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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

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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])

• *Marketing and targeted marketing for media services and consumer feedback management*	• *Advertisement management, placement, and scheduling*
• *Social media analysis and marketing*	• *Workflows for new capturing technologies, and techniques*
• *Customer intelligence either in real-time / non-real-time*	• *Copyright, IP and royalty management*
• *Digital content End-to-End*	• *Cost efficient productions by keeping creativity and quality*
• *Understanding audiences, advertisement statistics, audience trends, and audience preferences*	• *Integration of 'analogue' and 'digital' media product sales*
• *Data warehousing*	• *Customer service management & analytics*
• *Digital archiving & asset management*	• *Optimization of cross-media offerings and distributions via new channels*
• *Subscriber management & marketing*	• *Long tail-content management*
• *Personalized and individualized offerings to increase consumer loyalty*	• *Innovative and new pricing and billing models*
• *Target niche groups and create new revenue streams*	• *Live event management*
• *Increase revenue from intellectual property (IP) rights and royalties*	• *Operational efficiency and cost savings*
• *Financial performance management*	• *Management reporting & analytics and decision making support*
• *Collaborative productions*	• *Integrate supply chain management with financial performance*

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, eBuisness, 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).
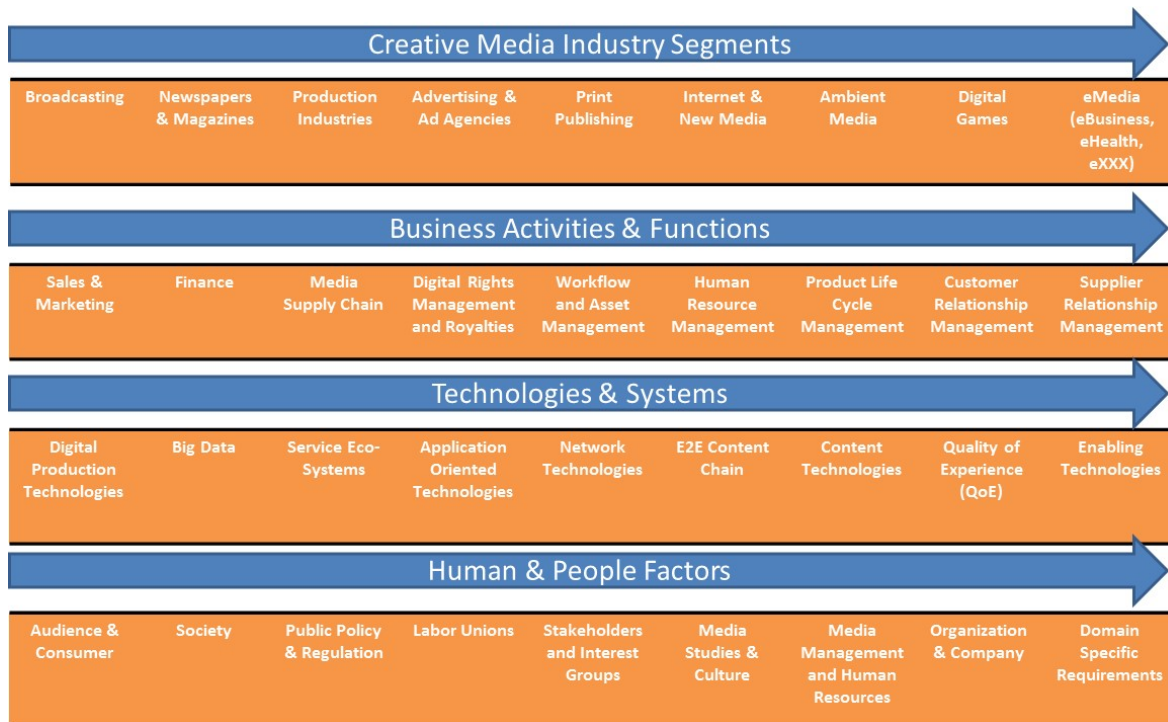
Figure 1: Creative eMedia specific influence factors

2 Methods & Approach

To tack 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.
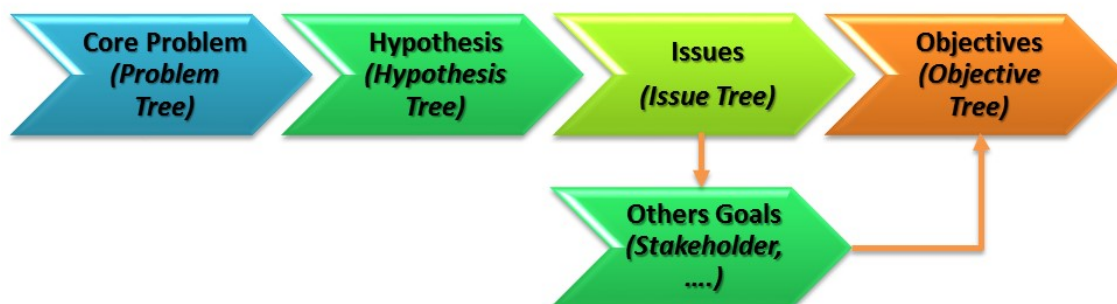

Figure 2: Methods & approach to define the European research agenda in creative eMedia

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.
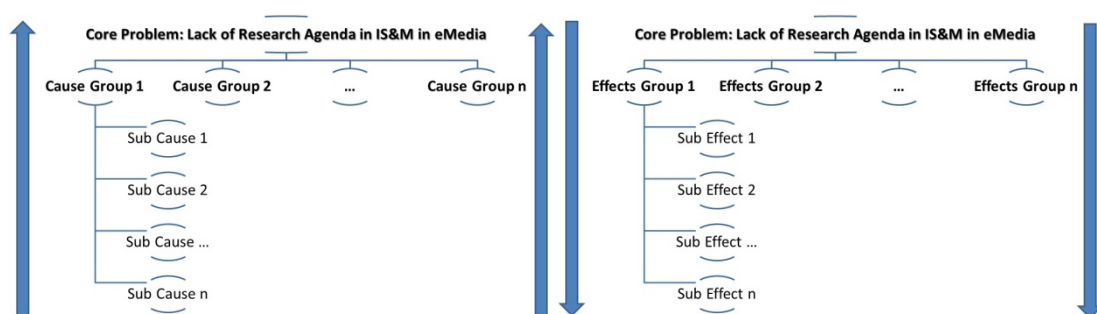

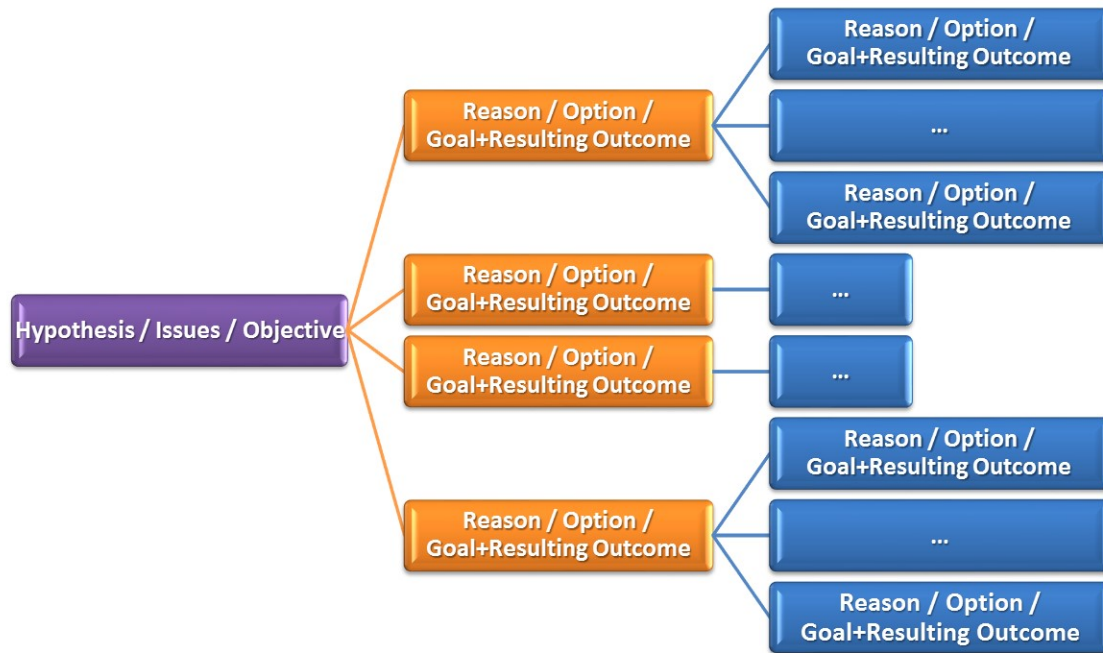**Figure 4:** Core problem definition (as problem tree) - after [11]

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 it's 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 it's 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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