

Increasing Research Creativity Through Open Innovation Platforms.

Prof. Dr. Thomas Köhler * & Prof. Dr. Andrzej M.J. Skulimowski **

* Institute of Vocational Education + Media Center
Dresden University of Technology, Germany

** AGH University of Science and Technology + Progress & Business
Foundation Kraków, Poland

12th International Conference on
Knowledge, Information and Creativity
Support System (KICSS 2017)
Nagoya Institute of Technology, Japan
November 09th – 11th, 2017



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Media Center is a central scientific unit of TU Dresden with research + services around digital media, dealing with all facets of technology and competency development for both research and education.

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Progress and Business Foundation (Krakow, Poland)

The Progress and Business Foundation grew out of the recognition on the part of the industry and academia of the new needs and circumstances of the free market economy after the fall of the Soviet system in Poland. Founded in 1991, P&BF is a registered EU consulting organisation. Its supervising body is the Polish State Committee for Scientific Research, a ministry-equivalent governmental institution.

Advanced applied scientific research and the development of the cooperation between the science and technology sectors in Poland have been two core goals of the Foundation since it was established.



The **International Centre for Decision Sciences and Forecasting (ICDSF)** is a specialised unit of the PBF that organises and carries out research on the foundations of Artificial Intelligence and cognitive sciences, decision support systems, multicriteria decision analysis, information retrieval and data mining for forecasting and foresight and discrete-event systems.

Conference Venue



Workshop at the TU Dresden

The event takes place in the premises of Dresden University of Technology. Communities in New Media 2017 offers an excellent opportunity to visit the HighTech location as well as famous baroque buildings of Dresden.

Organization and Review

The conference is chaired by a group of scientists from the faculties of education and economics as well as the media center of the Dresden University of Technology, with the kind support of the Silicon Saxony Network. As partner universities, the HGU Bad Hersfeld, the HTW Dresden and the University of Applied Sciences Dresden participate in the design of the 20th GeNeMe 2017. The international Steering Committee guarantees the assessment of the submissions.

Fees

The following fees are mandatory for participants of the GeNeMe '17: Speakers 95, - € / regular participants 195, - € / students 25, - € (limited quota, no evening event and conference proceedings)

Thematic Focus

The currently discussed digital transformation processes (Industry 4.0, IoT) characterize GeNeMe 2017. The focus is on innovation and research, methods and tools for the digital mapping of knowledge-intensive cooperation in increasingly heterogeneous communities (augmented knowledge communities). Further impulses are coming from the fields of knowledge visualization and knowledge-based architecture. In addition to the informal and media-technological analyses, the practice of (organizational) knowledge integration, whether through knowledge management, learning or education processes, is also considered.

Submissions

We invite scientific contributions of 8-10 pages, which are subject to the usual academic review procedure. In addition, application-oriented contributions from practice are strongly encouraged. These should cover 2-4 pages and are assessed in the context of practical relevance. Information can be found on format templates and submission systems on the website.

Enreichungen in deutscher Sprache werden ebenfalls akzeptiert (siehe separater „Call for Paper“ auf Deutsch).

Dates

17.07.2017 Deadline for submission of papers
15.08.2017 Notification of authors
30.08.2017 Early Bird Deadline
15.09.2017 Deadline for corrections of accepted papers

Contact

Phone: +49 351 463-35011
e-mail: info@geneme.de
www.geneme.de



www.geneme.de

Call for Papers

20th Workshop

ANNIVERSARY CONFERENCE

Dresden, October 18–20, 2017



GeNeMe 2017

GeNeMe stands for „Communities in New Media“ and addresses the topic of Online Communities at the intersection of several disciplines such as computer science, multimedia- and media technology, economics, education and information science as well as social and communication science. The conference is a forum for interdisciplinary dialogue between science and industry and serves to share experiences and knowledge among participants from diverse disciplines, organizations and institutions. In 2017 these topics will be covered:

Economic activity and information management in online communities

- Enterprise 4.0 and digital Workplaces
- Organization of labour, participation and leadership in virtual enterprises
- Organizational and personnel development for virtual organizations
- Motivation and moderation of social communities: Requirements for Community Management
- Colleague Bot - from the information supplier to the teamplayer
- Industry-specific approaches (security, healthcare, telecommunications, logistics, ...)
- Contextualization of work: B2B-commerce, virtual market places etc.
- Knowledge management and organizational learning

Public administration: infrastructure and application of social communities

- E-Government 4.0: Framework for the digital transformation of the administration
- From the administrative process to the administrative community: competences for e-government
- Demography and diversity: challenges for sustainable cooperation in the public sector
- Social media cooperation and knowledge transfer in networks
- Community building through self-services and user-generated content

Technologies and methods for online communities and digital knowledge architecture

- collaborative Web technologies and social software applications
- Mashup-Technologies and frameworks for composite rich Internet applications
- Ubiquitous systems and mobile collaboration
- Knowledge and information visualization
- Data based collaboration
- Spatial 3D data in the context of cultural heritage
- Methods and interaction technologies for immersive collaboration
- Methods of user and requirement modeling
- Information system architectures and knowledge integration

Mixed Reality concepts for online communities

- Sociological, communication and psychological aspects of communities
- Self-organization, -configuration and structure formation
- Community pattern solutions for networks, associations, self-help groups, etc.
- Experience and case reports, use cases, empirical studies of web applications in online communities

Knowledge-based online (collaborative) work in teaching and research

- Communities in Online Open Education
- Knowledge visualization and knowledge architecture
- Informal and augmented learning in online communities
- Learning Analytics and user data management
- Altmetrics versus Big Data
- Open and Citizens Science community development
- Research communities and platforms
- Cyber research infrastructures
- Creativity in collaborative online environments
- Cooperation between educational affiliations
- Data infrastructures and competencies for information professionals

GeNeMe 2017 Info auf Deutsch

GeNeMe steht für „Gemeinschaften in Neuen Medien“ und greift das Thema Online Communities an der Schnittstelle mehrerer Fachdisziplinen wie Informatik, Multimedia- bzw. Medientechnologie, Wirtschaftswissenschaft, Bildungs- und Informationswissenschaft sowie Sozial- und Kommunikationswissenschaft auf. Als Forum für den interdisziplinären Dialog zwischen Wissenschaft und Wirtschaft dient die GeNeMe dem Erfahrungs- und Wissensaustausch zwischen Teilnehmenden verschiedenster Fachrichtungen, Organisationen und Institutionen.

Enreichungen in deutscher Sprache werden ebenfalls akzeptiert (siehe separaten „Call for Paper“ auf Deutsch). Beiträge in deutscher Sprache werden in entsprechenden Tracks präsentiert.

Publication and Indexing

All contributions accepted for the conference as a result of the peer review will be published as publication with TUDPress and Open Access publication at Qucosa. This also applies to Full Papers and Short Papers. The indexing is done via Scopus and Qucosa.

The list of all previous 19 Proceedings can be found at www.geneme.de

20th
Workshop

October 18–20, 2017
Dresden

Creativity stimulation and creativity support systems (CSS) have been rapidly gaining importance in learning and research activities. However, the overall outcome is still lagging behind the other areas of creativity studies, even though the strong influence of recent developments in the context of **digitization and Web 2.0** have been discussed in scholarly publications.

In this paper, the authors intend to link a creative research scenario recommendation and its **impacts on research and innovation processes** with the previous results regarding creativity stimulation in **online learning systems and e-science platforms**. The corresponding open innovation platform is currently being developed as part of a trans-European Horizon 2020 flagship project.

Even though scientists' awareness of the respective potential of digitization and Web 2.0 technologies is still insufficient, the first underlying assumption for this research is that **future recommendation engines** designed for open learning and innovation platforms will be **capable of measuring users' creative engagement** in the decision making process.

1. Digitization & Web 2.0: insights into changing academic practices

- Influencing factors
- Terminology around eScience
- Brief history of eScience
- Open Innovation Platforms

2. Field access

- Research projects of TUD
- Use cases of the MOVING project
- Structures and Outcomes

3. Data, Conclusions & Discussion

- Empirical findings
- Is research methodology changing?
- Consequences for enabling creativity

Influencing factors:

Online + Digital Communication

- changed the way we communicate, inform, learn or entertain
- modified the conditions and the standards for these activities
- permanent Online-presence with network technologies + mobile computing

Online + Digital Collaboration

- substantial dissolution of spatial-temporal limits of our physical world experience (cp. Weinberger, 2007).
- not always visible, but still active individual participation (cp. Kahnwald 2011).

Online + Digital Data

- in the digital space institutional and physical embeddedness is replaced by permanent availability of massive data for anyone who is interested
- computer-mediated communications lead to new structures of collaboration in sciences as well as between sciences and industry, which even converts existing organizational patterns.

WHAT IS E-SCIENCE?

Term is used in a broad understanding

- Electronic science, dealing with technologies and infrastructures like 'Grids' and e-research infrastructures
- Data-intensive science with high performance computing of 'Big Data'
- Networked science and collaborative practices rather than individual activities
- Open science approaches that even allow opening toward 'Citizen Science'

Definition

- the eScience Research Network Saxony defines eScience as the „expansion of academic activities through the integration of information and communication technologies“ which happens in all areas and disciplines of “scientific research, communication and dissemination of knowledge“.
- it is clear that the term chosen is not a perfect concept for a dynamic agenda!

cp. www.escience-sachsen.de

A brief history

- E-Science or Electronic Science describes **different methodological fields** of research and development in the context of the defining and using computer technologies in scientific research.
- While primarily in Germany and Great Britain, the term e-Science is used, in the U.S., the comparable concept of a "**Cyber Infrastructure**" or in Australia, the "e-Research" term can be found. Currently, the discussion expands under the slogan "Science 2.0" and goes in particular to digital scientific cooperative work (Weichselgartner, 2010).
- Here, the thematic range starts with infrastructures on application architectures, **grid and cloud technologies** but also extends to educational technology, so-called e-learning.
- Also e-science systems support **cooperative research** between universities and in cooperation with industry (see Ziegler & Diehl, 2009).

Roots in e-Learning and e-Research

Open Online Innovation Technology as creativity stimulating instrument has its root in Online Learning Support Systems as well as in E-Science Platforms.

Specifically, authors assume, that:

- I. O-I platforms help to **manage & modify researchers' individual learning** (i.e. behavior) and respective information sets (i.e. technology) in order to apply the potential of open innovation more effectively.
- II. O-I platforms **enhance researchers' research output** by the creativity-supporting capabilities of new recommendation engines, designed for open learning and innovation platforms.
- III. Even though **scientists' awareness** of the usefulness of Web 2.0 technologies is still insufficient.

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The “eScience Research Network Saxony”

- a joint project of all universities and colleges in the German federal state Saxony,
- funded by the European Commission together with the local Ministry of Science in the period 2011 – 2014
- appr. 25 smaller research projects in different areas of eScience,
- research reports, publication and networking conferences
- counseling for the participating universities and colleges
- sustainable implementation of new approaches and technologies in the scientific practice of the partners and beyond
- **First study: [Science 2.0-Survey 2014_PDF_A.indd.pdf](#) cf. chapter 4. “Use of social media and online-based tools”**

The European project “MOVING”

- Since 2016 profiles eScience research technology toward **collaborative science practice with** Focus on data processing + collaboration methods and development of appropriate tools
- Deals on two sectoral differentiated **eScience use cases** of research activity
- **Specific training of respective practices among scientists** by using Technology Enhanced (Online) Learning in mainly automated and video based manner
- More details: <http://moving-project.eu/>

MOVING Objective: improving social capacity for innovation

- The objective of the MOVING project is to **improve the social capacity for innovation** by expanding its competencies in digital information management.
- The goal of the MOVING project is to train and empower people from all societal sectors and disciplinary backgrounds to **apply data analytics tools and techniques** in their daily working routines.
- To that extent, an **open and interdisciplinary platform** will come to aid which is similar for different branches and use cases.

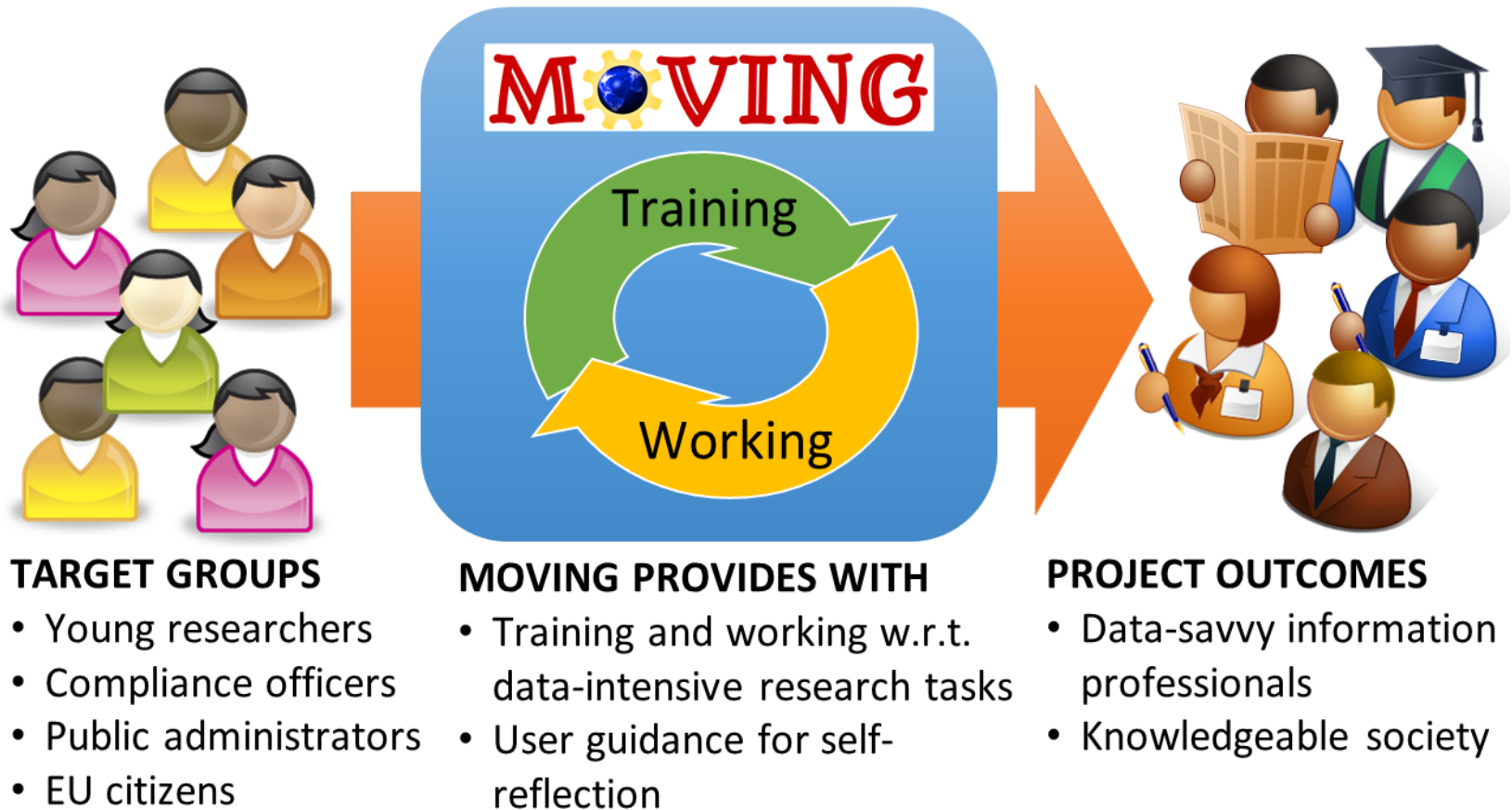


Figure: General structure of MOVING project

Use case I: legal accountants

- Based upon the background of the professional partner Ernest & Young
- The use case described here addresses public administrators, and is provided by EY and their 60.000 compliance officers.
- The objective here is the application of a human-centered design approach.
- According to the scenarios described for this use case, we applied, for the requirement analysis, a mixed-methods design conducting a series of internal interviews, conducting brainstorming sessions based on the questionnaire analysis of responses and performing a review of existing text mining tools.

Use case II: junior researchers

- Based upon TU Dresden and respective training networks with junior researchers.
- Task: Managing and mining research information
- The reception of the activities and results of other scientists in a certain research field as well as a precise knowledge of the current state of the discussion within the relevant scientific community is one of the core tasks in scientific work process in means of research quality.
- Today, the internet is the central place for scientific information and literature review.
- The available sources are varied: in addition to increasing library catalogues, online archives and databases as the classical approaches, social networking sites (e.g. <http://researchgate.net>) and content sharing platforms (e.g. <https://de.slideshare.net>) or scientific blogs (e.g. www.gwm-online.de) are available as sources.

RESEARCH AREA	EXPECTED IMPACT ON E-SCIENCE	RELEVANCE
1. CREATIVITY RESEARCH, SPECIFICALLY DECISION MAKING RELATED TO LEARNING	DSS AND RECOMMENDERS, ENDOWED WITH INCREASINGLY SOPHISTICATED AI- AND COGNITIVE-SCIENCE-BASED CAPABILITIES WILL BECOME INDISPENSABLE RESEARCH AND LEARNING SUPPORT TOOLS	HIGH
2. GLOBAL EXPERT SYSTEMS	INCREASINGLY SOPHISTICATED EXPERT SYSTEMS WILL ALIGN TO THE GROWING COMPLEXITY OF RESEARCH PROBLEMS AND TASKS RESTRICTED TO HUMAN RESEARCHERS SO FAR	HIGH
3. LEARNING SCENARIOS AND PEDAGOGIES	LEARNING SUPPORT SYSTEMS (LSS) AND CSS-BUILT SCENARIOS CAN TAKE INTO ACCOUNT A GREAT NUMBER OF FACTORS AND INCLUDE COGNITIVE MODELLING YIELDING OPTIMAL PERSONALIZED LEARNING TOOLS	HIGH
4. NEUROCOGNITIVE SYSTEMS	BCI MAY PROVIDE EFFICIENT ACCESS TO FUTURE KNOWLEDGE REPOSITORIES, INCREASING THE EFFICIENCY OF E-SCIENCE TOOLS, SPECIFICALLY THOSE RELATED TO AUGMENTED AND VIRTUAL REALITY	HIGH
5. VIDEO AND MULTIMEDIA PROCESSING	VISUAL INFORMATION OF VARIOUS KINDS WILL BE EASIER ANALYZED AND EMBEDDED IN EMPIRICAL RESEARCH	MEDIUM
6. ECONOMIC & SOCIAL ASPECTS OF OPEN INNOVATION PLATFORMS	POSITIONING THE ROLE OF SCIENCE IN FUTURE SOCIETIES, THE IMPACT ON THE ORGANISATION AND FINANCING OF RESEARCH TEAMS	MEDIUM

Method: Delphi Survey

- Conducted in the research consortium with experienced partners throughout Europe in 2017

MOVING PROJECT - DELPHI SURVEYS - USER PANEL Logged in: user | Main page | User panel | Logout

MOVING

MOVING Methods and Technologies - Your vision of the MOVING Platform by 2030

Your vision of the MOVING Platform by 2030

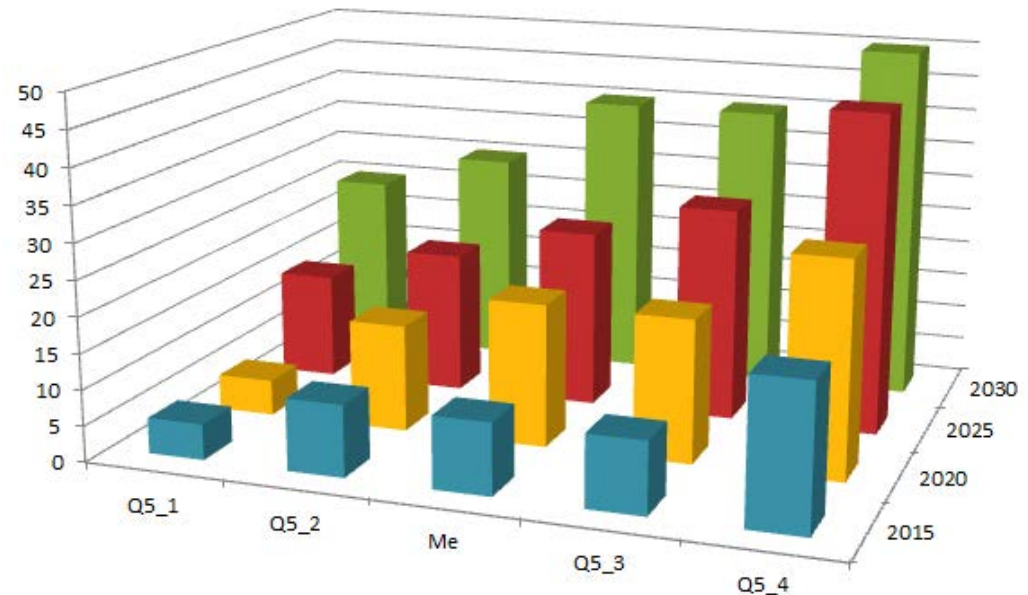
No.	At project end (03.2019)	2023	2025	2030	Notes, explanations, sources and forecast justifications	Degree of certainty	Relevance of question
1.	Online information available on the MOVING platform that will be considered by the users satisfactory and representative of [in % of MP users seeking specific kind of information listed below as (a)-(k), for each period 2020, 2025, 2030 separately]						
1a)	Computer science and information and communication technologies (ICT)	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/>	<input type="text"/>
1b)	Scientific research (natural sciences and engineering other than computer science)	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/>	<input type="text"/>
1c)	Social sciences, humanities	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/>	<input type="text"/>
1d)	Environmental sciences	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/>	<input type="text"/>
1e)	Biological and medical sciences	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %	<input type="text"/>	<input type="text"/>

Fig. 2. MOVING Delphi survey “Your vision of the MOVING Platform by 2030”

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Finding 1:

The results of the Delphi survey on the cumulative probability (in the timeframe until 2030) shows the commonly available CSSs will be capable of stimulating the development of general creativity of their Users (the bars indicate the estimated median and quintiles of the share reached at time horizons specified on the right axis).



Finding 2:

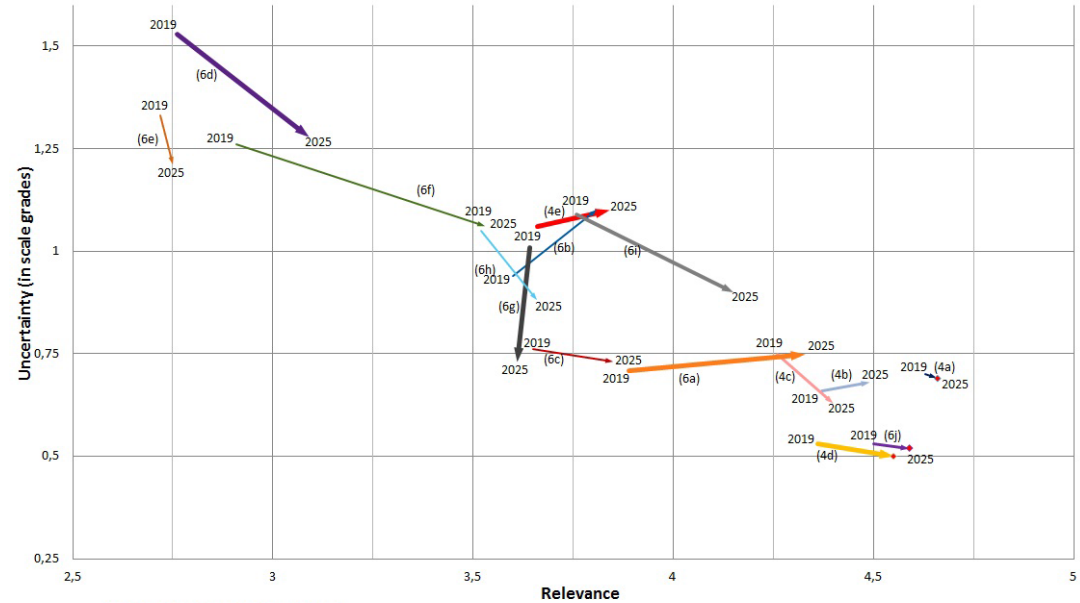
Questionnaire 8: Development prospects of cloud-based expert systems and DSS. Question 8.6: "Please provide the share of social networking sites (in %) endowed with intelligent DSS or recommender functionalities for each forecasting horizon"

Questionnaire 13: Problems of creativity in designing experts systems, DSSs, and decision making. Question 13.6f: "Please provide the cumulative probability that in the timeframe until 2030 the commonly available CSSs will be capable of stimulating the development of general creativity of their users".).

Specification of results (weighted)	Estimates for 2015	Forecasts for 2020	Forecasts for 2025	Forecasts for 2030
Shapiro Wilk test	negative	negative	negative	negative
Mean value	17,806	29,65	42,86	53,983
Standard deviation	12,981	17,671	24,01	30,177
Left semideviation	10,671	17,283	20,898	28,555
Right semideviation	15,396	18,665	29,279	32,862
Median value	15	25	40	40
1st quintile	5	5	10	10
2nd quintile	10	20	25	40
3rd quintile	20	30	40	55
4th quintile	25	50	70	85
Intequintile range	20	45	60	75
Intequartile range	15	30	50	55
No. of clusters	1	1	2	2

Finding 3:

Expected deployment of technologies



- (4a) Networked data analysis
- (4b) Big data analytics for text and image understanding
- (4c) Data mining and sequential pattern mining algorithms to keep track and predict the users' learning needs
- (4d) Multimedia content mining
- (4e) User preference extraction techniques
- (6a) Integration in European and national activities on research data management
- (6b) Gamification techniques- using game design and game principles in learning support systems
- (6c) Creativity tracking, stimulation and learning-oriented creativity support systems
- (6d) Augmented (AR) and virtual reality (VR)
- (6e) 3D environments to visualise elements of the MOVING platform
- (6f) Chat-bots for Question and Answers
- (6g) Guided walks through the MP including a context-based authoring tool (visual editor) for creating curricula
- (6h) Integration with social media
- (6i) Mobile learning technologies
- (6j) Learning pattern analysis to investigate the efficiency of platform design and users satisfaction

Finding 3: Limitations to expected deployment of technologies

Based on results presented in the Fig.3, the eScience tools to be implemented on the platform were assessed with the following three criteria:

- I. The impact on the users' learning and research efficiency, as estimated by the project team,
- II. The technological feasibility in the context of the project's resources,
- III. Further development prospects, as indicated by the trends resulting from the Delphi survey.

Additionally, when making the selection, the following constraints have been taken into account:

- The concordance with the MOVING contractual project goals specified in its Description of Work,
- The availability of time and funding,
- The availability of expert researchers and programmers capable of implementing specific tools.

Conclusions

1. By **now only a small subset** of creativity stimulation and decision support tools have been selected for implementation.
2. A simultaneous integration of data, information, and knowledge sources encompassed by a common emergence of GES will require an **increasing autonomy of AI-based tools** installed on knowledge platforms.
3. Consequently, **intelligent autonomous systems will take over many human researcher tasks**, specifically those related to information searching and gathering.
4. Soon **no scientist would be able to participate** in a research activity **without** the most comprehensive and widely **automated technological support**.

→ ARE WE READY FOR THAT CHANGE?

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Thank you for the great hospitality during KICCS17
@ Nagoya Institute of Technology!

I appreciate your inquiries.

Contact:

Prof. Dr. Thomas Köhler / Dresden University of Technology

Affiliations:

- A) Faculty of Education / Institute for Vocational Education / Educational Technology Chair: <http://tu-dresden.de/bt>
- B) Media Centre: <http://tu-dresden.de/mz>

Address:

Office: 01217 Dresden, Weberplatz 5

eMail: Thomas.Koehler@tu-dresden.de

Phone: +49-(0)351-463-32772 Fax: +49-(0)351-463-34963

Skype: [thomas.koehler1](https://www.skype.com/people/thomas.koehler1)