive education organisations. The findings provide practical support for the management of previously independent education institutes to confront the structural change towards regional and geographically dispersed actors. More generally, the discussion contributes to the discussion on managing growing knowledge-intensive organisations and knowledge work.
Performance management practices in construction business - a service recovery perspective
This paper studies how service recovery perspective can be utilized in order to improve performance management practices in construction industry in Finland. The purpose is to redesign service recovery encounters to better handle negative customer experiences when service failure or other problem has occurred. From performance management point of view, the key challenge is to manage negative customer experiences in order to avoid negative impacts on the performance of the company. The analysis focuses on how negative customer encounters can be used as a source of learning and thus, improving customer and employee satisfaction and the whole image of the industry.

Literature on service failure and recovery discusses various components of unsuccessful customer experience, their cognitive elements and ways of reacting to service failures. However, this discussion is separated from the business performance management literature. Theoretically the paper combines methods from service management and performance management and contributes with its holistic approach to the role of service quality in construction business.

Empirical data was gathered first by interviewing 16 employees and customer engaging to customer service in 4 construction companies. The purpose was to identify the key pitfalls and practices of service recovery encounters in three main phases of the customer journey: 1) buying and planning a new home, 2) construction period, and 3) living in a new home). After interviews, two workshops in two companies were organized to reflect findings and to improve and create new service recovery encounter practices.

As a result, three performance management practices were identified: 1) guideline for customer recovery encounters, 2) developing systematic service recovery process and related quality metrics, and 3) developing the service oriented attitude and recovery of employees.

General information
State: Published
Ministry of Education publication type: B3 Non-refereed article in conference proceedings
Organisations: Department of Information Management and Logistics, Research group: Novi
Authors: Vuolle, M., Sillanpää, V.
Number of pages: 17
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Publisher: The European Institute for Advanced Studies in Management, EIASM

Publication series
Quality measures for improving technology trees
The quality of technology trees in digital games can be improved by adjusting their structural and quantitative properties. Therefore, there is a demand for recognizing and measuring such properties. Part of the process can be automated; there are properties measurable by computers, and analyses based on the results (and visualizations of them) may help to produce significantly better technology trees, even practically without extra workload for humans. In this paper, we introduce useful technology tree properties and novel measuring features implemented into our software tool for manipulating technology trees.

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Organisations: Department of Mathematics, Research group: MAT Computer Science and Applied Logics
Authors: Heinimäki, T. J., Elomaa, T.
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Publication date: 2015
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Scopus rating (2015): 0.208 0.511
Publication Forum (2015): 1
Scopus rating (2014): 0.197 0.329
Publication Forum (2014): 1
Scopus rating (2013): 0.144 0.294
Publication Forum (2013): 1
Scopus rating (2012): 0.273 0.816
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Scopus rating (2011): 0.187 1.251
Scopus rating (2010): 0.145 0.514
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Source: Scopus
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Research output: Scientific - peer-review » Article

Relational Capital for Shared Vision in Innovation Ecosystems
This paper provides a multisopic view of the relationship profiles of businesses in three selected urban innovation ecosystems. With the Triple Helix framework, the ecosystem perspective and with shared vision for transformation initiatives, we explore relationships as structure in the metropolitan areas of Austin, TX, Minneapolis, MN, and Paris, France. Network metrics are interpreted as relationship indicators; and network visualizations reveal existing relationships and distinct patterns that structure the business ecosystems in each geographic area at the enterprise, growth and startup levels. We illustrate that relationship indicators and their visualization can be valuable resources for quantitatively and qualitatively understanding and analyzing the complexities of engagement, agility, structural cohesion, vitality, embeddedness, and linking factors in innovation ecosystems. Furthermore, these indicators highlight opportunities for the development of shared vision through interventions and network orchestration.
Robust Regulation Theory for Transfer Functions With a Coprime Factorization

Classical frequency domain results of robust regulation are extended by requiring only a right or a left coprime factorization of a plant, but not both. The famous internal model principle is generalized first, which leads to a necessary and sufficient solvability condition of the robust regulation problem and to a parametrization of all robustly regulating controllers. In addition, a procedure for constructing robustly regulating controllers is proposed.

General information
Understanding the user's context is important for mobile applications to provide personalized services. Such context is typically based on the user's own information. In this paper, we show how social network analysis and the study of the individual in a social network can provide meaningful contextual information. According to the phenomenon of homophily, similar users tend to be connected more frequently than dissimilar. We model homophily in social networks over time. Such models strengthen context inference algorithms, which helps determine future status of the user, resulting in prediction accuracy improvements of up to 118% with respect to a naïve classifier.
Towards Traditional Simulation Models of Context Using Process Mining

Context (sensor) systems are hard to model: they require constant updating and insightful approaches, especially considering the increasing data volume, variety, and generation rate of contemporary networking paradigms, like the Internet of Things. In this paper, we argue that intelligent process models can be mined to look at the actual system activity from alternative context perspectives, i.e., perspectives observable from the sensor attributes themselves. We explain how the close relationship between the models derived using Process Mining, and Event-Driven Simulation can be exploited to help not only better understand what is happening in such systems but also provide alternative models for the intelligent solutions they support, such as context inference. We demonstrate this using a real-world example and discuss the feasibility of extending these alternative process models to be viewed as simulation. We envision automated steps that would result in traditional simulation models of context using Process Mining.
Information Systems Laboratory, Managing digital industrial transformation (mDIT)
Authors: Jussila, J. J., Kärkkäinen, H., Aramo-Immonen, H., Huhtamäki, J.
Keywords: (social media, productivity)
Number of pages: 2
Pages: 26-27
Publication date: 2015

Host publication information
Title of host publication: TiedeAreena 2015
Place of publication: Pori
Publisher: Tampereen teknillinen yliopisto, Porin laitos
Editor: Väkiparta, M.

Publication series
Name: Laitosraportti - TUT Publication series
Publisher: Tampereen teknillinen yliopisto. Porin laitos. Julkaisu - Tampere University of Technology. Pori Department
ISSN (Print): 2323-8976
Links:
http://dspace.cc.tut.fi/dpub/handle/123456789/23399
Research output: Scientific - peer-review › Conference contribution

Tviittien politiikka – politiisen viestinnän sisäpiirit Twitterissä

General information
State: Published
Ministry of Education publication type: B1 Article in a scientific magazine
Organisations: Department of Mathematics, Research group: MAT Intelligent Information Systems Laboratory
Authors: Vainikka, E., Huhtamäki, J.
Number of pages: 19
Pages: 165-183
Publication date: 2015
Peer-reviewed: No

Publication information
Journal: Media ja Viestintä
Volume: 38
Issue number: 3
ISSN (Print): 1798-3827
Ratings:
Publication Forum (2017): 1
Publication Forum (2016): 1
Publication Forum (2015): 1
Publication Forum (2014): 1
Publication Forum (2013): 1
Publication Forum (2012): 1
Original language: Finnish
Links:
Source: RIS
Source-ID: urn:5DC4656774F98722AB4C9376484098B9
Research output: Scientific › Article
Guard-based Partial Order Reduction

This paper aims at making partial-order reduction independent of the modeling language. To this end, we present a guard-based method which is a general-purpose implementation of the stubborn set method. We approach the implementation through so-called necessary enabling sets and do-not-accord sets, and give an algorithm suitable for an abstract model checking interface. We also introduce necessary disabling sets and heuristics to produce smaller stubborn sets and thus better reduction at low costs. We explore the effect of these methods using an implementation in the model checker LTSmin. We experiment with partial-order reduction on a number of Promela models, on benchmarks from the BEEM database in the DVE language, and with several with LTL properties. The efficiency of the heuristic algorithm is established by a comparison to the subset-minimal Deletion algorithm and the simple closure algorithm. We also compare our results to the Spin model checker. While the reductions take longer, they are consistently better than Spin 's ample set and often surpass the upper bound for the process-based ample sets, established empirically earlier on BEEM models.
Analysis of a city-region from the knowledge perspective: Tampere, Finland

Purpose - The paper aims to evaluate the knowledge-based urban development (KBUD) dynamics of a rapidly emerging knowledge city-region, Tampere region, Finland. Design/methodology/approach - The paper empirically investigates Tampere region's development achievements and progress from the knowledge perspective. Findings - The research, through qualitative and quantitative analyses, reveals the regional development strengths, weaknesses, opportunities and threats of Tampere region. Originality/value - The paper provides useful suggestions based on the lessons learned from the Tampere case investigation that could shed light on the KBUD journey of city-regions.

General information
State: Published
Organization: Department of Information Management and Logistics, Research group: Novi, Queensland University of Technology QUT, School of Management
Authors: Yigitcanlar, T., Lönnqvist, A., Salonius, H.
Keywords: (City-region, Finland, Knowledge-based urban development, Regional development, Tampere)
Number of pages: 22
Pages: 445-466
Publication date: 5 Aug 2014
Peer-reviewed: Yes
ASJC Scopus subject areas: Computer Science Applications, Library and Information Sciences

Publication information
Journal: VINE
Volume: 44
Issue number: 3
ISSN (Print): 0305-5728
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.316 0.947
Publication Forum (2016): 1
Scopus rating (2015): 0.356 0.711
Publication Forum (2015): 1
Scopus rating (2014): 0.243 0.547
Publication Forum (2014): 1
Scopus rating (2013): 0.4 0.863
Publication Forum (2013): 1
Scopus rating (2012): 0.287 0.601
Scopus rating (2011): 0.247 0.481
Scopus rating (2010): 0.384 0.772
Scopus rating (2009): 0.297 0.478
Scopus rating (2008): 0.294 0.713
Scopus rating (2007): 0.247 0.774
Scopus rating (2006): 0.115 0.272
Scopus rating (2005): 0.105 0.399
Scopus rating (2004): 0.163 0.417
Scopus rating (2003): 0.104 0.032
Scopus rating (2002): 0.109 0.042
Scopus rating (2001): 0.129 0.006
Scopus rating (2000): 0.106 0.012
Scopus rating (1999): 0.13 0.032
Original language: English
DOIs:
10.1108/VINE-09-2013-0056
Links:
http://www.scopus.com/inward/record.url?scp=84908236523&partnerID=8YFLogxK (Link to publication in Scopus)

Bibliographical note
EXT="Lönnqvist, Antti"
Source: Scopus
Source-ID: 84908236523
Automated driving and the key megatrends of future

Road transport is facing several changes that derive from the operational environment. Technological progress supporting advances in automated driving is one of these. Alongside e.g. globalisation, urbanisation, aging, climate change and digitalisation are challenging the transport needs and solutions of today. This paper discusses how automated driving is related to the factors of change. Based on the analysis, the progress towards more automated driving is supporting and is supported by the changes deriving from the key megatrends even though also some conflicting issues are recognised.
In this article we introduce learning analytics visualizations based on content analysis principles that are implemented in TUT Circle, a social media-enhanced learning environment developed by the Intelligent Information Systems Laboratory (IISLab) at Tampere University of Technology in Finland. TUT Circle contains all the basic functionalities of a modern social media service, supporting communication, collaboration, networking, and information sharing [1]. Data about students’ actions recorded in the log data of TUT Circle is analyzed and visualized in order to support monitoring and tracking students’ activity and participation. TUT Circle provides several different kinds of interactive visualizations for teachers and students. According to an earlier study the most relevant and motivating visualizations for students in TUT Circle were based on content analysis. They were more useful in learning and studying according to students than, for example, visualizations of student activity or network visualizations illustrating reading and commenting on each other’s contents [2].
Information systems and management in media industries a first problem evaluation from a business perspective

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics
Authors: Scheib, C., Lugmayr, A.
Number of pages: 5
Pages: 1-5
Publication date: 2014

Host publication information
Title of host publication: 8th International Technology, Education and Development Conference, INTED 2014, 10.-12.3.2014, Valencia, Spain
Publisher: International Association of Technology, Education and Development IATED
ISBN (Print): 978-84-616-8412-0

Publication series
Name: International Technology, Education and Development Conference
ISSN (Print): 2340-1079
Links:
http://library.iated.org/publications/INTED2014

Bibliographical note
Contribution: organisation=tlo,FACT1=1<br/>Portfolio EDEND: 2014-07-14<br/>Publisher name: International Association of Technology, Education and Development IATED
Source: researchoutputwizard
Source-ID: 818
Research output: Scientific - peer-review › Conference contribution

Insights for orchestrating innovation ecosystems: the case of EIT ICT Labs and data-driven network visualisations
This paper explores opportunities for supporting the orchestration of innovation ecosystems, hence contributing to a fundamental capability in the networked world. We present analysis, evaluation and interpretation toward the objective of decision support and insights for transforming innovation ecosystems with a case study of EIT ICT Labs, a major initiative intended to turn Europe into a global leader in ICT innovation. Towards this, we use a datadriven, relationship-based and network centric approach to operationalize the “Innovation Ecosystems Transformation Framework”. Our results indicate that with coordinated and continuously improved use of visual and quantitative social network analysis, special characteristics, significant actors and connections in the innovation ecosystem can be revealed to develop new insights. We conclude that the IETF transformation framework can be used to develop shared vision and to support the orchestration of innovation ecosystem transformations.

General information
State: Published
Knowledge perspective to public management - managing public service provision with knowledge

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics
Authors: Laihonen, H., Mäntylä, S.
Number of pages: 21
Pages: 2333-2353
Publication date: 2014

Host publication information
Title of host publication: Proceedings of the 9th International Forum on Knowledge Asset Dynamics, IFKAD 2014, 11-13 June 2014, Matera, Italy
Place of publication: Matera, Italy
Publisher: Institute of Knowledge Asset Management
ISBN (Print): 978-88-96687-04-8

Publication series
Name: International Forum on Knowledge Asset Dynamics
ISSN (Print): 2280-787X
Links:
http://www.knowledgeasset.org/IFKAD/Proceedings/

Bibliographical note
Proceedingsin tarvitaan käyttäjätunnus ja salana
Contribution: organisation=tlo,FACT1=1
Portfolio EDEND: 2014-07-14
Publisher name: Institute of Knowledge Asset Management
Source: researchoutputwizard
Source-ID: 873
Research output: Scientific - peer-review → Conference contribution

Knowledge Transfer Challenges in ERP Development Networks

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics
Authors: Alanne, A., Kähkönen, T.
Number of pages: 16
Pages: 336-351
Publication date: 2014

Host publication information
Title of host publication: 27th Bled eConference, 1.-5.6.2014, Bled, Slovenia
Publisher: University of Maribor

Publication series
Kävelyn ja pyöräilyn seuranta: Ohjeita mittariston kokoamiseen

Increased bicycle and pedestrian traffic is one of the objectives of the national transport policy. One of the sub-objectives is to develop bicycle and pedestrian traffic monitoring. This report includes a model for creating an indicator toolbox for bicycle and pedestrian traffic monitoring to be implemented by municipalities. The report has been compiled on the basis of examples in Finland and abroad, specialist reports and two workshops arranged during the project. A total of 41 specialists from municipalities, the Finnish Transport Agency, the ELY Centres, organisations representing urban regions, and consulting firms participated in the workshops.

This report includes the most important available methods and indicators, based on which the municipality can create its own set of indicators for bicycle and pedestrian traffic monitoring. The indicators have been categorized into: input, output, land use, travel chains, mobility behaviour, traffic volumes, traffic and social safety, accessibility, quality of the mobility environment, outlook and impact. The choice of recommended comparative indicators has been based on the workshops and specialist advice. The municipalities should find it useful to compare the data from these indicators.

Measuring and monitoring do not provide any absolute values, but they are tools for coherent planning and development. The strategies and the objectives to promote bicycle and pedestrian traffic should be treated as part of the transport strategy of the municipality, which in its turn is part of a greater whole. The implementation of the monitoring practice depends on the policy, the prevailing practice and plans of the municipality.

Monitoring data increases the understanding of the specific characteristics of bicycle and pedestrian traffic, which also makes it easier to promote non-motorized traffic as well as justify and plan the development measures to be taken. Without monitoring data it is impossible to set the objectives to promote bicycle and pedestrian traffic. When the starting level is unknown, it is impossible to follow up how the objectives have been achieved. Monitoring data can also be used to compare different municipalities. The comparison between municipalities is necessary in order to draw conclusions on the development of the own municipality. Comparative data is also useful for examining if the own objectives are set at an appropriate level. Comparisons make it easier to identify and share experiences of successful measures and to boost development. The greatest obstacle to monitoring bicycle and pedestrian traffic is insufficient time and fiscal resources. However, monitoring data is a helpful tool when making decisions on how to allocate resources in a sensible way.

A comprehensive set of indicators combines several measuring perspectives resulting in a monitoring model. When creating a set of indicators, one should not only look into the traditional mobility indicators, such as the division between modes of transport, but also use well tried indicators. Already existing data on bicycle and pedestrian traffic monitoring should be utilized before new research is initiated. At its minimum, monitoring can simply mean pulling together already existing data. The limitations and characteristics of different methods of data collection should be identified, for example regarding
The use of monitoring data varies according to the demands and objectives of the users. A comprehensive picture of bicycle and pedestrian traffic and the use of urban spaces can be gained by utilizing monitoring in an extensive and versatile way and by set

**General information**

State: Published
Ministry of Education publication type: D4 Published development or research report or study
Organisations: Department of Information Management and Logistics, Research group: Transport Research Centre Verne
Authors: Rantala, T., Luukkonen, T.
Keywords: (promoting walking and cycling, monitoring, measuring, travel behaviour, monitoring methods, sojourning)
Number of pages: 37
Publication date: 2014

**Publication information**
Place of publication: Helsinki
Publisher: Liikennevirasto
Original language: Finnish

**Publication series**
Name: Liikenneviraston tutkimuksia ja selvityksiä 15/2014
Publisher: Liikennevirasto
ISSN (Print): 1798-6656
ISSN (Electronic): 1798-6664

**Links:**
Research output: Professional › Commissioned report

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**Methods for Analyzing the Impacts of Workplace Changes on Knowledge Work**

**General information**

State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics
Authors: Vuolle, M., Palvalin, M., Lönnqvist, A.
Number of pages: 9
Pages: 418-426
Publication date: 2014

**Host publication information**
Title of host publication: 11th International Conference on Intellectual Capital, Knowledge Management and Organisational Learning, ICICKM 2014, November 6-7, 2014, Sydney, Australia
Place of publication: Reading, UK
Publisher: Academic Conferences and Publishing International Limited
Editors: Rooney, J., Murthy, V.
ISBN (Print): 978-1-910309-71-1

**Publication series**
Name: International Conference on Intellectual Capital, Knowledge Management and Organisational Learning
ISSN (Print): 2048-9802
ISSN (Electronic): 2048-9811

**Bibliographical note**
Contribution: organisation=tlo,FACT1=1<br/>Portfolio EDEND: 2014-11-17<br/>Publisher name: Academic Conferences and Publishing International Limited
Source: researchoutputwizard
Source-ID: 1769
Research output: Scientific › peer-review › Conference contribution

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**Negative Emotions and Knowledge Work Performance**

**General information**
Predicting tree structure from tree height using terrestrial laser scanning and quantitative structure models

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Mathematics
Authors: Krooks, A., Kaasalainen, S., Kankare, V., Joensuu, M., Raumanen, P., Kaasalainen, M.
Number of pages: 11
Pages: 1-11
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Silva Fennica
Volume: 48
Issue number: 2
Article number: 1125
ISSN (Print): 0037-5330
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.65 1.013
Publication Forum (2016): 1
Scopus rating (2015): 0.63 0.998
Web of Science (2015): 1.155 1.589 9.0 0.14 0.00207 0.531
Publication Forum (2015): 1
Scopus rating (2014): 0.605 0.985
Web of Science (2014): 1.177 1.728 8.3 0.057 0.00213 0.486
Publication Forum (2014): 2
Scopus rating (2013): 0.914 1.175
Publication Forum (2013): 2
Scopus rating (2012): 0.881 1.121
Publication Forum (2012): 2
Scopus rating (2011): 0.797 1.076
Scopus rating (2010): 0.728 0.933
Scopus rating (2009): 0.747 1.184
Scopus rating (2008): 0.718 0.668
Social Media Utilization in B2B Networks Organizational Learning - Review and Research Agenda Proposal

General information
State: Published
Ministry of Education publication type: A2 Review article in a scientific journal
Organisations: Department of Information Management and Logistics, Pori Department, Managing digital industrial transformation (mDIT)
Authors: Pettersson, E., Aramo-Immonen, H., Jussila, J.
Number of pages: 16
Pages: 218-233
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Journal of Mobile Multimedia
Volume: 10
Issue number: 3&4
ISSN (Print): 1550-4646
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.157 0.502
Publication Forum (2016): 1
Scopus rating (2015): 0.197 0.427
Publication Forum (2015): 1
Scopus rating (2014): 0.127 0.401
Publication Forum (2014): 1
Scopus rating (2013): 0.116 0.612
Publication Forum (2013): 1
Scopus rating (2012): 0.115 0.305
Publication Forum (2012): 1
Original language: English
Electronic versions:
Social media utilization in B2B networks organizational learning - review and research agenda proposal
Links:
http://urn.fi/URN:NBN:fi:ttty-201606294319
http://www.rintonpress.com/journals/jmm/

Bibliographical note
Contribution: organisation=pla,FACT1=0.67<br/>
Contribution: organisation=tlo,FACT2=0.33<br/>
Portfolio EDEND: 2014-05-31<br/>
Publisher name: Rinton Press
Teachers' learning analytics tools in a social media enhanced learning environment

In this paper, we introduce the results of a study concerning the usefulness of learning analytics tools implemented in the TUT Circle, a social media enhanced learning environment, from the teachers' point of view. According to the results of the study, learning analytics tools with interactive visualizations can help teachers utilize data about students' actions recorded in log files of learning environments for didactical purposes. The tool can help teachers to make decisions regarding potential pedagogical strategies, instructional guidance, actions, and interventions that may be used to support student participation and activity. The ability to access real time information about students' actions, compare students' activities during the course, and identify students who might be at risk of failing or dropping out are of significant benefit to the teachers. However, in order to support teachers in obtaining more practical value from the learning analytics tools the controls for specifying the data and manipulating views need to be developed further.

Teacheral learning analytics tools in a social media enhanced learning environment

In this paper, we introduce the results of a study concerning the usefulness of learning analytics tools implemented in the TUT Circle, a social media enhanced learning environment, from the teachers' point of view. According to the results of the study, learning analytics tools with interactive visualizations can help teachers utilize data about students' actions recorded in log files of learning environments for didactical purposes. The tool can help teachers to make decisions regarding potential pedagogical strategies, instructional guidance, actions, and interventions that may be used to support student participation and activity. The ability to access real time information about students' actions, compare students' activities during the course, and identify students who might be at risk of failing or dropping out are of significant benefit to the teachers. However, in order to support teachers in obtaining more practical value from the learning analytics tools the controls for specifying the data and manipulating views need to be developed further.
The impacts of inter-organizational knowledge transfer on performance of a collaborative network

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics
Authors: Pekkola, S., Laihonen, H.
Number of pages: 21
Pages: 2027-2047
Publication date: 2014

Host publication information
Title of host publication: Proceedings of the 9th International Forum on Knowledge Asset Dynamics, IFKAD 2014, 11-13 June 2014, Matera, Italy
Place of publication: Matera, Italy
Publisher: Institute of Knowledge Asset Management
ISBN (Print): 978-88-96687-04-8

Bibliographical note
Proceedingsiin tarvitaan käyttäjätunnus ja salasana

Transfer of performance information as a driver of network performance

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics
Authors: Laihonen, H., Pekkola, S.
Number of pages: 12
Pages: 1-12
Publication date: 2014

Host publication information
Title of host publication: PMA Conference 2014, Performance Management Designing the high-performing organization, 25.-27.6.2014, Aarhus, Denmark
Place of publication: Cambridge, UK
Publisher: Performance Management Association PMA
ISBN (Print): 978-8-778826-52-7

Bibliographical note
Contribution: organisation=tlo,FACT1=1
Portfolio EDEND: 2014-07-14
Publisher name: Performance Management Association PMA
Source: researchoutputwizard
Value creation and evolution of a value network: A longitudinal case study on a Platform-as-a-Service provider

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Managing digital industrial transformation (mDIT)
Authors: Ojala, A., Helander, N.
Number of pages: 10
Pages: 975-984
Publication date: 2014

Host publication information
Title of host publication: 47th Hawaii International Conference on System Sciences, HICSS 2014, 6.-9.1.2014, Waikoloa, HI
Publisher: IEEE
ISBN (Print): 978-1-4799-2504-9

Publication series
Name: Annual Hawaii International Conference on System Sciences
ISSN (Print): 1530-1605
DOIs: 10.1109/HICSS.2014.128
Links: http://www.hicss.hawaii.edu

Bibliographical note
Contribution: organisation=tlo,FACT1=1<br/>Portfolio EDEND: 2014-06-30<br/>Publisher name: IEEE
Source: researchoutputwizard
Source-ID: 1180
Research output: Scientific - peer-review › Conference contribution

Visual network analysis of Twitter data for co-organizing conferences: case CMAD 2013
The aim of this research is to explore what kinds of insights information visualization of social media data can provide for co-organizing conferences. Our paper focuses on Twitter use before, during and after conference. We present a case study based on an conference of Community Manager Appreciation Day (CMAD 2013). With the process of data-driven visual network analysis, we used Twitter data to analyse the network of conference participants and the conference’s discussion topics. We were able to identify e.g. influential conference participants, most interesting presentations and discussions, similarities between interests of the conference participants. Hence, several development and information needs of conference co-organization were derived from the information visualizations, which have implications for improving the planning and co-organizing of conferences, as well as for Twitter use in conference communication.

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Department of Mathematics, Managing digital industrial transformation (mDIT)
Authors: Jussila, J., Huhtamäki, J., Henttonen, K., Kärkkäinen, H., Still, K.
Number of pages: 10
Pages: 1474-1483
Publication date: 2014

Host publication information
Title of host publication: 47th Hawaii International Conference on System Sciences, HICSS 2014, 6.-9.1.2014, Waikoloa, HI
Publisher: Computer Society Press

Publication series
Name: Annual Hawaii International Conference on System Sciences
ISSN (Print): 1530-1605
Electronic versions: jussila_visual_network_analysis_of_twitter_data.pdf
Developing learning analytics for TUT Circle

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Mathematics
Authors: Tervakari, A., Marttila, J., Kailanto, M., Huhtamäki, J., Koro, J., Silius, K.
Number of pages: 10
Pages: 101-110
Publication date: 2013

Host publication information
Publisher: Springer Berlin Heidelberg
Editors: Ley, T., Ruohonen, M., Laanpere, M., Tatnall, A.
ISBN (Print): 978-3-642-37284-1
ISBN (Electronic): 978-3-642-37285-8

Publication series
Name: IFIP Advances in Information and Communication Technology
Publisher: Springer Berlin Heidelberg
Volume: 395
ISSN (Print): 1868-4238
DOIs: 10.1007/978-3-642-37285-8_11

Bibliographical note
Contribution: organisation=tlo,FACT1=0.5
Portfolio EDEND: 2014-03-15
Publisher name: Computer Society Press
Source: researchoutputwizard
Source-ID: 619
Research output: Scientific - peer-review › Conference contribution

E-learning environments as niche strategy to match the ‘DNA’ of particular university

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics
Authors: Lugmayr, A.
Number of pages: 8
Pages: 5-12
Publication date: 2013

Host publication information
Title of host publication: The 4th International workshop on Interactive Environments and Emerging Technologies for e-learning, IEETeL 2013, 4.6.2013, Utrecht, the Netherlands
Publisher: CEUR-WS.org

Publication series
Name: CEUR Workshop Proceedings
Volume: 991
Engineering intelligence - Product-service concepts and requirements in industry

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Production Engineering, Department of Intelligent Hydraulics and Automation, Department of Mathematics
Authors: Lanz, M., Nykänen, O., Aaltonen, J., Ranta, P. A., Koskinen, K. T., Andersson, P. H.
Number of pages: 4
Pages: 138-141
Publication date: 2013

Host publication information
Title of host publication: 2013 IEEE International Symposium on Assembly and Manufacturing (ISAM), July 30th – Aug 2nd 2013, Xi’an, China
Place of publication: Piscataway
Publisher: Institute of Electrical and Electronics Engineers IEEE
ISBN (Print): 978-1-4799-1656-6

Publication series
Name: International Symposium on Assembly and Manufacturing
DOI: 10.1109/ISAM.2013.6643510

Enterprise Architecture Quality Attributes: A Case Study

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Managing digital industrial transformation (mDIT)
Authors: Niemi, E., Pekkola, S.
Number of pages: 10
Pages: 3878-3887
Publication date: 2013

Host publication information
Title of host publication: 46th Hawaii International Conference on System Sciences, HICSS 2013, 7.-10.1.2013, Wailea, HI, USA
Place of publication: Piscataway, NJ
Publisher: IEEE
ISBN (Print): 978-1-4673-5933-7
ISBN (Electronic): 978-0-7695-4892-0

Publication series
ERP Research at ECIS and ICIS: a fashion wave calming down?

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Managing digital industrial transformation (mDIT)
Authors: Pekkola, S., Niemi, E., Rossi, M., Ruskamo, M., Salmimaa, T.
Number of pages: 12
Pages: 1-12
Publication date: 2013

Host publication information
Title of host publication: Proceedings of the 21st European Conference on Information Systems, ECIS 2013, 5.-8.6.2013, Utrecht, the Netherlands
Place of publication: Utrecht, the Netherlands
Publisher: Utrecht University

Publication series
Name: European Conference on Information Systems
Links:
http://www.ecis2013.nl

Establishing an Organization’s Master Data Management Function: A Stepwise Approach

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Managing digital industrial transformation (mDIT)
Authors: Vilminko-Heikkinen, R., Pekkola, S.
Number of pages: 10
Pages: 4719-4728
Publication date: 2013

Host publication information
Title of host publication: 46th Hawaii International Conference on System Sciences, HICSS 2013, 7.-10.1.2013, Wailea, HI, USA
Place of publication: Piscataway, NJ
Publisher: IEEE
ISBN (Print): 978-1-4673-5933-7
ISBN (Electronic): 978-0-7695-4892-0

Publication series
Name: Annual Hawaii International Conference on System Sciences
ISSN (Print): 1530-1605
DOIs:
10.1109/HICSS.2013.205
Framework for understanding ERP development ecosystems: business and technology perspectives

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics
Authors: Alanne, A., Pekkola, S.
Number of pages: 15
Publication date: 2013

Host publication information
Place of publication: Oslo, Norway
Publisher: University of Oslo

Publication series
Name: Information Systems Research Seminar in Scandinavia
Links:

Bibliographical note
Contribution: organisation=tlo,FACT1=1
Portfolio EDEND: 2013-10-29
Publisher name: University of Oslo
Source: researchoutputwizard
Source-ID: 1902
Research output: Scientific - peer-review › Conference contribution

Heikoin lenkki ratkaisee

General information
State: Published
Ministry of Education publication type: E1 Popularised article, newspaper article
Organisations: Department of Information Management and Logistics
Authors: Ilvonen, I., Virtanen, P.
Number of pages: 1
Pages: 18-18
Publication date: 2013
Peer-reviewed: Unknown

Publication information
Journal: Aamulehti
ISSN (Print): 0355-6913
Original language: Finnish
Links:
http://www.aamulehti.fi

Bibliographical note
Contribution: organisation=tlo,FACT1=1
Portfolio EDEND: 2013-11-29
Publisher name: University of Oslo
Source: researchoutputwizard
Source-ID: 2370
Research output: General public › Article

Information and communication technology impacts on knowledge work performance

General information
Information Security Assessment of SMEs as Coursework - Learning Information Security Management by Doing

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Information Management and Logistics, Managing digital industrial transformation (mDIT)
Authors: Ilvonen, I.
Number of pages: 57
Pages: 53-59
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: Journal of Information Systems Education
Volume: 24
Issue number: 1
ISSN (Print): 1055-3096
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.173 0.733
Publication Forum (2016): 1
Scopus rating (2015): 0.139 0.767
Publication Forum (2015): 1
Scopus rating (2014): 0.129 0.299
Publication Forum (2014): 1
Scopus rating (2013): 0.145 0.084
Publication Forum (2013): 1
Publication Forum (2012): 1
Original language: English
Links:
http://ijise.org/Volume24/24-1/PDF/Vol24-1pg53.pdf

Bibliographical note
Contribution: organisation=tlo,FACT1=1<br/>Portfolio EDEND: 2013-10-29<br/>Publisher name: Journal of Information Systems Education
Information visualization of Twitter data for co-organizing conferences

The aim of this research is to explore what kinds of insights information visualization of social media data can provide for co-organizing conferences. Our paper focuses on Twitter in ‘during-conference’ use. We present a case study based on CMAD2013 conference and on the tweet traffic during the conference day. We applied the process of data-driven visual network analysis for providing insights on Twitter use during CMAD2013 conference day. By analyzing the network of conference participants and the conference's discussion topics, we were able to identify e.g. influential conference delegates, most interesting presentations and discussions, similarities between interests of the conference participants, and several development and information needs of conference co-organization derived from the information visualizations, which have implications for the planning and co-organizing of conferences, as well as for Twitter use in communicating during conferences.

Introduction to the Special Issue: Contemporary Social Media Topics in Business and Public Organisations

General information
State: Published
Ministry of Education publication type: C2 Edited books
Organisations: Department of Information Management and Logistics
Authors: Kärkkäinen, H., Lugmayr, A., Franssila, H., Sotamaa, O.
Publication date: 2013

Publication series
Name: International Journal of Social and Humanistic Computing
Publisher: Inderscience Publishers
Volume: 2
Preparing for Cyber Threats with Information Security Policies

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Information Management and Logistics
Authors: Ilvonen, I., Hellsten, P.
Number of pages: 10
Pages: 22-31
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: International Journal of Cyber Warfare and Terrorism
Volume: 3
Issue number: 4
ISSN (Print): 1947-3435

Ratings:
Publication Forum (2017): 1
Publication Forum (2016): 1
Publication Forum (2015): 1
Original language: English
DOIs:
10.4018/ijcwt.2013100103

Students' participation in a social media enhanced learning environment

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Mathematics
Authors: Tervakari, A., Silius, K., Kailanto, M.
Number of pages: 9
Pages: 871-879
Publication date: 2013

Host publication information
Publisher: Institute of Electrical and Electronics Engineers IEEE
ISBN (Print): 978-1-4673-6111-8

Publication series
Name: IEEE Global Engineering Education Conference
ISSN (Print): 2165-9559
DOIs:
10.1109/EduCon.2013.6530209
Students’ Participation in a Social Media Enhanced Learning Environment

**General information**
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Mathematics
Authors: Tervakari, A., Silius, K., Kailanto, M.
Number of pages: 8
Pages: 20-28
Publication date: 2013
Peer-reviewed: Yes

**Publication Information**
Journal: International Journal of Emerging Technologies in Learning
Volume: 8
Issue number: 2
ISSN (Print): 1868-8799
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.218 0.516
Publication Forum (2016): 1
Scopus rating (2015): 0.208 0.418
Publication Forum (2015): 1
Scopus rating (2014): 0.128 0.337
Publication Forum (2014): 1
Scopus rating (2013): 0.205 0.361
Publication Forum (2013): 1
Scopus rating (2012): 0.188 0.321
Publication Forum (2012): 1
Scopus rating (2011): 0.235 0.407
Scopus rating (2010): 0.134 0.37
Scopus rating (2009): 0.14 0.094
Original language: English
DOI:
10.3991/ijet.v8iS2.2741
Links:
http://online-journals.org/i-jet/article/view/2741

Teollisuudelle etua sosiaalisesta mediasta

**General information**
State: Published
Ministry of Education publication type: D1 Article in a trade journal
Organisations: Department of Information Management and Logistics
Authors: Kärkkäinen, H.
Number of pages: 1
Pages: 42-42
Tietojohtaminen


General information
State: Published
Ministry of Education publication type: D5 Text book, professional manual or guide or a dictionary
Organisations: Department of Information Management and Logistics
Number of pages: 84
Publication date: 2013

Publication information
Place of publication: Tampere
Publisher: Tampereen teknillinen yliopisto, Tietojohtamisen tutkimuskeskus Novi
Original language: Finnish
Electronic versions: tietojohtaminen.pdf
Links:

Bibliographical note
Contribution: organisation=tlo,FACT1=1<br/>Portfolio EDEND: 2013-09-29
Source: researchoutputwizard
Source-ID: 2704
Research output: Professional › Book

Virtuaalinen konelaboratorio ja semanttinen mallinnus konejärjestelmän suunnittelun tukena, Loppuraportti, Semogen II -hanke

General information
State: Published
Ministry of Education publication type: D4 Published development or research report or study
Visualizations of user data in a social media enhanced web-based environment in higher education

**General information**
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Mathematics
Authors: Silius, K., Tervakari, A., Kailanto, M.
Number of pages: 7
Pages: 893-899
Publication date: 2013
Peer-reviewed: Yes

**Host publication information**
Publisher: Institute of Electrical and Electronics Engineers IEEE
ISBN (Print): 978-1-4673-6109-5
ISBN (Electronic): 978-1-4673-6111-8

**Publication series**
Name: IEEE Global Engineering Education Conference
ISSN (Print): 2165-9559
DOIs:
10.1109/EduCon.2013.6530212

**Bibliographical note**
Contribution: organisation=mat,FACT1=1<br/>
Portfolio EDEND: 2013-07-29<br/>
Publisher name: Institute of Electrical and Electronics Engineers IEEE
Source: researchoutputwizard
Source-ID: 3418
Research output: Scientific - peer-review › Conference contribution

Visualizations of User Data In a Social Media Enhanced Web-based Environment in Higher Education

**General information**
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Mathematics
Authors: Silius, K., Tervakari, A., Kailanto, M.
Number of pages: 7
Pages: 13-19
Publication date: 2013
Peer-reviewed: Yes

**Publication information**
Journal: International Journal of Emerging Technologies in Learning
Why SPI Initiative Failed: Contextual Factors and Changing Software Development Environment

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Managing digital industrial transformation (mDIT)
Authors: Virtanen, P., Pekkola, S., Päivärinta, T.
Number of pages: 10
Pages: 4606-4615
Publication date: 2013

Host publication information
Title of host publication: 46th Hawaii International Conference on System Sciences, HICSS 2013, 7.-10.1.2013, Wailea, HI, USA
Place of publication: Piscataway, NJ
Publisher: IEEE
ISBN (Print): 978-1-4673-5933-7
ISBN (Electronic): 978-0-7695-4892-0

Publication series
Name: Annual Hawaii International Conference on System Sciences
ISSN (Print): 1530-1605
DOIs:
10.1109/HICSS.2013.609

Bibliographical note
Contribution: organisation=tlo,FACT1=1<br/>Portfolio EDEND: 2013-12-29<br/>Publisher name: IEEE
Source: researchoutputwizard
Source-ID: 3713
Research output: Scientific - peer-review › Conference contribution