Dagstuhl Manifesto

Digital Social Media

24 March 2010

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Summary

This manifesto explains and stresses the importance of “digital social media”, “social software” and “social computing”. In particular, it makes the claim that we need a better understanding of how this mix of enabling technology, social behaviour and market practises is challenging our socio-economical and political systems, and puts forward an action plan for the areas of education, fundamental research and applied research, to address these challenges.

The goal of this manifesto is to raise awareness for digital social media and to stress the need for research, research funding, and education in a field so far under-represented in public research funding programmes and in education. This manifesto does not cover all aspects of digital social media, or provide a comprehensive treatment of their socio-economical impact. Such issues are beyond the scope of this manifesto.

This manifesto is an outcome of a Perspective Workshop held from the 25th to 29th of January 2010 at the research centre Schloss Dagstuhl. The workshop brought together scientists and practitioners from academia and industry, across the fields of social sciences and computer science.

Digital Social Media, Social Software and Social Computing

Digital social media give rise to users and communities to collaboratively generate and exchange content and, more generally, to interact. They also make social computation possible, that is, computations that involve both software and groups of people. They use information and communication technologies such as the Internet and Web technologies. They are operated by specific software systems called social software.

Digital social media ease and strengthen social interactions by overcoming physical limitations in communication (like distance and synchronicity) and alleviating human limitations like the number of people with whom one can maintain relationships. Digital social media thus offer opportunities for social interactions that would not be possible without them. Digital social media build, and/or rely upon, social networks that might be the primary purpose of the media.

Examples of digital social media are social networks (like facebook, StudiVZ, LinkedIn and Xing), blogs, content sharing sites (like flickr, YouTube and last.fm), product reviews (like epinions.com), social electronic games (like SecondLife), social bookmarking (or tagging) platforms (like delicious), microblogging platforms (like twitter), wikis (for collaborative authoring like it is used for the wikipedia encyclopaedia) and innovation markets (like YourEncore and InnoCentive). In the Google Wave and Buzz projects, the traditional medium 'email' is reshaped in different manners as a social medium.

Although digital social media have only appeared during the last decade, they are already used by a large part of the population: According to a study by Global Web Index,[1] digital social media had in 2009 in Germany 37,6 Million users (46% of the population), in the USA 223,1 Millions (72% of the population), and in China 358 Millions (27% of the population). The growth of social media is remarkable: According to Nielsen Wire,[2] the total time users spend with social media increased from 2008 to 2009 by 82%, the average time per person by 67%. The report "A world of connections" of The Economist of 28 January 2010[3] gives more information on the use and reach of digital social media. The recent study "The Impact of Social Computing on the EU Information Society and Economy", [4] commissioned by the European Commission, addresses the

1 http://www.globalwebindex.net/latest/
2 http://blog.nielsen.com/
3 http://www.economist.com/specialreports/displaystory.cfm?story_id=15351002
4 http://ftp.jrc.es/EURdoc/JRC54327.pdf

importance of digital social media for society. For some users, digital social media have become as common as, or have even replaced, telephone and email. Usage of social media is a controversial issue, though: Figures like the ones aforementioned are often criticized as superficial.

Users of digital social media are increasingly conscious of the potential, limitations, and also dangers of the new media. Specific, non-public, digital social media are also used more and more in enterprises and at the workplace, an evolution for which the term "Enterprise 2.0" has been coined (see McAfee, Andrew P. (2006), Enterprise 2.0: The Dawn of Emergent Collaboration, Sloan Management Review 47 (3): 21–28).

Digital social media are both, controversial and the subject of considerable optimism. They have been criticized for threatening traditional media like newspapers, for being in their majority privately controlled by US companies, for not giving sufficient control to their users over the user-generated content they collect and exploit, and for endangering privacy. Nonetheless, digital social media significantly ease and strengthen social interactions. They are seen as a means of user and community empowerment, of boosting innovation in large technological companies, of enhancing organizational communication and knowledge management in organisations, of viral spreading of ideas and of strengthening democracy.

Digital Social Media are Important

Digital social media are important for economical and social reasons that would constitute a research area of considerable promise.

Digital social media are important for economical reasons. There are no doubts that digital social media are essential vectors of tomorrow's commerce, communication and (organisational) learning. eCommerce builds upon social computing, for example with personalization services based on collective knowledge. Large companies deploy digital social media for organisational communication, knowledge management, market research, consumer localization and reach, advertising, product customization and boosting innovation. The aforementioned report of The Economist (Martin Giles, "A world of connections", The Economist, January 28th 2010) stresses that "social-networking technologies are creating considerable benefits for the businesses that embrace them".

The economical significance of digital social media is difficult to assess. On the one hand, digital social media so far are not always as economically successful as one might think. The celebrated digital social network facebook (with an estimated number of users of three hundred millions) for example has become cash flow positive for the first time ever only in September 2009. Analysts of Crédit Suisse have expected the image sharing platform YouTube to loose one million USD a day in 2009, but to generate future revenues of 240 million USD a year (Todd Spangler, YouTube May Lose $470 Million In 2009: Analysts Credit Suisse Report Estimates Video Site Will Generate $240 Million In Revenue, Multichannel News, 3rd April 2009[5]). On the other hand, digital social media have already motivated considerable investments: Microsoft offered 240 million USD for a 1,6 percent share in facebook and Google purchased the video-sharing website YouTube for 1,65 billion USD.

Digital social media are important for society. Indeed, they have a considerable impact on how people live and work together. The aforementioned study "The Impact of Social Computing on the EU Information Society and Economy" stresses the importance of digital social media for society. Speaking on the role of social media in the democratic process in continental China, media expert Martin Giles stated that digital social media have become "embedded in the making of a country" (Interview with The Economist, January 28th 2010 [6]).

Digital social media represent an emerging field of research of considerable importance. Even though digital social media already are omnipresent, they still are under-represented in scientific research, especially in Germany and Europe. As a result, there is a growing fear that Europe scientifically and technologically will fall behind the USA, especially in the area of application-oriented research and development. A further note is that this field spans over several disciplines, from computer science over media research to social sciences. For a new research field this is not only an opportunity, but also a potential hurdle.

Challenges

Digital social media challenge societies and cultures, economics, politics and, of course, technology. They also open avenues for novel perspectives.

5 http://www.multichannel.com/article/191223-YouTube_May_Lose_470_Million_In_2009_Analysts.php
6 http://audiovideo.economist.com/?fr_story=037df1cce1344f5a977e2e7ed1363a654111c3d5&rf=bm

Digital social media re-launch social communication and social expression. Therefore, they challenge to re-consider self-expression, self-perception, social identity and social participation. Awareness of both, the possibilities and dangers of digital social media, is still insufficient and needs to be strengthened. In order to avoid a digital social media divide, social media literacy must be promoted. Social media literacy challenges in particular the educational systems – from elementary schools to colleges and universities. Note that today, digital social media are on the one hand mostly absent in the (German and European) educational systems, on the other hand actively used by students of all ages.

Digital social media transform social spaces, in particular cities. Cities are beginning to be re-shaped by digital-physical pervasive social services that blur the border between the virtual and real world – a border that has been highlighted in the Web's early years. The consequences of digital-physical pervasive services on social life, at this stage of development, are difficult to predict. Suffice to say that the changes will be considerable.

Digital social media are platforms for new forms of commerce and new services. Companies like Amazon and eBay build upon the social aspects of their Web platforms with personalization or reputation services based on collective intelligence. In the field of digital social media driven commerce, early experiments are keys to success. Thus, digital social media literacy, a prerequisite to an active part taking in shaping the digital social media landscape, is not only desirable for socio-cultural reasons; it is also a vector of economical success.

Digital social media call for novel policies. The re-shaping of our society, culture and economy through the emerging digital social media implies a need for novel policies and therefore represents major political challenges. Current issues include privacy, the ownership of user-generated content and update and exploitation rights on such contents. Today, digital social media still are terra incognita to most policy makers and politicians, especially in Germany and Europe while they are a play ground for our children.

Digital social media also call for novel policies at the workplace because they are (de facto or by decision of companies' managements) increasingly used at work. Employees using digital social media at their workplaces often move in a legal grey area where it might be unclear what are their duties and rights.

Digital social media challenge technology. The authors of this manifesto recognize the following issues as today's major technological and socio-economic challenges of digital social media:

- **Usability of social media and in particular the development of appropriate user interfaces.** Appropriate user interfaces are needed also for a better awareness of the social impact of user actions on a social medium. The problem is most pressing in the mobile domain and for elderly and impaired audiences. Goal is a technology for augmented reality enriched with social content.
- **Content selection and user attention management.** Digital social media must move to new levels of social scalability. As one-to-many (producer-to-consumers) distribution models move on to many-to-many ('prosumer', using a portmanteau built from 'producer' and 'consumer') architectures, they must avoid an information overloading of their users: Confronted with exponentially growing amounts of information, limited time for media consumption, and, as some argue, a decreasing quality in content moderation, new strategies for user attention management are needed.
- **Interoperability.** This is one of the core challenges for digital social media. Indeed, digital social media, especially today's digital social networks, can be seen as 'segregated data silos'. Interoperability is pre-requisite to user control of user-generated data. Interoperability calls for novel standards, that is, both technological solutions and their wide spreading. Cloud computing, the emerging form of network-based computing without localization of data or software at specific computers, strengthens the need for interoperability of social media.
- **Special needs of social groups like elderly and impaired people.** Digital social media have been so far mostly conceived for educated, un-impaired, and professionally active computer-literate users. Taking into account the special needs of other social groups is key to avoid a digital social media divide.
- **Digital social media regulation.** Today's youth enjoy the freedom offered by digital social media. Policy makers try to attenuate the negative effects of these media. Industry and lobbyists are further participants in the digital social media revolution. Often, regulatory attempts are technologically ineffective, provoke an outcry against censorship and invasion of privacy, or are declared unconstitutional. The challenge here is to find an appropriate societal balance between regulation and freedom and

to translate it into effective technical solutions. The challenge is to translate policies into software, instead of software implying policies. So far the social software de facto specifies and controls how a digital social medium can be used.

- **Ambient intelligence and context sensitivity.** The view of digital social media being deployed in a parallel virtual world is obsolete. Today's media build more and more upon pervasive digital-physical systems able of so-called ambient intelligence and of adaption to geographical and/or social contexts. Conceiving and bringing ambient intelligence and adaption to their full potentials represent considerable technological challenges.
- **Personalization.** Personalization remains a major technological challenge, not only in the area of digital social media, but also other software services positioned for wide use like search engines and eCommerce systems. Precise user targeting through personalisation is also a mean for avoiding unwanted advertisement (spam) providing customers with only the information they requested.
- **Spreading.** How news and ideas widespread in a community and how such a wide spreading can be initiated or enhanced by algorithms is, possibly, one of the most challenging technological issues. Mastering it is of both, economical and social importance. Indeed, viral marketing can serve not only commerce, but also social objectives like emergency management.
- **Socially-Enhanced Algorithms.** One of the promises of digital social media is that of computations involving both software and humans. Under the name 'human computation', the approach has been successfully deployed for gathering data that, so far, cannot be well collected, or computed, by software. The technological challenge here is twofold: on the one hand, digital social media must be conceived that provide humans with incentives to contribute to a computation; on the other hand, an algorithmics of social computing, that is, conceptual tools for the development and analysis of socially-enhanced algorithms, needs to be developed.
- **Digital Social Media Monitoring.** A digital community does not necessarily come together physically. As a consequence, it often needs specific, yet still mostly inexistent means to gain a consciousness of itself as far as its size, its social structure, its geographical structure, its history, its stability or sustainability, and its life cycle. The challenge is to analyse and understand the mechanisms and the dynamics underlying social media. So far, this understanding is very elementary. The ultimate goals are methods to predict these mechanisms and dynamic. This is a fundamen-

tal prerequisite for other tasks like governance.

- **Digital Social Media Governance.** Governance, including self-governance, private governance and/or state governance, is a core issue for every community. So far, digital social media often are – more or less intentionally – governed by software functionalities. Productive and socially satisfying social communities call for more control and/or consciousness of good governance.
- **Digital Social Media Literacy.** Participation in digital social media environments calls for a new form of media literacy. Appropriate media literacy skills range from passive media control (how to search and use different media) to active media control (how to create and how to appropriately publish content), from critical reception (how to analyse media content, economical media actors, and social implications of media use) to the ability to secure one's privacy and to protect one's published content.

Suggested Action

The authors of this manifesto see an urgent need for action in the areas of education, in fundamental research and in applied research.

- **Actions in Education**
  - » **Digital social media should become both, subject of teaching and tools, at primary and secondary schools.** Indeed, primary and secondary school are the places of choice for acquiring social media literacy, like any other kind of literacy. Digital social media, especially digital networks, are already widely used by school students, but so far much less by their teachers, and even less for teaching. This asymmetrical situation must be overcome. With digital social media promising new advanced eLearning tools, their wide spread deployment is likely to have a profound and positive impact on the learning and teaching sector.
  - » **Courses of studies in social computing should be started at universities.** Such courses should depart from traditional computer science and from (traditional) media computing courses of studies. Indeed, they need first a significant social science component, second a strengthened engineering-orientation as digital social media moves beyond the practical experiments of traditional academic research and traditional media computing.
  - » **Doctoral schools in social computing should be started at universities** that, preferably, would bring together doctoral students from disciplines such as computer science, natural language processing, and social sciences.

Seeds for the creation of courses of studies and/or doctoral schools in social computing can be found at universities where several of the following areas are well represented:

- » In computer science: knowledge representation, semantic web, web technologies, human computation, data mining, network analysis and user interfaces.
- » In social sciences: (social, organisational, economic, or pedagogical) psychology, economics, sociology and law.

Currently, in France, Germany, Italy, the UK and Spain at least half a dozen to a dozen young researchers trained in the aforementioned areas of computer science

would qualify for professorships in social computing, not mentioning the researchers available in smaller European countries.

- **Actions in Fundamental Research.** Fundamental research in social network analysis, one of the scientific core of digital social media, is already well established in Germany and Europe. Still under-represented in Germany and Europe is fundamental research in social computation and human computation. In the UK, the initiative "Web Science Trust" (formerly "Web Science Research Initiative" or WSRI) jointly started a few years ago by the University of Southampton and the MIT to turn the World Wide Web into a "Web of linked data" and thus to extend it to social media can be seen as a European bridgehead of the US applied research in social and human computation. In March 2010, the initiative has received 30 million UK£ in government funding.[7]

- The funding of doctoral schools in social and/or human computation or, in Germany, of a "Priority Programme" ("Schwerpunktprogramm") of the German Foundation for Research ("Deutsche Forschungsgemeinschaft", DFG) would be first actions of choice.

- **Actions in Applied Research.** So far, digital social media have arisen mostly from entrepreneurial endeavours. This practice, however, is extremely under-represented in Germany and Europe. Together with the creation of engineering-oriented courses of studies in social computing recommended above, the following is essential to giving Germany and Europe a place in the social, economical and technological revolution initiated by digital social media.
    - » R&D (research and development) funding programmes targeted at practical experiments with digital social media and accessible especially to SME (small and medium sized enterprises).
    - » Funding programmes for a joint academic-industrial research targeted at conceiving novel forms of digital social media, especially for the work place and/or for education and training.

7 http://webscience.org/article/106.html

European and national funding programmes should open up to applied research in digital social media. They should be exploited for digital social media research so as to leverage the interaction of cross-disciplinary fundamental and applied research.

The authors of this manifesto are convinced that a fast deployment of actions in education, fundamental and applied research like the aforementioned is necessary for Germany and Europe to be at the cutting-edge of digital social media research. They believe that such a position is indispensable for taking part in, and thus controlling, a technological revolution that has already begun to re-shape our economy and our society.

Acknowledgements

The editors and contributors would like to thank the Research Centre Schloss Dagstuhl for hosting the January 2010 Perspective Workshop, which inspired this manifesto.