

The International Series on Information Systems and Management in Creative eMedia is advancing the knowledge of the use of information systems and management in the wider field of creative eMedia industries. The series covers a wide range of media, such as television, publishing, digital games, radio, ubiquitous/ambient media, advertising, social media, motion pictures, online video, eHealth, eLearning, and other eMedia industries.



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Information Systems and Management in Creative eMedia

Emilija Stojmenova and Artur Lugmayr

Proceedings of the 1st Workshop on Defining a European Research Agenda on Information Systems and Management in eMedia Industries



Printed by Tampere Univ. of Technology (TUT)
for Ambient Media Association (AMEA)
published by lugYmedia Inc.
Ihanakatu 7-9/A1
FIN-33100 Tampere
FINLAND
available through: www.ambientmediaassociation.org

ISBN 978-952-7023-00-6 (Online)
ISBN 978-952-7023-01-3 (Print)

ISSN 2341-5584 (Print)
ISSN 2341-5576 (Online)
ISSN 2341-6165 (CD-ROM)

Nr. 2013/1

Emilija Stojmenova and Artur Lugmayr (eds.)

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Number 2013/1

Bled, Slovenia, 9th-13th June 2013

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published by lugYmedia Inc.

Tampere, Finland 2013

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Preface

The Workshop on Defining a European Research Agenda on Management Information Systems in eMedia Industries (MIS-AGENDA@eMEDIA), organized this year for the first time, announced the arrival of a new international workshop series on information systems and management in creative eMedia. The goal of the workshop series is to attract delegates and presenters from many fields including media, entertainment, art, education, business, and culture to discuss and shape eMedia. As the MIS-AGENDA@eMEDIA workshop series is a think-tank for creative thinkers, it's a special workshop format which aims at team-work and working together on envisioning the European research agenda on information management and systems in eMedia industries from a people, information, and technology perspective, and form a network of partners for further activities.

This year's conference was organized in a conjunction with the 26th Bled eConference which took part in Bled, Slovenia. The call for position papers led to 7 submissions contributions, where 6 papers were accepted and published after a thorough blind review process.

The workshop organizers present you a fascinating crossover of latest cutting edge views on the topics of information systems and management in eMedia industries, and hope you will be enjoying the reading. We also would like to thank all the contributors, as only with their enthusiasm the workshop can become a success. At least we would like to thank the lovely organizing team of the 26th Bled eConference 2013, with the help in the organizational aspects of the workshop.

Emilija Stojmenova
Artur Lugmayr

Tampere, Finland, 2013

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Presentations

MIS-AGENDA@eMEDIA Workshop Outline

Artur Lugmayr

Research on the Content Industries seen from the IS Perspective: A View from Munich

Thomas Hess, Oliver Oechslein

WEB on TV: designing the user experience

Jože Guna, Emilija Stojmenova, Daniela Hauswirth, Roland Winkler,
Manfred Ninaus and Matevž Pogačnik

Reshaping knowledge tools using social media solutions

Andrej Duh, Dean Korošak

Persona-Based Design for Personal Health Information Management Systems

Emilija Stojmenova, Dejan Dinevski, Jože Guna and Matevž Pogačnik

Edoo - Online Match-making Portal for Educational Content Production

Alenka Kavčič, Matevž Pesek, Ciril Bohak and Matija Marolt

Issues & Approach in Defining a European Research Agenda on Information Systems and Management in Creative eMedia Industries

Artur Lugmayr

Call for Papers

26th Bled eConference

eInnovations:

Challenges and Impacts for Individuals, Organizations and Society

June 9, 2013 – June 13, 2013; Bled, Slovenia

1st Workshop on Defining a European Research Agenda on Management Information Systems in eMedia Industries- Information Management & Systems in Media, Entertainment, Art, Education, and Culture Industries (MIS-AGENDA @eMEDIA)

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1 Workshop Outline

Media and entertainment industry is the third largest industry segment for investments in information systems. And this particular industry segment is faced with tremendous challenges in terms of organizational, transformational, leadership, customer behavioral, and technological changes. One particular challenge is the transformation of the analogue media world into its digital counterpart. As of today, the successive research of business information management and systems focusing on media and entertainment industries is rather fragmented and stretches over a wide area of research islands such as social media, eCommerce, or eBusiness. To face this challenge, this workshop focuses on the definition of a European research agenda of information management and systems for media and entertainment industries and highlighting their particular needs in production, distribution, and consumption. The workshop shall gather a scientific community around the theme of business information management and systems in the larger context of media and entertainment industries. The outcome of the workshop shall be a roadmap of research challenges, and a structured approach towards information management & systems in media and entertainment industries.

2 Main Research Leads

- Information management and systems in media and entertainment industries, and
- Media research supporting research in information management and systems.

3 Goals of the Workshop

- Discussion of the European research agenda on information management and systems in eMedia industries from a people, information, and technology perspective;
- Form a network of partners for further activities (e.g. NoEs, Cost actions);
- Special journal issue compiling the results of the workshop and attracting potential new interested communities around this research field, and
- Gathering a critical mass of interested community to submit a larger scale workshop or track to an AIS conference in 2014 (e.g. ECIS 2014, ICIS 2014, AMCIS 2014, or ACIS 2014).

4 Vision of the Workshop

Defining Media Business Information Management: Managing of media as product and resource including its related strategic and managerial activities to improve the organizational performance of a media firm along with traditional information management. This process involves developing strategies, systems and activities to improve media from a managerial viewpoint and adding value to media products.

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Research on the Content Industries seen from the IS Perspective: A View from Munich

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Abstract

The content industry has been under a strong transformation within the last years. This transformation is mainly driven by new information technologies. So it should be subject to research on “Information Systems”. There are some activities in Europe but they could be more visible and better integrated. Therefore, we want to support the establishment of a European Research Agenda for the content media industry in three ways. First, we offer a simple framework to sort and to give an overview of interesting and relevant research activities. Second, we describe our own activities on the research agenda and propose research questions related to this field. Third we want to offer ideas about a joined research agenda and their potential contribution to the research field.

1 A Framework for Research

Information Systems Research (ISR) and related disciplines like Business Informatics are dealing with the development and the use of computer-based information systems (IS). In the context of this research proposal we are strongly focusing on IS dealing with the production and the use of content. Content – in a broader sense – is information subject to public discussion.

A first interesting area of research for ISR is on the systems-level. Subject of discussion is the architecture of these systems, their interaction and the methods to develop them. Typical examples in the context of the content industries are content management systems, platforms for social

networks, digital rights management systems, media players and hybrid TV systems. Also the ongoing discussion on methods for designing internet services is typical for this field of research.

A second major area of research is the overall impact of information systems on economic structures. This field of research shows high potential, in order to analyze the impact of IS on economic structures in the content industry. Typical examples are research projects on the impact of IS on content markets, on the value chain in the content industry and on business models for content providers.

Figure 1 describes these two areas of research. In both areas technical and economical issues are combined and so ISR has a competitive advantage against research coming from management studies and from computer sciences.

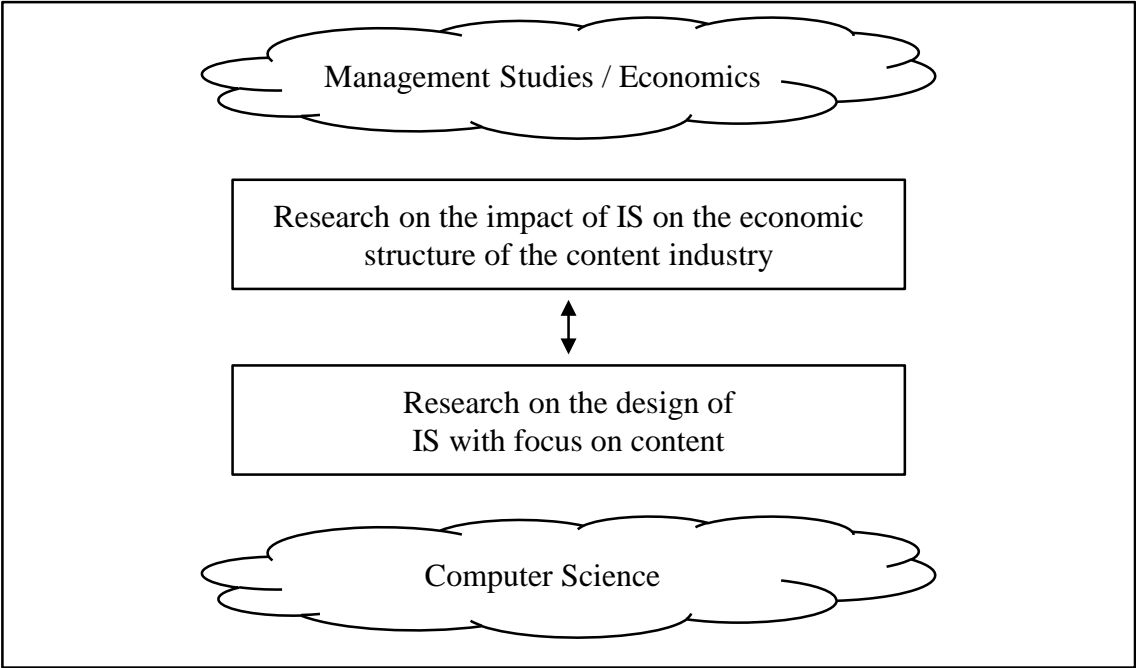


Figure 1: Two areas of research

In the beginning of research in this field, the inside perspective of the content industry and related industries (e.g. software, hardware and telecommunication) has been addressed. Nowadays, due to new cases of application, it is appropriate to extend research in other industries as well (e.g. automotive).

Next to these research fields, there are also e-commerce topics in the media industry possible. But, we would not recommend including these fields of research in a European Research Agenda in the content media industry.

2 Our Research Agenda

Our focus in the second area of research is described in chapter one. We see new IS as driver for changes in the economic structure of the content industry. We address some fundamental questions which arise in different sub-industries.

First, cross-media concepts present an important topic, since their introduction in the content industry. Media companies have to fulfill the transformation from the offline world to the digital world, and to handle all channels efficiently. Analog channels (e.g. print or analog radio) as well as digital channels (e.g. internet and closed digital networks) have to be considered. Therefore we are dealing with the interaction of these channels (Mann, Mahnke, & Hess, 2012) and with personalized offers (Rauscher, Thallmayer, & Hess, 2007).

Second, in the analog media world, content and medium is physically combined. But in the digital media world, content and medium is separated from each other, leading to unregulated duplication and spreading of content. As piracy concerns strongly increase, distribution of content has to be controlled. Digital-rights-management-systems provide a technological approach, using watermarks or encryption, to control the transportation of content to groups of paying users. Streaming services provide another technological approach, to control the ownership of the content. In particular, the optimum level of protection provides an sustainable research field (Von Walter & Hess, 2004).

Third, the monetization of content is still one of central problems in the content industry. A famous example is the publishing industry that began to move from printed newspapers to an online offer of news. But, this has created monetization problems. The freemium-model presents a promising approach to solve this problem from a supplier's point of view. It provides a free version as well as a paid-based premium version, e.g. without advertisement. Therefore, we address this field of research, in order to provide future business model solutions for the content industry (Wagner, Benlian, & Hess, 2013).

Fourth, due to the digitalization and the strong development of the internet, the existence of aggregation systems and recommender systems for the content industry are questionable. Therefore, the question arises, if content intermediaries are still necessary in the digital world. This field of research discusses the impact of new IS on the value chain of the media industry. We are addressing these questions from a technology driven perspective (Oechslein & Hess, 2013) and from the consumer side (Matt & Hess, 2012).

To sum up, we consider the continuous transformation of the understanding of the content industry. Moreover, we also address digitalization strategies, the management of a media company's transformation, as well as the concrete elaboration of a media company's individual business model.

3 New Interesting Fields of Research

Finally, we would like to address three new fields of research. These new ideas can be based on current research activities. Also, we propose to extent research on other industries.

Considering modern cars, we focus on the questions which role will be applicable of IS in the automotive industry. Nowadays, entertainment systems and comfort systems are integrated in cars. Nevertheless, we need to find out which services are necessary and applicable in cars. Furthermore, which value chain structures are necessary and appropriate? In the context of digital services, we need to address the question, if it is possible to deduct implications from the content industry. Due to the strong importance of the automotive industry in the European Union, this research focus could bring up theoretical and practical implications.

Big data is one of the current main topics in the IS, and the availability of new data sources is strongly increasing. Due to these, the automatic production and personalization of content shows strong potential. Hereby the question arises, if it is possible to transfer the production and bundling of content from a manual process (e.g. journalist) to an automated process. Also, a general implication for the content industry and the media system is an interesting point of view. Next to theoretical implications, practical information for several application examples is feasible (e.g. television industry).

This leads to the topic of the strategic relevance of IS for the content industry. We consider the transformation of the traditional value chain, which leads to the research question of the future position of media companies in the vertical range of manufacture.

Presenting a strong development of IS in the future, as well as the strong economic importance of the media industry, these research topics show potential and should be regarded in a European Research Agenda for the content media industry.

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WEB on TV: designing the user experience

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Abstract

The EU SEE TV-WEB project combines the traditional broadcast world with the dynamic internet web environment while focusing on the aspects of usability and user experience in order to provide the best possible experience for the elderly people, economically weak people and people living in rural areas who do not usually use personal computers and who have no possibility of an Internet

connection at all. Main focus is on providing selected web based multimedia content directly over DVB-T/T2 networks with simulated local interactivity. Several real world pilot trial runs are foreseen including extensive usability and user experience evaluations.

Keywords: Web on TV, DTT, HBBTV, usability, Ux, TV WEB project

1 Introduction and project motivation

The plans of building a broadband internet access to European households are behind the schedule due to a lack of investment in broadband infrastructure. Some of the less advantaged areas in Europe are even without any internet access. Therefore alternative concepts of delivering internet experience and content are being developed. An example is an international project TV WEB (TV WEB, 2013) funded by the European union, whose idea is to use the free digital terrestrial television (DTT) broadcasting frequency spectrum capacities for transmitting selected Internet content (such as news, e-services etc.), thus ensuring a sort of Internet experience via TV devices. The target groups are certain less advantaged segments of the population, or those in rural areas without broadband access.

The goal of the project is to ensure a kind of “push content” experience, which should allow for interactive experience without an existing return channel. This means that users can receive information but can't input or send data. The project pilot setups will be deployed and tested in six European countries.

2 Technical requirements and architecture

The project has been technically designed as an universal solution, which should adapt to existing DTT networks and their infrastructure. A number of possibilities need to be taken into account, which depends on current network status of each and every target operator. These include the existing technical equipment, number of TV channels in the multiplex, available bandwidth, etc. The usability aspects of the deployed solutions will be evaluated for every deployment. These will most probably be implemented in a local scope with limited reach, but can later be extended and upgraded for any DVB-T/T2 network.

A simplified system consists of the editorial tool, content adaptation modules, integration of content into the transport stream and its distribution over DVB-T networks.

3 Usability aspects and user evaluation

In essence, designing the TV-WEB experience means designing a combination of a website and interactive television. Considering the multiple facets of television, it is important to know that people who are using television are normally not putting a lot of effort into achieving a certain goal, but are relaxing or enjoying themselves. This means that a TV-WEB has to be easy enough to use, that even users who are relaxing have a satisfying experience using it. Therefore the interface has to be very easy to use and should not have any complex obstacles to deal with.

Another important aspect of the TV-WEB is the broad target audience. The identified target groups are Southeast European citizens, elderly people, people living in rural areas and also other branches e.g. tourism and social services who do not usually use personal computers per se and who have no possibility of an Internet connection.

Most of these people are not used to interact with technical services so they are not aware of the known patterns of interactive systems. They might not know how a button, a link or a menu should look like. The conclusion is to design a very intuitive system. This means, for example: using known symbols and metaphors, to make it obvious what is clickable and what is not, to let the user stay in control, to provide clear feedback on actions, to make the structure of the service as visible as possible, to make pages easy to skim or to use the users' usual language. The choice of a TV display (CRT vs. HDTV) presents another technical challenge in terms of suitability to render low definition or high definition text and multimedia content.

Finally, the choice of content displayed, will also determine the success of the TV-WEB system. With this in mind, the proposed technical solution is agnostic content-wise. Because of current standard and equipment limitations only the extensive use of video content presents a challenge. But still, which content types to use and how best to design the user interface and interactions are questions to be answered.

To this end and using the best practices of user centered design approach, the users are included in critical steps of the project using standard methodology, mainly the project specific questionnaires, interviews and focus groups. Preliminary results show, that on the one hand medical, well-being and e-Government services and on the other geographically specific local information present the most value to potential target user groups.

In the final stages of the project, when the system is technically operational, we plan to deploy several real-use pilot trials in six different partner countries. Final evaluation and user feedback will be conducted using previously mentioned methodology as well as using standardized usability procedures, such as SUS or ATTRAKDIFF questionnaires, for example.

4 Conclusions

The main idea of the project, to broadcast web content over DVB-T networks, may seem somewhat unusual, but lack of internet access in many areas across Europe is a good reason to implement this idea. The initial acquisitions of user requirements have shown that there is enough interest for it among the target population. The final evaluations of the usability aspects will show, whether we designed the system appropriately and accordingly to the users' needs.

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Reshaping Knowledge Tools Using Social Media Solutions

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Abstract

Nowadays, there is more information on any given topic that anyone can consume. Individuals would like a simple way to discover the topics that interest them most. On the other hand, media companies want to engage individuals by delivering the news that are the most interesting for them. Our paper focuses on the possibility to use various social media and traditional news channels for automatic generation of interactive social media news stream. Social media are in a way a perfect disseminator of news: “Our message is simple and direct: if it doesn’t spread, it’s dead.” [1].

There are already solutions that are focusing on the ways to help individuals to discover the messages they are interested in. Our idea is not focused on individuals, but on using collective intelligence and detecting important messages from huge amount of social network data and traditional news data, and spreading these messages through interactive social media news streams into digital universe [2]. We propose a network presentation and a network model of spreadable media content as a basis of new application using the notion of persistent context and apply perpetual analytics against all prior messages, where every incoming message is evaluated against all previous messages. Messages can be also delivered to an individual user from social network depending on the details of user’s engagement with media content. The insight into users’ social media data will also allow us to measure and perpetually infer the dynamic structure of the network model. Proposed concept can be applied in media companies as a dissemination tool to individual users.

On the other hand, company as an individual user can use proposed concept as a knowledge tool. In the world of widely distributed knowledge, companies cannot afford to base their research and development only on their own knowledge and research. By using the knowledge tool a company can

collect, classify, interpret and exploit information from unstructured multimedia sources yielding structured knowledge and information about developments in its business area. This approach could be especially beneficial for research intensive SMEs searching for cooperation with large public universities or other research institutions.

Keywords: social media, perpetual analytics, cross-media semantic, interactivity.

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1 Research contributions

- How understanding Big Data can boost open innovations: by using interactive knowledge tools a company can collect, classify, interpret and exploit information from unstructured multimedia sources to obtain structured knowledge on a daily basis in a very condensed form.
- Semantic analysis of innovation proposals: using semantic analysis of innovation proposals to identify potentially great content.
- Network Model of Spreadable Social Media Content.

2 Research questions

- Algorithm that converts unstructured Big Data (news data, government data,...) into structured data?
- Collective navigation for cars: navigation for each car uses also navigation data from other cars include in the traffic. Waze solution (<http://www.waze.com/>) is already one example: best route in real time. Other possible features?
- Collective intelligence and semantic analysis: using blogs and forums data for evaluating dealers, vendors, brands, etc.
- How to automatically identify fake news, fake blogs, fake social accounts?
- Detecting unknown patterns from sensor data.

Acknowledgments

The work that led to this paper was partially financed by the project SEETechnology “Co-operation of SEE science parks for the promotion of transnational market uptake of R&D results and technologies by SMEs” co-funded by South East Europe Transnational Cooperation Programme. The work of one of us (DK) was partly financed within the framework of the operation entitled “Centre for Open Innovation and Research of the University of Maribor”. The operation is co-funded by the European Regional Development Fund and conducted within the framework of the Operational Programme for

Strengthening Regional Development Potentials for the period 2007 – 2013, development priority 1: “Competitiveness of companies and research excellence”, priority axis 1.1: “Encouraging competitive potential of enterprises and research excellence”

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Persona-Based Design for Personal Health Information Management Systems

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Abstract

The field that represents the promotion of ICT for supporting, improving or enabling the health and healthcare systems, is widely known as e-health. Various studies ([1]and [2]) have concluded that e-health is effective in terms of: significant cost reductions for the patients and the health system, increased health service efficiency, increased technical quality and usability and increased user satisfaction. Numerous guidelines exist for supporting the user-interface designs of e-health systems for all the different types of users. However, relying solely on user interface design guidelines is not enough [3]. One of the possible ways to provide for good usability and acceptance of an e-learning system is to involve the target users of the e-learning services throughout the entire design and development processes [4]. The approach of design which actively involves users in the design and development process is known as a participatory or cooperative design [5]. Participatory design is more effective when users are continuously involved throughout the development process – from

the conceptualization phases until the very end i.e. testing the new technology together with the users. However, this can be both time- and cost-consuming. In the situations where price and fast delivery are critical, researchers suggest using expert reviews [6] and [7].

Expert usability reviews are based solely on the usability expert's extensive experience, mainly from usability testing. They are based on well-known and recognized usability guidelines and not on expert's self-invented ones. Expert reviews do not involve end-users. In order to make experts think like end users, Molich suggests persona- and scenario-based expert reviews [8].

Persona- and scenario-based expert reviews help experts see the product or system from the perspective of the real users and the context of usage. Persona-based usability expert review takes into consideration the type of the end-user who is interacting with the system or the product. This type of usability expert reviews consider end-users familiarity of the terminology, information architecture, navigation system and the graphical user interface design of the system end-users interact with.

Keywords: user-centred design, expert evaluation, persona, scenario, e-health.

1 Research contributions

Potential research contributions are the following:

- Provide a cheaper and faster alternative for participatory design.
- Provide a template for creating personas needed in a persona-based expert review.
- Provide a template for creating use-case scenarios needed in a persona-based expert review.
- Provide guidelines for expert-reviewers for conducting persona-based expert reviews.

2 Research questions

Potential research questions are the following:

- How to provide a good alternative for time- and cost-consuming, though effective, participatory design?
- How to improve expert usability reviews?
- What are the most important characteristics that should be taken into account when creating personas?
- What should be included in a use-case scenario?

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26th Bled eConference

eInnovations:

Challenges and Impacts for Individuals, Organizations and Society

June 9, 2013 – June 13, 2013; Bled, Slovenia

Edoo: An Online Match-making Portal for Educational Content Production

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Abstract

Although masses of electronic learning materials are being regularly created for e-learning purposes, there is still difficult for a teacher to find a suitable material for a particular teaching situation. Instead of adapting lessons to suit the available learning content, the teachers should actively adjust the learning content itself to make it suit their needs for use in the class. Despite having good ideas, not all teachers are capable of creating an attractive learning content, or even just customising it due to the lack of programming knowledge and inadequate ICT-usage skills. Our goal is to bring together two distinct communities, teachers and programmers, to work together, share ideas, and brainstorm, with the common goal to benefit from this mashing in providing useful materials for enhancing learning experience. The portal is aimed as a meeting place for teachers with innovative ideas for new e-content and technology buffs wishing to contribute their knowledge to common good.

Keywords: e-learning, knowledge exchange, online knowledge services, gamification

1 Introduction

In the recent years, lots of educational content has been adopted for use with e-learning environments such as Moodle. To support such work, many standards have been developed for easier exchange of content and to bust reusability (Kavčič, 2009). There were also many attempts on collecting, categorising and providing educational materials on combined online portals (e.g. Slovenian Education Network SIO¹ or Learning Resource Exchange for Schools²).

High quality content is usually created by professional content providers and made available to educators (i.e. teachers and parents) to use in class or for remote education. Some ICT competent teachers prepare their own electronic teaching material to use in class. Although having innovative ideas about incorporating e-learning material in classes, a number of teachers lack proficiency in ICT skills and are unable to create new or customize the existing material in order to make it more interesting, informational and appealing to students.

2 Related Work and Discussion

An important question, which has not yet been properly addressed, is the connection of content providers and users of this content. This is often a one-way process, where the content is generated on one side, pushed to the providing services, and used on the other side. The users usually do not have an option on collaborating in the content development process, nor to provide a relevant feedback. The idea of such online aggregation services is to collect and share learning materials; however, it is lacking the interaction between end users and content producers.

We present the idea of bringing together the producers and users of the educational content in order to work together and share ideas, thus bridging the gap between these two distinct communities. Both communities can benefit from such collaboration, leading to high quality and didactically sound materials. Hence, we have founded a new portal called Edoos that will act as a meeting place for these two communities. The first step is to attain highly motivated schoolteachers and connect them with Computer Science students that are developing educational applications as part of their regular seminar work. Currently, we focus mostly on educational games, since gamification is well known to facilitate the learning experience (Kapp, 2012) and there is also higher student motivation in game development. Successful examples of using gamification in class (Nicholson, 2013) are our additional inspiration.

As far as we know, only Edmodo (Edmodo, 2013), a social learning platform for teachers, students, and parents, uses a similar approach trying to connect educators directly with application developers through their Teacher-Developer Exchange. Their goal is to create the applications that are most needed in class.

3 Contributions

¹ Slovenian Education Network SIO: <http://www.sio.si/>

² Learning Resource Exchange (LRE) for Schools: <http://fire.eun.org/>

Potential research contributions are the following:

- A novel approach to cooperative production of learning materials. Connecting the end users of the learning materials (i.e. teachers) with producers of such materials results in a better design and quality of learning materials. The produced material is used in class and instantly improved through the immediate feedback from the teachers.
- Applying gamification principles to learning materials. Creating materials with game-like scenarios makes learning more interesting and appealing to students.
- Bootstrapping the online community for cooperation between producers and users of learning materials.

4 Research Questions

Possible research questions arising from the presented work:

- Will such collaboration improve the quality of learning materials? There is a question whether such collaboration can result in learning materials of higher quality and better acceptance of materials by students.
- Will such collaboration encourage the production of additional learning materials? Although the proposed community has the ability to affect the produced materials, there is always an additional effort involved in time-consuming activities of product development, including iterating product evaluation during the production phase, demanding personal initiative.
- How to encourage the collaboration of both communities (producers and users of learning materials)? The relevant features of the portal have to be identified that would ease and stimulate further collaboration and would not distract or limit users in exchanging ideas. The integration of gamification attributes as a stimulating factor for creation of e-learning materials has to be investigated.
- How to stimulate the users of learning materials to be actively involved in the development process? The attracting factors for constant active participation of users have to be identified.
- The question of prompt testing also arises and will be addressed in our further studies. We want to bring testers into the creation process as soon as possible for prompt feedback and corrective measures to be applied early in the development process.

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June 9, 2013 – June 13, 2013; Bled, Slovenia

Issues & Approach in Defining a European Research Agenda on Information Systems and Management in Creative eMedia Industries

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Abstract

According Gartner, media industries are the third largest spender in IT infrastructure, software, and hardware after banking and manufacturing industries. Newcomers in media industries utilize latest technologies to produce, manage, and distribute their content in a way the consumer would like to enjoy digital content with their rich new content offerings. Amazon, Apple, Facebook, or Google are just the prime examples for companies attracting many new consumers with their innovative content offerings. Their IT infrastructures are centred on the management of digital content throughout their software solutions to manage digital rights, apply data mining, or their customer relationship management software. Within the scope of this position paper the challenge is to pinpoint to the importance of defining a research agenda on information systems and management in creative media industries, to create a holistic vision of eMedia industries in total – from traditional towards fully digital media industries.

Keywords: media industry, digital media, broadcasting, media firms, media organization, digital media industries, eMedia, eHealth, social media

1 Introduction

Despite a partially concentrated market as e.g. in gaming industries or social networks, newcomers seem to succeed well in adopting new technologies. Traditional media industries such as broadcasters, publishing, or advertisement agencies seem to face the challenge of transforming their industries towards the 21st century fully digital firm. The main challenge for them, is in adapting new

digital ways of working, introducing digital technologies into their daily lives, as well as adapting the organizational model to cope with the challenge of ‘digital’. The challenge for traditional media industries in contrast to their digital counterparts range from different organizational cultures, requirements towards the creative content creation process, methods in deploying information systems on organizational level, integration of departments, legacy system integration, up to fully different non-compatible architectures on operational and strategic levels.

Table 1: Application scenarios of new digital services in media industries (collected from SAP [1], IBM [2], and Google Search [3] and previously published in [4])

<ul style="list-style-type: none"> • <i>Marketing and targeted marketing for media services and consumer feedback management</i> • <i>Social media analysis and marketing</i> • <i>Customer intelligence either in real-time / non-real-time</i> • <i>Digital content End-to-End</i> • <i>Understanding audiences, advertisement statistics, audience trends, and audience preferences</i> • <i>Data warehousing</i> • <i>Digital archiving & asset management</i> • <i>Subscriber management & marketing</i> • <i>Personalized and individualized offerings to increase consumer loyalty</i> • <i>Target niche groups and create new revenue streams</i> • <i>Increase revenue from intellectual property (IP) rights and royalties</i> • <i>Financial performance management</i> • <i>Collaborative productions</i> 	<ul style="list-style-type: none"> • <i>Advertisement management, placement, and scheduling</i> • <i>Workflows for new capturing technologies, and techniques</i> • <i>Copyright, IP and royalty management</i> • <i>Cost efficient productions by keeping creativity and quality</i> • <i>Integration of ‘analogue’ and ‘digital’ media product sales</i> • <i>Customer service management & analytics</i> • <i>Optimization of cross-media offerings and distributions via new channels</i> • <i>Long tail-content management</i> • <i>Innovative and new pricing and billing models</i> • <i>Live event management</i> • <i>Operational efficiency and cost savings</i> • <i>Management reporting & analytics and decision making support</i> • <i>Integrate supply chain management with financial performance</i>
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The previous two centuries let various new forms of media emerge – media industry developed from mass media towards smart media environments utilizing technologies to personalize content (see e.g. [5]). From the traditional media company’s perspective many new challenges emerged, that have heavy impact on daily business and how to transform the businesses to be successful in the future. Coping with satisfying the content hungry consumer with terabytes of content, selling the ‘digital’

audience to advertisers, and creating a workflow that is adequate for leaving space for the content creator as well as the experience oriented consumer. Nevertheless, also new digital media services across the domain of eMedia are still exploring the possibilities and potential of latest technology in search for new business models and revenue streams. Inside media organizations, the dilemma how management can adopt new practices and lead their firms into the digital future becomes evident. On very basic level, the problems across creative eMedia industries are as follows:

- lack of understanding of traditional media firms how to cope with new technologies and create new business models and integrating these into their daily work;
- lack of understanding what eMedia means, and how new digital services can be turned into businesses and revenue streams;
- lack of understanding what creative eMedia industries actually are, which various segments exist, and the mix of traditional and emerging companies can function;

To tackle these problems, a holistic information systems and management perspective might help to gain understanding. Thus by taking the people perspective, we gain understanding in management processes, creative content creators, and understanding the 'new' digital consumer. By taking the technology perspective, we gain understanding the latest trends in technology, and how they can be applied in practical terms. And finally, by taking the information perspective, we gain understanding how to deal with data, information, and knowledge. A view from these three perspectives shall allow us to understand the core of media industry: content – and the medium.

To cope with these challenges it's important to understand that 'the medium' as well as content is the core of creative media industries that stretches across any eMedia: eHealth, eBusiness, eCommerce, and eMedia. The workflow to create content is in the core of any media business. This differs from many other industries, such as production industries. Digital end-to-end workflows, where content is digitally managed from production to consumption are in the foreground. Convergence technologies are one example for this trend, where editorial practises and technical realities don't match (see e.g. [6] and [7]). Let it be the industry segment of publishing of digital books, broadcasting, magazines or digital games. The workflow is determined by creative content creators, organizational practices, and managers. In difference to other industries, the perishable product content is in the foreground, rather than a physical asset. This alters the way of thinking about the challenges of the application of information systems to support management in many terms, especially ways of working and social organizational aspects and its business activities (see Figure 1).

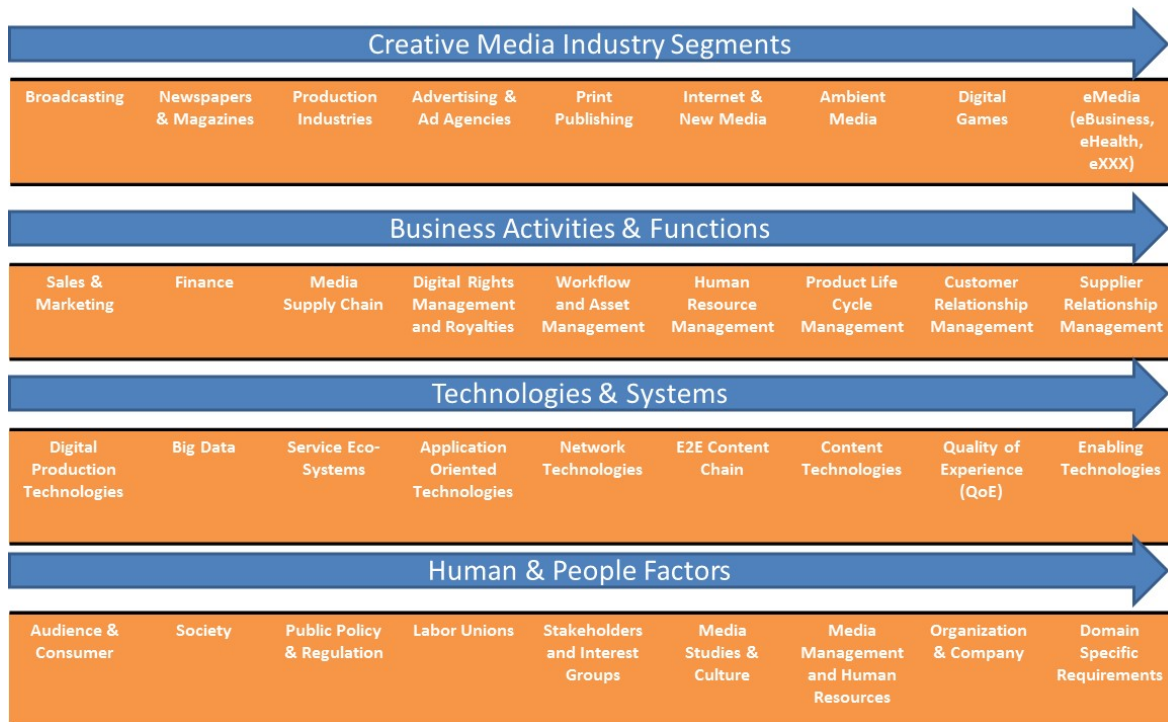


Figure 1: Creative eMedia specific influence factors

2 Methods & Approach

To tackle the problematic of defining the European Research Agenda in creative eMedia industries we selected a set of methods as described in [11] and visualized in Figure 2. The approach based on defining the core problem and extracting research hypothesis to identify the objectives and issues of the research agenda. Additional methods, such as e.g. stakeholder analysis shall support the process of defining research objectives.

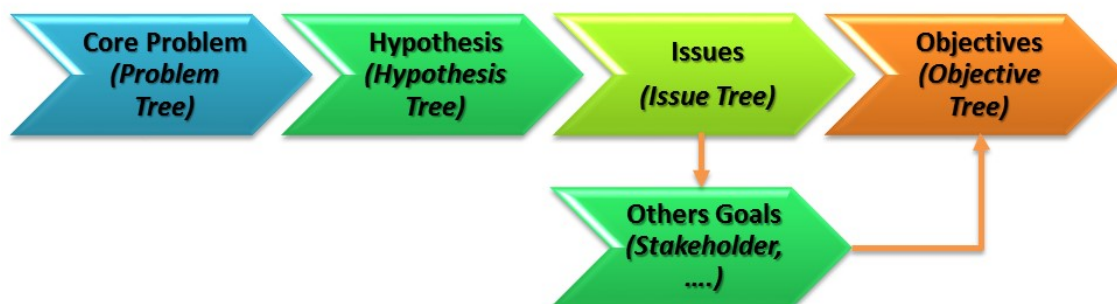


Figure 2: Methods & approach to define the European research agenda in creative eMedia

In the following, the major utilized methods are roughly described and outlined as described in [11]. Figure 3 and Figure 4 illustrate these approaches:

- **Core Problem Definition (Problem Tree):** the problem tree is a method for defining the problem and to understand the causes, and the effects of it. The idea is to define the causes, group these, and identify the effects, and their groups. The major questions are ‘what causes the problem, and what effects does the matter have?’ (as described in [11]);

- **Hypothesis (Hypothesis Tree):** the hypothesis tree is a method that starts with assumptions, and identifies reasons why the matter is relevant. The major question is 'why and what are the reasons that are leading to this hypothesis?'. Thus the hypothesis tree can be used to quickly test and reject hypothesis (as described in [11]);
- **Issues (Issues Tree):** similar to the hypothesis tree, the issue tree builds on particular problems, but starts with the actual problem, and attempts to find issues that lead to solve this particular problem. Thus an issue tree attempts to gather options that lead to solve a particular problem, which answers the question 'how can a particular problem be solved?' (as described in [11]);
- **Objectives (Objective Tree):** the objective tree attempts to define the clear goals and sub-goals as soon as the objective has been defined. The method defines 1) which sub-goals have to be defined; and 2) what the results of the achieved goal should be. Thus the main question of this method is 'which goals and sub-goals have to be defined, and which impact do the achieved goals have?';
- **Other Methods:** while organizing the workshop, a modified method of 'Design Thinking' is used to generate ideas and cluster major ideas concerning the issue (see e.g. [8,9] and [10]) (as described in [11]);

Several of these methods are utilized within the scope of an expert team. The team starts by defining the actual problems, then iterating through several methods to achieve the goal to define a research agenda for creative eMedia research.

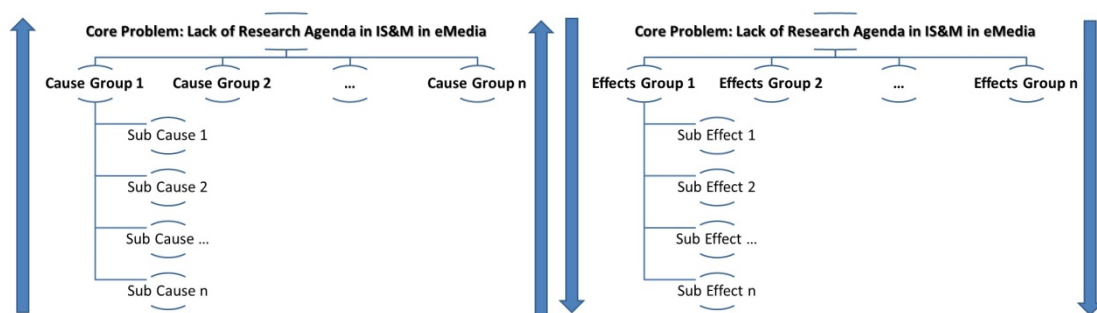


Figure 4: Core problem definition (as problem tree) - after [11]

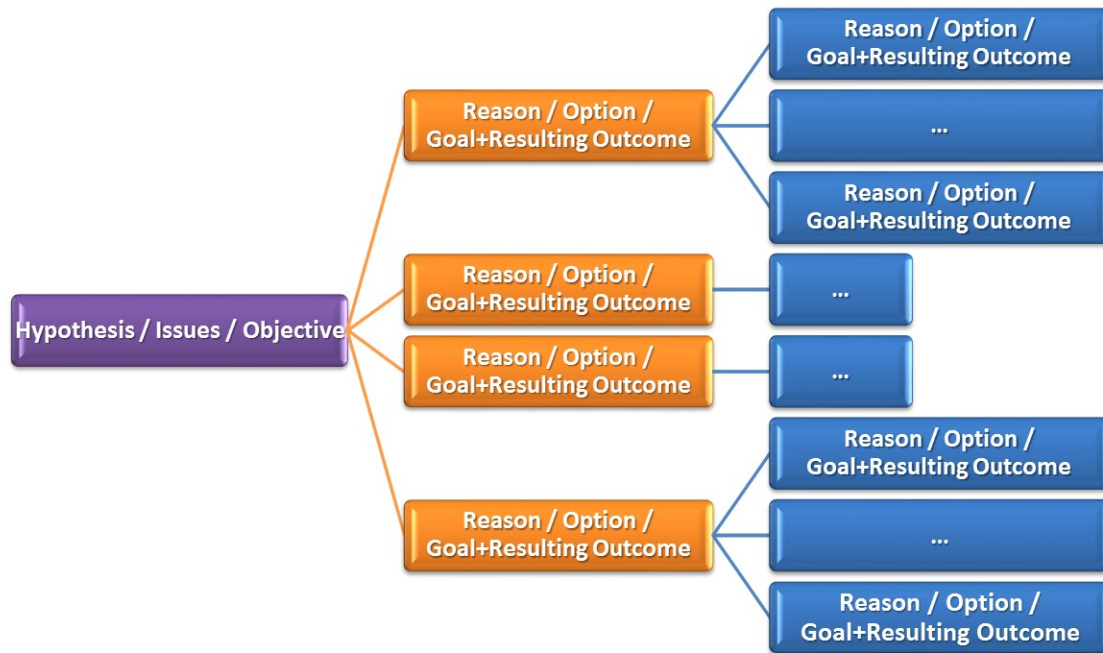


Figure 4: Hypothesis tree, issues tree, and objective tree as problem solving approach [11]

3 Practical Examples as Starting Point

Media industries are a good example of applying IS methods that are driven by the organizational (or provocatively) re-organizational process as e.g. TV broadcasting demonstrates. In TV broadcasting the artistic (traditional) departments were separated from the new (digital) departments. Both ways of working differed, and the introduction of new common ways of working challenged management. Similar problems arise in publishing, where traditional media firms keep their workflows, but require the knowledge of applying new IT infrastructures in their common ways of working to be competitive. Film industry, that needs to cope with the challenge of HD and 3D shows a similar problematic – IS solutions of traditional media firms simply does not cope with the digital challenges. On the other hand, new media firms, as gaming companies or social media firms integrated additional functions in their information systems and workflows. Within this position paper, these dilemmas shall contribute to the workshop. A few industrial solutions are presented in Table 1, and shall be discussed within the context of the workshop. A very specific focus shall target the dilemma of legacy workflows vs. the introduction of new IT infrastructures, ways of working, and its management (see e.g. [12]). This is especially visible in media industries, as they are very particular, people focused, and are based on traditional organizational models.

The following two cases shall illustrate current approaches of ERPs in digital media industries:

- ABC – Australian Public Service Broadcaster: ABC faced the dilemma of transforming from a broadcast station to a digital media firm. The vision of ABC is not to consider to be a broadcaster, but to be a digital media firm providing digital content to screens. The consumer demand driven approach changed the organization of the company by integrating art and digital departments, and developing CRM systems distributing the content on any screen of the consumer within the context of the online video distribution platform “iView”. The case illustrates how changing consumer demand have effect on the media firms organization as well as its decisions in adapting IT systems [13];

- IST ENTRHONE (End-to-End QoS through Integrated Management of Content, Networks, and Terminals): the ENTHRONE project devoted its research to integrate E2E systems on operational, knowledge, and management levels. The development of a platform for exchanging content between telecom provider(s) (e.g. Deutsche Telecom), content creator (e.g. RBB), and the consumer provided a solution for end-to-end content exchange. The system integrated into CRM systems, media distribution systems, and end-consumer terminals. The prototype can be considered as one example for systems for B2B and B2C content exchange involving Service Level Agreements (SLAs) (see [14], [15]);
- New Technologies Transforming the Landscape of Media Business: new trends, as e.g. BigData, social network analysis, newly emerging digital media services, streaming solutions, 'Apps', or digital eBooks are emerging rapidly with the advent of the internet;
- Other Cases: other cases in media and its related industry shall act as practical examples for applying media applications in other industries – or act as particular examples in media industries as base technologies for information systems (e.g. ubiquitous businesses processes [16], social media and sentiment analysis [17], social media in a general context [18], or user-generated content [19]);

The mentioned practical cases underline the importance of streamlining a research agenda in the domain of creative eMedia industries.

4 Discussion

This paper is an attempt to clarify the need and methods required to define a research agenda for creative eMedia industries. In the following the key-conclusions are enlisted:

- lack of coherent information systems and management approaches for creative eMedia industries;
- to achieve a coherent perspective on information systems and management in creative eMedia industries, a proper research agenda and method needs to be defined;
- creative eMedia industries are a particular branch of industry, requiring a unique perspective, especially dealing with the core product 'content' and its production, management, and distribution;
- the particular industrial structure, as e.g. SMEs and freelancers have to be considered, to cope with the new information system infrastructures, practices, and new technologies (e.g. 3D, or HD);
- there is a clear need for application oriented viewpoint towards IS research, especially from the media industry perspective;
- information systems as domain specific solutions in particular contexts in contrast to non-customized solutions that lead to failure to adopt as e.g. previous efforts demonstrate (e.g. MPEG-21);
- information systems as matter of bottom up technology, that requires careful consideration of existing and traditional workflows on operational or knowledge level, when introducing solutions on higher levels, such as management level or leadership level;
- coping with the dilemma of legacy workflows and practices in a particular industry segment by introducing new system architecture on management and leadership level;

- media industries as an example of a people driven industry, that has very particular ways of working and accepting new technologies;
- in media industries, information systems are a bottom up matter, that requires a solutions towards changing a traditional way of working inside organizations in comparison to other industry branches;
- methods and techniques coming from media focused industries can enrich ERPs in other industries e.g. by consumer data analysis, distribution of digital content, advanced social media, dealing with virtual goods, among many others;
- etc.

As conclusions, media industries are a very particular example for introducing organization wide information technology infrastructure. This infrastructure needs to match with common organizational structures, traditional ways of working, and with a very particular focus on content. However, the impact of research is twofolded: First, a research agenda clearly needs to address the particular needs in media industry by emphasizing the requirements of this particular industry segment; and second, a research agenda has also to address solutions coming from media industry (e.g. audience research) and the impact on other industrial segments.

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