The European Media Cloud Campus (EMCC) Project [1]

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Abstract: Five partner institutions have received Erasmus + financing 2015-2017 to create a European Media Cloud Campus (EMCC). This is an innovative, cloud-based learning environment for cross-media content production based on open source technology. The participants are primarily students in journalism, media and the creative industries, and the EMCC employs a constructivist didactical approach.

Keywords: Erasmus +, cloud technology, innovative learning environment, content production

1. Background

In mid-2014, a 3-year strategic partnership project 2014-2017 entitled The European Media Cloud Campus (EMCC) received Erasmus + funding through Germany and the German Academic Exchange Service (DAAD). In a highly competitive selection process, the EMCC was one of 12 projects among 57 applications to receive funding.[2] The five EMCC partners represent media departments from five tertiary education institutions: Stuttgart Media University (project coordinator), Istanbul Bilgi University, Amsterdam University of Applied Sciences, Danish School of Journalism and Media and Oslo and Akershus University College of Applied Sciences. The project involves 20 workshops covering a variety of themes that together will lead to the realization in mid-2017 of the EMCC. The overall EMCC mission statement is to develop *a cloud-based, innovative learning environment that enables students to continually develop their competences to pro-actively participate in a disruptive media landscape*. The workshops last one week and are hosted in the various partner countries according to their

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specializations. They are based on the pedagogical concept of blended learning where students play a proactive and key role. Teachers are primarily coaches and mentors. In figure 1 below, the main features of the EMCC are summarized.
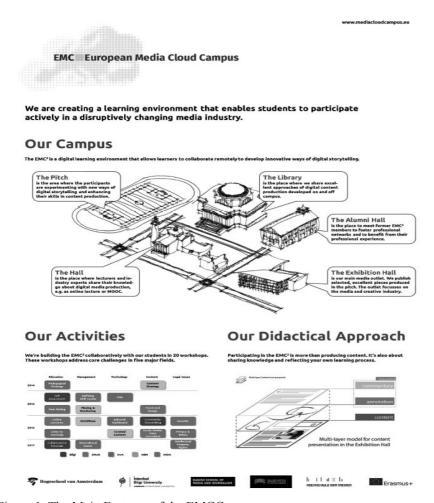

Figure 1. The Main Features of the EMCC

Our motivation in working together to develop the EMCC as a strategic partnership is closely linked to the rapid changes in the global media economy (Albarran, 2010, 2013; Doyle, 2013; Wasko et al., 2014) and especially how digitization affects the business models of almost every industry (Pringle & Starr, 2014). The increasing influence of communities is one of the most important aspects of this development. Customers and fulfilment partners become a crucial part within the value networks and are not just embedded in innovation processes. This is what we call community-driven companies. Leadership is getting more important in this type of

companies, because hierarchical influence is nearly totally replaced by successful sense-making. Hence, corporate communication should focus on framing, narratives and relevant issues to foster and maintain effective innovation networks. First and foremost, the company itself should be seen as a community and resilient organization. Therefore, network-based communication strategies are needed instead of top-down information along hierarchical structures. Digital and mobile media could be helpful to implement network-based communication strategies. There are a lot of open source information and communications technology (ICT) tools available to collaborate remotely and to share knowledge and ideas. The challenge for companies is to combine these tools into an efficient communication environment that meets the needs of the organization and its stakeholders. And they need media and communication professionals, who use these tools appropriately.

It is important to stress that the EMCC is a "voyage of discovery" where not all answers are known today. This article therefore gives an overview of the project and then reflects critically on a few selected topics to be explored in the various workshops: a) collaborative digital storytelling, b) intellectual property rights, c) ethics and d) web security. As the project progresses and more data and empirical findings are available, more research will follow, primarily scientific articles in academic journals.

1.1. Didactical Theory

Our approach draws on the work of Mark Pegrum (2009) and his 5-Lenses Model of Digitization. The basic assumptions in our didactical model can be summarized as:

- Perspectives and opinions are fundamental to understanding a task or problem as completely as possible. Only then can the best solution be selected.
- Learning is a network-forming process in which information sources are connected in a nodal manner.
- Knowledge is stored in complex networks.
- Knowledge might be collected and stored in machine operated environments, so learning should be enabled and supported by a technological framework.
- Recognizing connections and patterns to develop novel ideas and concepts is the core skill for individuals today.
- Accurate knowledge of current trends and practice is the goal of connectivist learning activities.
- Students learn by making decisions. Selection of skills that are practiced and weighing the meaning and importance of information and data is an ever ongoing process.

This approach proved very useful in a forerunner project to our current EMCC project (Boers, Ercan, Rinsdorf & Vaagan, 2012). Seen as a whole, the EMCC is a complex ecology of topics. These topics range from current practices in cross-media journalism to matters that are didactical and technological in nature. A key element is the connectivist learning of proactive EMCC participants.

2. Towards a Learning Environment for Community-driven Communication

Digitalization affects the business models of almost every industry. The increasing influence of communities is one of the most important aspects of this development. Customers and fulfilment partners become a crucial part within the value networks and are not just embedded in innovation processes. This is what we call community-driven companies. Leadership is getting more important in this type of companies, because hierarchical influence is nearly totally replaced by successful sense-making. Hence, corporate communication should focus on framing, narratives and relevant issues to foster and maintain effective innovation networks. First and foremost the company itself should be seen as a community and resilient organization. Therefore, network-based communication strategies are needed instead of top-down information along hierarchical structures.

Digital and mobile media could be helpful to implement network-based communication strategies. There are many open source ICT tools available to collaborate remotely and to share their knowledge and ideas. The challenge for companies is, to combine these tools to an efficient communication environment that meets the needs of the organization and its stakeholders as well. And they need media and communication professionals, who are using these tools appropriately. The EMCC project will provide a learning environment suited to foster skills and competences among participants that will allow them to meet the challenges of today's disruptive media environment. In Figure 1 below, we have summarized some main features of the EMCC: a campus map, activities/ workshops and the didactical approach.

The pedagogical strategy ("blended learning") behind the EMCC stresses autonomous learning strategies of the students involved and empowers them to co-create crucial parts of the campus. In line with the didactical framework of connectivism, the web as a whole is seen as a platform where communities are formed and students are generators and aggregators of content. As noted, Pegrum's (2009) 5-Lenses Model of Digitization seems to provide a fitting semantic structure to apply this model to the education of media and communication professionals.

Our content strategy addresses a web platform on innovation in the creative industries as case study to test our tools and the communication within the community of teachers, students and other stakeholders working on our cloud campus. Metaphorically speaking, our campus contains different virtual buildings with particular purposes, described as follows.

The pitch is the area where the participants are creating innovative digital media products, experimenting with new ways of digital storytelling and enhancing their skills in digital content production. In the library, excellent approaches of digital content production developed on and off campus are stored as templates for further use. The library is curated by the EMCC network members.

Lecturers and industry experts share their knowledge about digital media production in the hall. They are providing online lectures, Massive open online courses (MOOCs) and selecting excellent online tutorials dealing with innovative content production. The alumni hall is the place to meet former EMCC members who made their way in the media industry, to foster professional networks and to benefit from their professional experience.

The exhibition hall is the main media outlet of the EMCC. On this part of our website we publish selected, excellent pieces produced by the participants in the pitch. The outlet focusses

on the media and creative industry. According to the didactical approach of the campus, content is generally presented in three layers. The first layer contains the content itself. The second layer presents the technical background: how was it made? The third layer explains and reflects the technique: why was it made this way?

These layers reflect the different target groups of the cloud campus: The best practice content in our media outlet will attract experts and professionals, who want to inform themselves about the latest trends and possibilities of the creative industry. But it should also attract anyone who is interested in creating new media content and is inspired to develop relevant skills in this field, especially media students we would like to encourage to join the campus. One good example is the increasing demand of users for visuals, infographics, and video content. We are facing this "iconic turn" and feeling obliged to develop innovative formats of visual storytelling, as it is outlined below.

Obviously, technology is the core field of our strategic partnership. We test, select, customize and implement different cloud based and open source ICT tools to build up a collaborative, digital learning environment. The main part of our ICT environment is our content management system. Following the philosophy of collaboration, we will adapt open source solutions that were originally developed for a cloud campus project with a focus on other main topics.

The main challenge here is to offer mass customized content on the three defined content layers for specific target groups such as, participants, lecturers or media professionals. Therefore, we stress the importance of an appropriate metadata management concept for the success of the project. Due to the concept of a digitalized campus with rare physical places of cooperation and coordination we also emphasize the need for an editorial dashboard that visualizes key performance indicators for all relevant editorial workflows running on the campus, such as grading, assessing, feedback loops, or publication of media assets. According to our main strategic focus on sharing and connecting knowledge, we need efficient and feasible solutions for content curation embedded in our technological framework.

Of course, content curation isn't just a matter of technology. The tools we will use in our cloud campus have to be adapted to general changes in media usage patterns inside and outside of companies. What kind of information are people still actively seeking for? What kind of news do they receive via social media or recommendations in other communication channels? At this point the campus is linked to current news media research, such as Reuters Institute's Digital Newsreport (Reuters, 2014).

Additionally, we develop, test and reengineer specific processes to run collaborative media productions. On a basic level we have to define particular skill levels which are required to fulfill specific editorial tasks on the cloud campus. These skill sets are much broader than in the analog media world, skills and competences that are connected to one particular platform and its specific demands have to be enriched with management skills to coordinate a multi-platform production. These definitions allow us to assign participants with different skills and competence profiles to particular professional roles on campus, especially on the editorial board. To avoid any misunderstanding: We do not believe in the myth that you could find the whole skillset for a multi-platform production in one person. Instead, we are firmly convinced that building multi-skilled teams is the most important factor in successful editorial management, especially in a digitized and international context. We have to keep this in mind when we

develop standard workflows for planning, monitoring, production and quality management. It is quite obvious that hierarchical processes are not the appropriate way to provide quality in an open content production network. First and foremost, we have to answer the question how participants of the campus could be empowered and encouraged to develop sufficient and efficient workflows for it.

Last but not least, we reflect critically how technologies are influencing the professional role of communicators from an ethical, security and legal perspective. In a collaborative and open communication environment new ethical questions arise, as for example, how far and in which way should the privacy of semi-professional communicators be respected? From a security perspective we're talking about a reliable production environment, the protection of valuable business information. Collaboration and co-creation obviously address intellectual property rights issues, e.g., which license models are sufficient in network-based communication structures?

These and a lot more question are crucial for a learning environment that is based on technology but obviously still operated by professional people within organizations which are committed to the values of a free, democratic and open society. The theoretical background and the consequences for communication practice are outlined below. In our cloud campus we will embed these issues by running several workshops on intercultural communication, digital ethics, web security and intellectual property rights in a digital world. It is really important for us, to mingle the perspective of international experts in these fields with the view of students on these topics, which is often less bounded to a traditional professional understanding of media ethics and media law.

Following the idea of open innovation we integrate the students not only in the ethical debate, but in almost every step of our innovation process. For example, they develop a content strategy, present editorial workflows or hand in solutions for online peer rating. In general, every work package of our cloud campus project is embedded in regular lectures at the partner universities. In these lectures students create a first draft of a solution and present it in a workshop with students and experts from all partner schools. All their solutions feed forward into the final cloud campus, to be realized by the summer of 2017. We will share our tools, guidelines, process maps etc. with other institutions in higher education.

3. Collaborative Digital Storytelling: Challenges for Higher Education and Organizations

Successful communication in a digitized economy differs substantially from communication in an analog world. Firstly, it is crucial to establish powerful narratives about the major goals and challenges of a company to align highly specialized employees as well as freelancers and fulfillment partners in your value network. Secondly, it is worth to embed these people and their perspectives on a company in content production processes, so as to tell relevant and reliable stories.

In the following, we give an overview of key success factors of digital storytelling and reflect on their historical and cultural backgrounds. Additionally, we outline how new media practices are changing editorial processes from a static to a dynamic and collaborative model. We stress that this trend should be seen as an opportunity for authentic communication and not – as can often be observed – as loss of control. We also discuss the mutual reaction of the described trends. We focus on how digital storytelling could be improved in a collaborative

setting of a media cloud campus. The implications of this approach for editorial processes as well as for required skill sets of the involved professionals are outlined. Finally, we suggest how our findings in the field of higher education could be adopted for corporate communication.

3.1. Digital Storytelling

Digital storytelling – the combination of narrative with digital media – emerged as a practice in the 1990s but can still be considered an emerging area of activity and as an adaptation of the storytelling tradition, which has existed for more than six thousand years (Jenkins & Gravestock, 2009). Developed by Dana Atchley, Denise Aungst, Joe Lambert, Nina Mullen and Patric Milligan, the innovative idea behind digital storytelling was to develop an exportable workshop-based approach to teach "ordinary" people – with or without knowledge of computers or media production – how to produce their own personal videos (Hartley & McWilliam, 2009, p. 3). However, the uses and applications of digital storytelling have advanced and diversified with the development of new tools such as Web 2.0. With the availability of new tools and ways of storytelling, not only have the technology and the application of digital storytelling changed but also the modes of storytelling have been transformed. Consequently, some scholars tend to use another term for the new applications, "new media narrative". Jason Ohler states, "Although the term 'digital storytelling' is more recognizable; however, the term 'new media narrative' does help reinforce the point that the emphasis of digital storytelling has to be on the story itself, rather than the technology (Ohler, 2008, p. xviii, cited in Jenkins & Gravestock, 2009).

    "Digital storytelling", "crossmedia storytelling", "new media narrative" or "electronic narrative" (Punday, 2011, p. 29), or "collaborative digital storytelling" are different names for new ways of storytelling or narrative creation by using novel ways and tools of media technology. From digital activism and personal narrative development to cultural institutions and commercial applications, it is applied and performed for varied contexts. By the developing of collaborative platforms and tools it has also developed new modalities. Hartley and McWilliam (2009) characterize four trend pivots that digital storytelling (or new media narrative) fulcrums around. First, as a form, it enables the user to combine the direct, emotional charge of confessional disclosure, the authenticity of documentary, and the simple elegance of the format. Secondly, as a practice, it combines training of the individual with new narrative devices for multiplatform digital publishing across hybrid sites. Third, as a movement, it represents one of the first genuine amalgamations of expert and consumer/user-led activity. And fourth, as textual system created for the new media ecology, it challenges the traditional distinction between professional and amateur production, reworking the producer/consumer relationship (Hartley & McWilliam, 2009, pp. 4-5).

3.2. The Language of Computer-Mediated Communication

The rapid changes and developments in media technology landscape transformed the audiences/ readers/receivers into users, creators, contributors and active participants of the media sphere. Using new media tools as a facilitator, "passive" receivers of the past media environment became "active" users of the new media territory. Web 2.0 enabled ordinary people to be part of content

creation. By enabling the user to create, contribute and modify content, the users became the content of "the machine" which we call the "internet". Although there are different naming practices (such as "new media", "digital media", "collaborative media", "convergence media", "spreadable media", etc.) and frameworks and approaches for this user-centered evolving media environment, every single name indicates the fact of human-computer interaction.

The language of computer-mediated communication forms consists of two interconnected levels. Dewdney and Ride (2006) define these levels as the user/receiver level (where we can conceive of a language of the human-computer interface) and the computer processing and programming level (which consist of codes, mathematical algorithms which structure the computer processing and operating system) (Dewdney & Ride, 2006, pp. 37-38). These two levels also resemble the layers of new media designated by Lev Manovich. Manovich thinks of new media consisting of two layers as the "cultural layer" and "the computer layer". Cultural layer encompasses the encyclopedia and the short story; story and plot; composition and point of view; mimesis and catharsis, comedy and tragedy. On the other hand, computer level covers process and packet; sorting and matching; function and variable; computer language and data structure (Manovich, 2001, p. 46). Since the user experiences these two layers as one, the distinctions of these layers are not noticeable for the user. However, these two layers, as a whole, constitute what is called "the language" of new media.

The significant aspect of new media for narrative or storytelling practices here is to designate or map the peculiarities of this language by understanding its abilities and limits. Almost every year we encounter new tools and applications that mediate user preferences, user behaviors and the means of content creation for the new media environment. What is crucial for a new media narrator or digital storyteller is to understand, use, apply and alter the abilities of this language that s/he uses. In order to describe some aspects of this language, Manovich summarized some of the differences between old and new media as: "numerical representation", "modularity", "automation", "variability" and "transcoding" (Manovich, 2001, pp. 27-48). These five aspects of new media would enable us to map and understand the aspects of content creation.

However, as stated previously, rapid evolution and change in technology and its applications require some other definition to help us develop a deeper understanding of the media environment. One of the many novel aspects of this environment can be designated as collaboration. With collaboration and other fundamental aspects of new media (such as hypertextuality and interaction), texts are turned into a network of texts. In a recent study, Löwgren and Reimer state that the new media imply a fundamental blurring of the roles of producer and consumer. In collaborative media, people produce as well as consume "texts", but also they shape and modify the infrastructures carrying the "texts" (Löwgren & Reimer, 2013, pp. 87-88).

3.3. Collaborative Digital Storytelling and EMCC

In a multimedia environment, stories should be organized and created like music scores. Even if we are dealing with factual narratives, such as journalistic pieces, we should be prepared to organize and use different media elements together. Perrin claims "editors-in-chief of leading publications in media-convergent journalism say that writing will be the key competence in the

journalism of the future. By 'writing' they mean the ability to present complex relationships not only with speech and written characters but also with sounds and images in an appealing, illustrative, and appropriately objective way." (Perrin, 2012, p. 390). To create powerful and engaging stories in this new environment we need not only to comprehend the abilities of each media element but also to develop a mindset to use each element with harmony. In this sense, a reporter in a collaborative media environment needs to act as a composer. Also, editors should develop new skills, which will enable them to curate content relevant to the stories that they produce and share.

Since storytelling in Web 2.0 age necessitates a relation between three domains – social media, gaming and storytelling (Alexander, 2011, p. 40), every story produced in this media environment inevitably involves social media. Even the most minor stories can be shared, liked, commented, modified and amplified through social media. This aspect of new media storytelling is not a novel idea. For thousands of years people have shared and commented on stories heard from others. The stories shared and told within a society constituted an important role for the survival of cultures and to cultivate new communities. If we accept that one of the many definitions of culture is "exchange of meanings", then collaborative storytelling can be an ideal tool to exchange, share and disseminate the stories both on personal and corporate levels.

A recent Erasmus Impact Study showed that between the start of the Erasmus program in 1987 and the academic year 2012-13, over 3 million students had participated in the Erasmus mobility program. However, the same study revealed that a significant number of students were not able to participate in the program for reasons such as uncertainty with regard to costs, personal relationships and lack of financial resources (Erasmus Impact Study, 2014, p.76). In this sense, our EMCC and collaborative digital storytelling may generate other results. Web as a third space and virtual mobility (Sweeney, 2012, p. 9, p. 25) vehicle could provide an opportunity to non-mobile students and enable them to "exchange meanings" to foster a new way of European identity.

4. Maintaining Open Communication Structures: Legal, Ethical and Security Issues

The corporate culture of community driven companies differs a lot from traditional organizations (Albarran, 2013; Miller, 2014). Intensive hierarchical ways of coordination are replaced by more informal ways of cooperation to keep up with the increasing dynamics caused by digitization. An open communication structure enables companies to take opportunities from this contingent and uncertain environment. Nevertheless, these structures must be actively maintained to meet new challenges from legal, ethical and security considerations.

The EMCC project includes three workshops in 2016-2017 on "Security", "Privacy & Ethics" and "Intellectual Property Rights". We therefore turn to these issues and challenges below, beginning with legal aspects, then ethical and security aspects.

4.1. Licensing the Cloud

In creating a cloud campus there are several legal issues requiring our attention. Our students will be collaborating and co-creating in an online environment. However, how do we address

the issue of authorship and copyright of collaborative creativity? Which licenses can apply in network-based communication structures? And who takes care that collaboratively produced content complies with national and international rules and regulations?

Online collaboration is gaining more and more importance each day, the trend of the digitally empowered netizen is becoming established in different fields in the online world (Tapscott, 2008). Questions arise on how intellectual property can govern this collective creativity, when the classic notion of the individual author is no longer valid in an online world (Craig, 2011). As has been seen in the world of open source, the sum of all individual contributions only makes sense in the combined collaborative work (Rimmer, 2009). Often it is not even possible to determine who the author is, and the concept of an individual author as an owner is being seen as a hazard to innovation. This stands at odds with the concept that individual authors will only be innovative and creative if there is a monetary incentive, which is realized by granting an exclusive exploitation right to the creator of a work (Zemer, 2006).

Among the questions that need to be answered is whether traditional copyright licenses are suitable to govern collective creativity, as the notion of copyright requires a distinguishable author. Reproduction methods have been democratized, the netizen has become more and more digitally literate and is accustomed to appropriate media content via Web 2.0-applications. One could say that this digital reproduction and appropriation is essential for digital culture, copying and imitation being highlighted as being among the pillars of participatory culture (Shifman, 2014).

The ambition of the cloud campus is to remain 'open': the content which will be created and published must be licensed via an open content license. This requires that students and teachers who participate in this project have a correct understanding of what open content is. Works which have licensed under traditional copyright licenses cannot be part of EMCC-products unless the copyright holder agrees to an open content license instead. This requires a shift in the way the creators on the campus perceive the rights to their creations. It is very probable that more traditional copyright view of 'control' will clash with the openness of the online world.

Another legal issue which this project will have to explore is the concept of privacy in the online world. Within the European union the member states still have varied levels of privacy protection, it will be interesting to see whether the members of the European Media Cloud Campus will reflect these differences. In order for this project to be successful the campus will have to adhere to existing and future European legislation on data protection. This requires a common understanding of the concept of privacy and what the limits of the protection of personal data are. This not only requires a legal approach but also ethical discussions. Privacy is also a very personal concept, which has to be questioned, explored and reflected upon.

4.2. Ethical Issues

Ethics and the law often coincide, but not always, as civil disobedience is a reminder of. Legal considerations adhere to the law, while ethics follow the dictates of the heart and conscience. Ethics (often used synonymously with morals) is often divided into *normative ethics* (which morals are "right" and where one distinguishes between ethics of virtue, ethics of deontology

or duty, and ethics of responsibility), *meta ethics* (how moral and amoral phenomena are distinguishable, and the foundation of moral judgments) and *moral science* (stressing the underlying psychological, biological and historical foundations). Ethics has today developed into a very important field in academia (the humanities, social science and natural sciences) and also in working life and industry, e.g. as CSR (Corporate Social Responsibility). Many professional bodies, enterprises, national and international associations have today developed ethical codes of conduct, e.g. The International Federation of Journalists, The Global Alliance for Public Relations and Communications Management (Vaagan, 2015, pp. 197-223; Herrick, 2010, pp. 144-170; Albarran, 2013, pp. 45-65; Miller, 2014).

Press codes of ethics have traditionally been deontological in kind, stressing the duty of the press to report truthfully and accurately and distinguish between editorial and commercial content. Today this distinction is under pressure from content marketing. Research in journalism has shown that commercial pressure against journalists for favorable coverage occurs especially in technology journalism, travel journalism and celebrity journalism. Common codes of conduct in journalism and PR mainly address the ethical obligations of professional communicators regarding the gathering, presentation and publishing of certain aspects of a story or an issue. These aspects remain relevant in a digitalized media context, but new ethical questions arise, when different stakeholders participate in corporate communication: For instance, how far and in which way should the privacy of semi-professional communicators be respected? What is our understanding of fairness in debates in online social networks? And what exactly does transparency mean in social media campaigning? (ibid.).

In Western journalism, it has long been accepted that a free press, freedom of expression, media plurality, editorial independence and the protection of sources are vital. But that does not mean that offensive content cannot be pre-edited, post-edited or censored. Editorial content should not be mixed with commercial content (product placements or advertising). In some cases material that the editor(s) judge to be of vital, public interest is published although it has been procured in obscure or even illegal ways, as, for example, the case of Edward Snowden and material published in the US by the Guardian shows. For the EMCC project, which is devoted to journalism and the creative industries, a major challenge to participants is how to maintain ethical awareness of the distinction between editorial content and commercials.

During the workshop on "Content strategy" in Stuttgart in February 2015, students discussed ethics. It was agreed that all EMCC participants must be familiarized with the press codes of conduct and also PR codes of the 5 strategic partner countries. Based on these, it was agreed that ethics management in the EMCC project should:

1) Protect the dignity and rights of the individual
2) Use only truthful, reliable and varied sources
3) Aim for the truth
4) Distinguish commercial material from editorial content and fiction
5) Not use visual material to create a false impression or incite violence

During the next workshop on "Defining skill levels" in Oslo in June 2015, it was further agreed that for all key roles in the EMCC project (contributors, tutors, moderators, proofers and

especially editors), knowledge, skills and competence in the stated ethical press and PR codes and ethical management foci were necessary.

4.3. Security Issues

Collaborative and cloud-based media production relies on complex and often vulnerable ICT tools. Many public institutions and private enterprises are outsourcing vital ICT functions. Analysts have long predicted that most ICT spending by 2016 will be for cloud computing platforms and applications, and more than 50% of large enterprises will have cloud deployments by the end of 2017 (Gartner, 2013). But cloud-based platforms are vulnerable. From a security perspective, we need to prioritize safety and a reliable production environment, the protection of valuable business information e.g., in an innovation process, and the protection of personal data of stakeholders embedded in our corporate communication. In many countries public institutions and private sector institutions are registering an increasing amount of cyberattacks ranging from simple pranks and malware to sophisticated forms of espionage, sabotage and cyberwarfare (Vaagan, 2015, pp. 119-142; pp. 171-196). Cloud security is becoming increasingly important, and depends on service models (SaaS, PaaS, IaaS) and deployment models (private, public, hybrid and community). Typical threats embrace both threat agents (anonymous attackers, malicious server agents, trusted attackers, malicious insiders) and cloud security threats (traffic eavesdropping, malicious intermediaries, denial of service, insufficient authorization, virtualization attacks, overlapping trust boundaries). Measures designed to thwart such threats include encryption, hashing, digital signatures, public key infrastructures (PKIs), identity and access management (IAM) systems, single sign-on (SSO), cloud-based security groups, and hardened virtual server images (Erl, Zaigham & Puttini, 2014).

For the EMCC project, cloud security has two distinct aspects, viz. technological infrastructure and participant skill levels. Luckily, the EMCC technological infrastructure need not be exposed to many of the existing cloud security threats. After all, the EMCC is devoted predominantly to journalism and the creative industries, not to corporate or state secrets, and will publish media content of relevance and interest mostly to EMCC target groups. It therefore seems likely that possible threats would come first and foremost from pranks. On the other hand, participants in the EMCC project must be familiarized with security issues as an integral part of the EMCC mission statement and as part of acquiring knowledge, skills and competence. Beyond technology and infrastructure, participants should also grasp the management and finances of business-centric models and metrics relevant for cloud-based IT resources.

5. Conclusion

The EMCC project draws on didactical theory of connectivist learning which underpins learning activities in an innovative, open source-based media environment in which proactive students produce crossmedia content. The EMCC is a "voyage of discovery" whose success will only become apparent in mid-2017 when the project comes to an end. By then we will have realized another step in a strategic partnership among five tertiary education institutions that transcends national and linguistic boundaries. By then a total of maybe 100 students and 15-20

teachers will have bonded, and several scientific articles will have been completed. Not least we will have developed an infrastructure and competence allowing us and other users access to *a cloud-based, innovative learning environment that enables students to continually develop their competences to pro-actively participate in a disruptive media landscape*.

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