SUB | NIEDERSÄCHSISCHE STAATS- UND UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN

Digital Transformation of Information Infrastructures

Enabling digital resaerch in the Humanities – DINI-DARIAH-TEXTGRID Workshop

Dr. Wolfram Horstmann

28.09.2015

Questions to be answered

- What is Digital Transformation?
- What is Information Infrastructure?
- Digital Transformation in research institutions?
  - IT
  - Libraries
- How can information infrastructure be developed?

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Digital Transformation

- Digital transformation refers to the changes associated with the application of digital technology in all aspects of human society. ...

- In a narrower sense, "digital transformation" may refer to the concept of "going paperless".

https://en.wikipedia.org/wiki/Digital_transformation

Digital Transformation through technology

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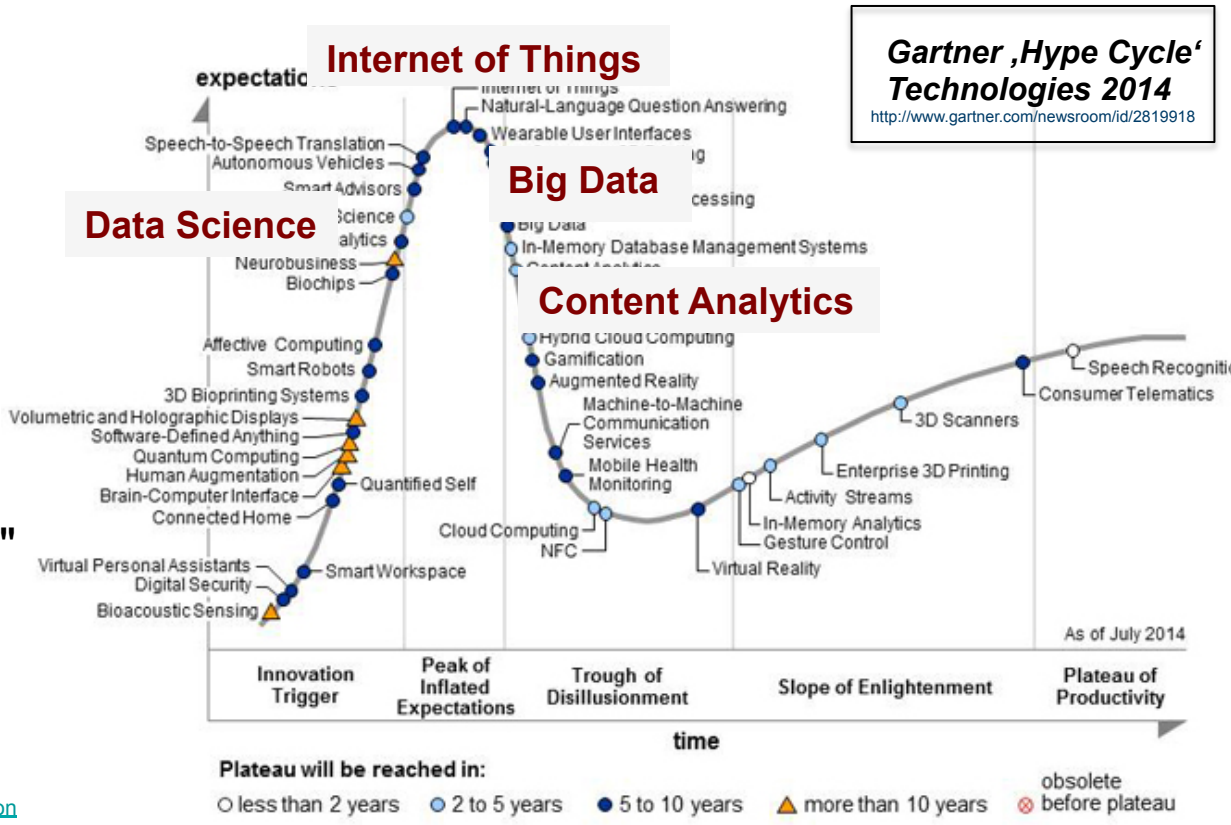
https://en.wikipedia.org/wiki/Digital_transformation



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Information Infrastructure

- ...all of the people, processes, procedures, tools, facilities, and technology which supports the creation, use, transport, storage, and destruction of information https://en.wikipedia.org/wiki/Information_infrastructure

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- *„Let us build a global community in which the people of neighboring countries view each other not as potential enemies, but as potential partners, as members of the same family in the vast, increasingly interconnected human family.“* -- Vice–President Al Gore (1994)

- *„The information society has the potential to improve the quality of life of Europe's citizens, the efficiency of our social and economic organization and to reinforce cohesion.“* -- Bangemann Report (1994)

Cf. Christine L. Borgman, The Premise and the Promise of a Global Information Infrastructure, *First Monday*, Volume 5, Number 8 - 7 August 2000, http://pear.accc.uic.edu/ojs/index.php/fm/article/view/784/693

Information Infrastructure in Research

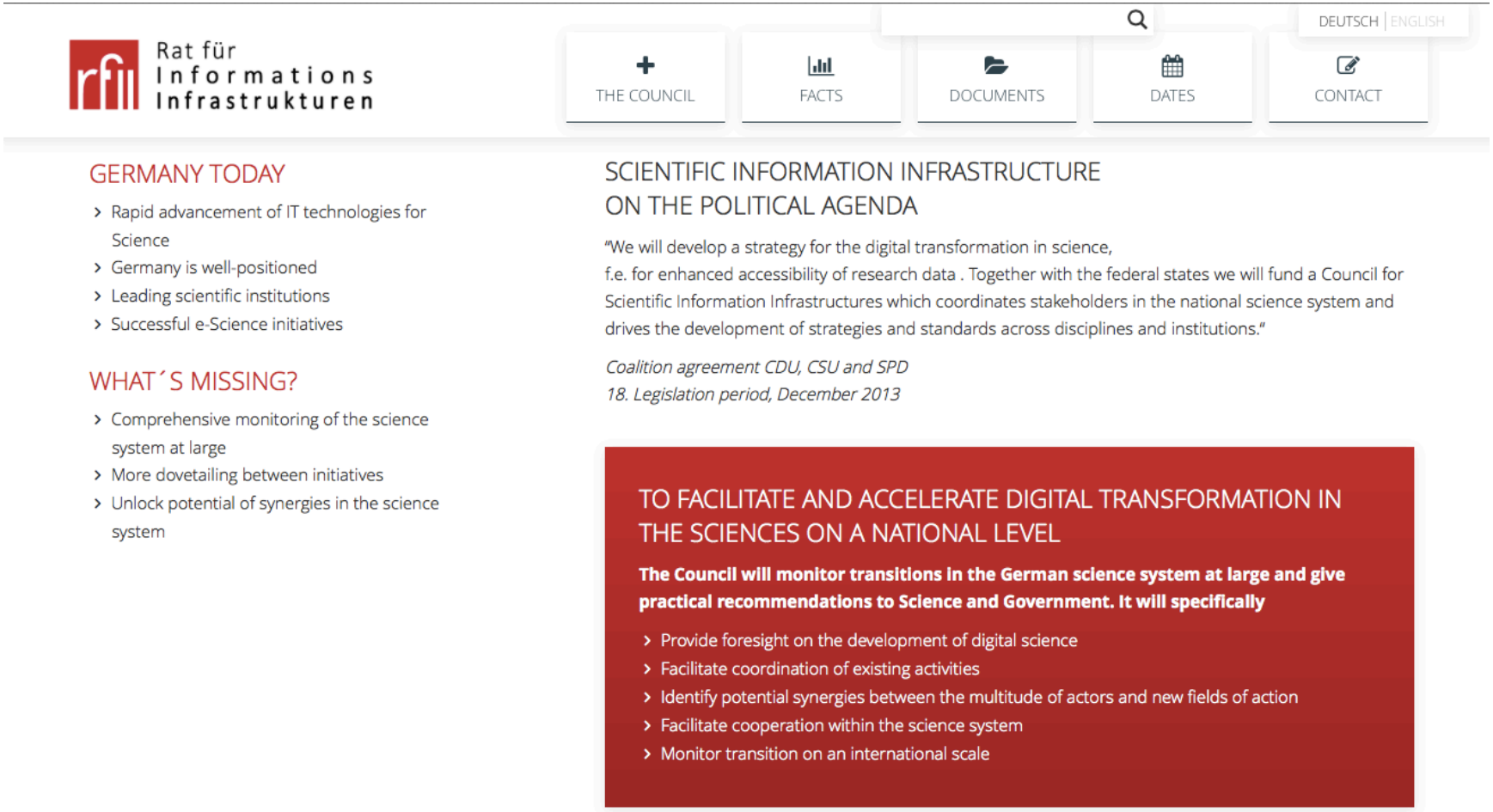
Der Begriff Informationsinfrastruktur umfasst:

- die Erwerbung, Aufbereitung, Erschließung, der Nachweis, die Bereitstellung und Archivierung von Information („klassische“ Aufgaben)
- die Sicherstellung von nachhaltiger *Retrieval*- und Analysefähigkeit von relevanter Information
- das Management von Information **aller** Art (Daten, textuelle und nichttextuelle Objekte, Medien) einschl. der Bereitstellung von Werkzeugen zur Bearbeitung
- die Sicherstellung des dauerhaften Zugriffs (Langzeitverfügbarkeit)
- die Gewährleistung von Sicherheit, Vertraulichkeit und Vertrauenswürdigkeit
- die Bereitstellung von Möglichkeiten der kollaborativen Nutzung (z. B. *data sharing*) und der virtuellen Kommunikation
- die Unterstützung dieser neuen Prozesse und Arbeitsgebiete durch adäquate Methoden in der Lehre und Ausbildung.

Kommission „Zukunft der Informationinfrastruktur“

http://www.leibniz-gemeinschaft.de/fileadmin/user_upload/downloads/Infrastruktur/KII_Gesamtkonzept.pdf

German Council for Information Infrastructure



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Changes for Libraries: Provocation 1/5

„Students know more about academic information than librarians.“

Changes for Libraries: Provocation 2/5

„Researchers don‘t go to the libraries anymore.“

Changes for Libraries: Provocation 3/5

„The public opinion is that libraries lend books. (And that is obsolete!)“

Changes for Libraries: Provocation 4/5

„In the digital world, Google has replaced the library.“

Changes for Libraries: Provocation 5/5

„Academic information is freely (or cheaply) available on the internet.“

Changes for Libraries: Virtue 1/5

„Student workplaces in librariers are more precious than ever.“

Changes for Libraries: Virtue 2/5

„Researchers cannot live without reliable digital library services .“

Changes for Libraries: Virtue 3/5

„Libraries are an information sanctuary in a confusing digital world.“

Changes for Libraries: Virtue 4/5

„Libraries are the most established service enterprise on the campus“

Changes for Libraries: Virtue 5/5

„Libraries are a social and intellectual local technology partner.“

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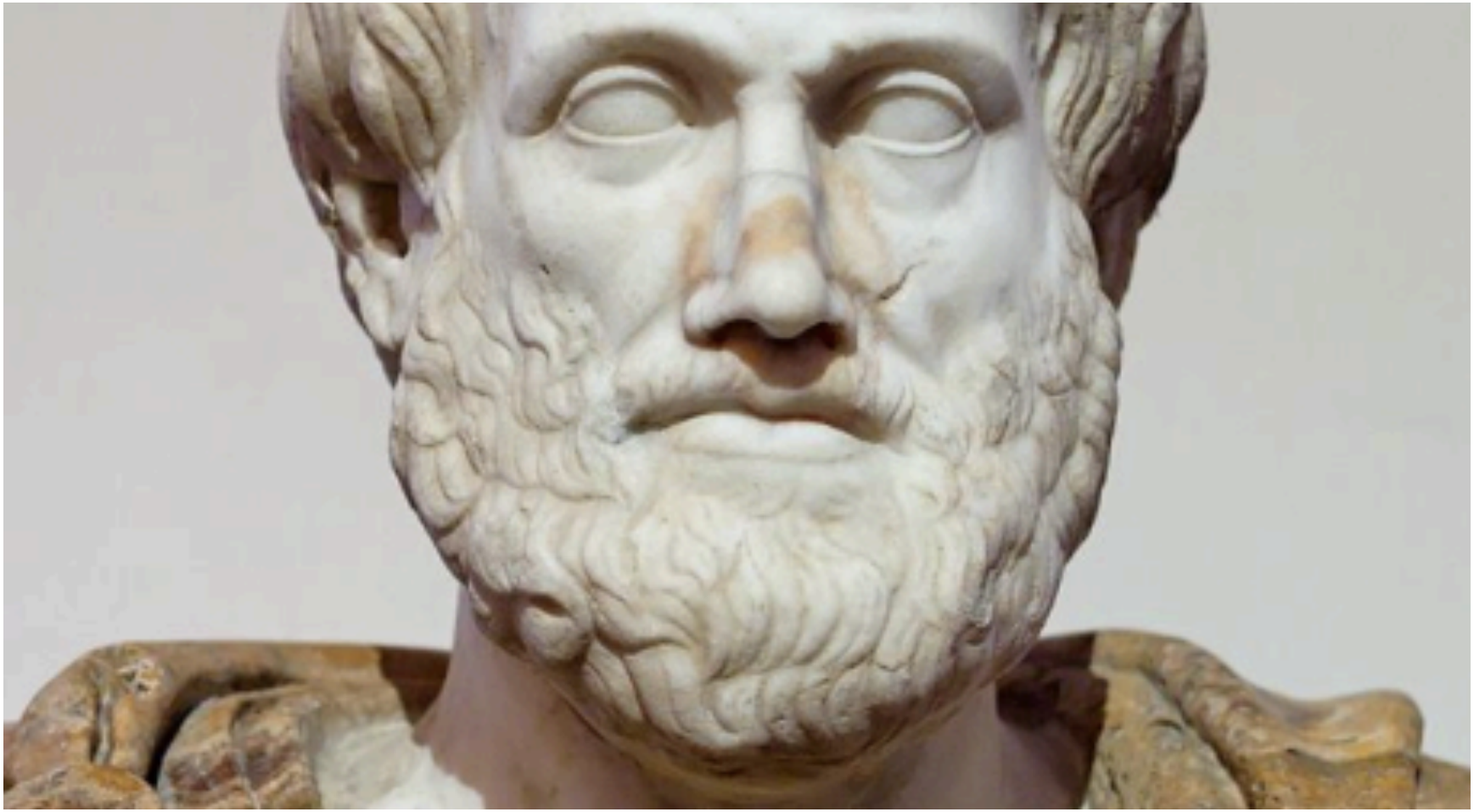
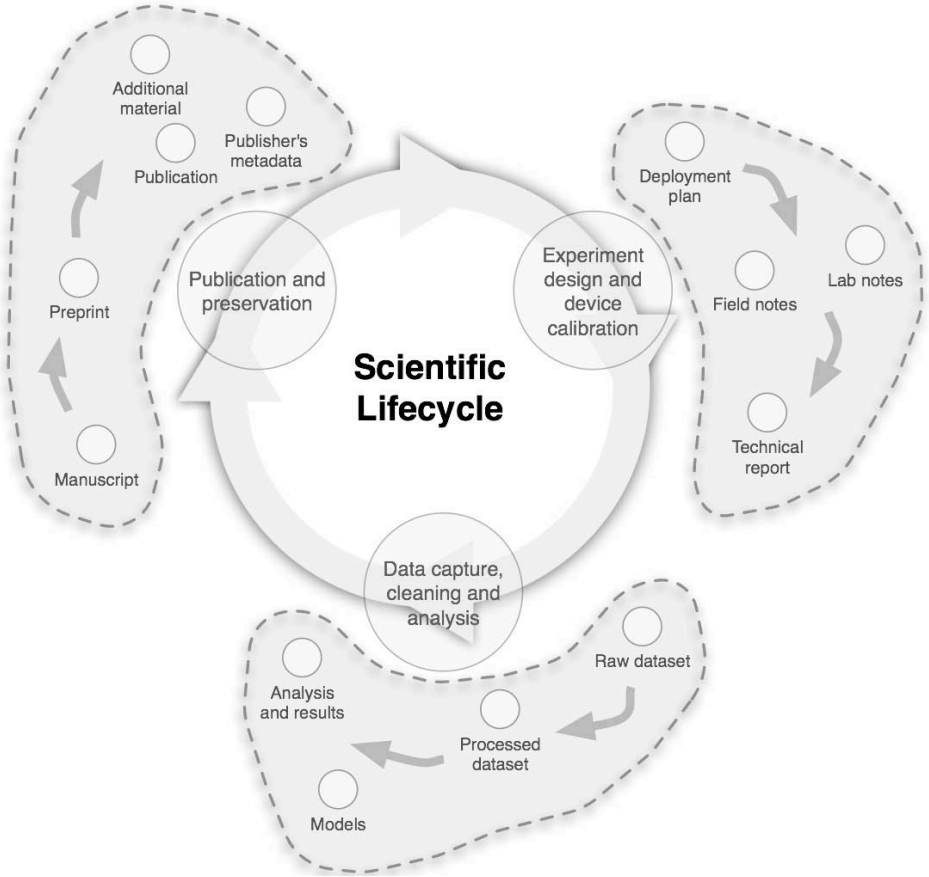
What I will **not** talk about: The Researcher



What I will **not** talk about: The Resarch Lifecycle



(Pepe et al. 2009)

What I will **not** talk about: International Subject Infrastructures

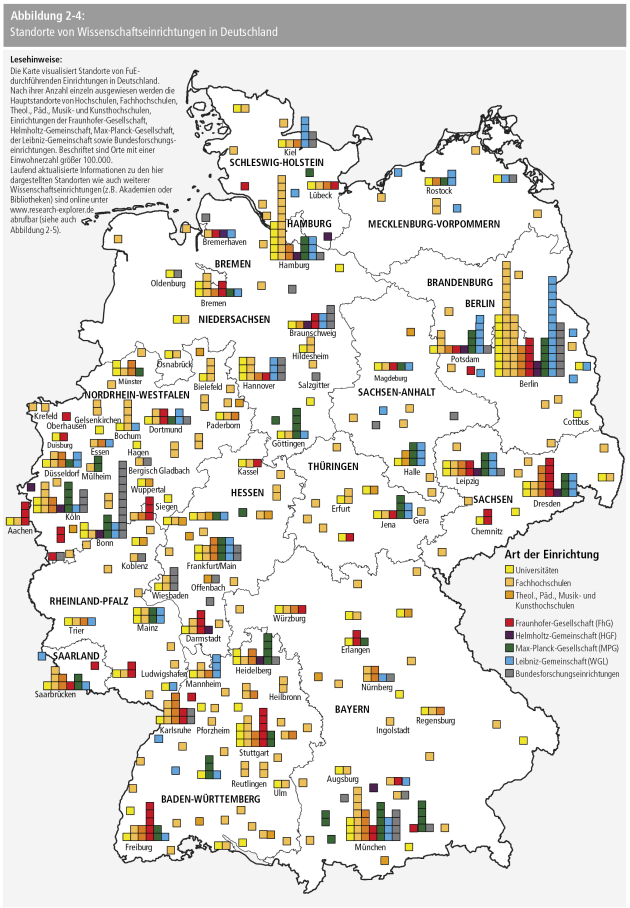
DARIAH-DE

Digital Research Infrastructure for the Arts and Humanities

What I will **not** talk about: Teaching

MOOC

What I will **not** talk about: National Infrastructures



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What I will **not** talk about: Libraries

What I will **not** talk about: Openness

What I will **indeed** talk about: Campus Level Research

Göttingen Campus

Members

- The University of Göttingen
- Göttingen Academy of Sciences and Humanities
- German Primate Center
- German Aerospace Center
- Max Planck Institute for Biophysical Chemistry
- Max Planck Institute for Dynamics and Self-Organization
- Max Planck Institute for Experimental Medicine
- Max Planck Institute for Solar System Research
- Max Planck Institute for the Study of Religious and Ethnic Diversity

An example...

Göttingen/eResearch Alliance

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GWDG Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen

Research data management

distributed resources

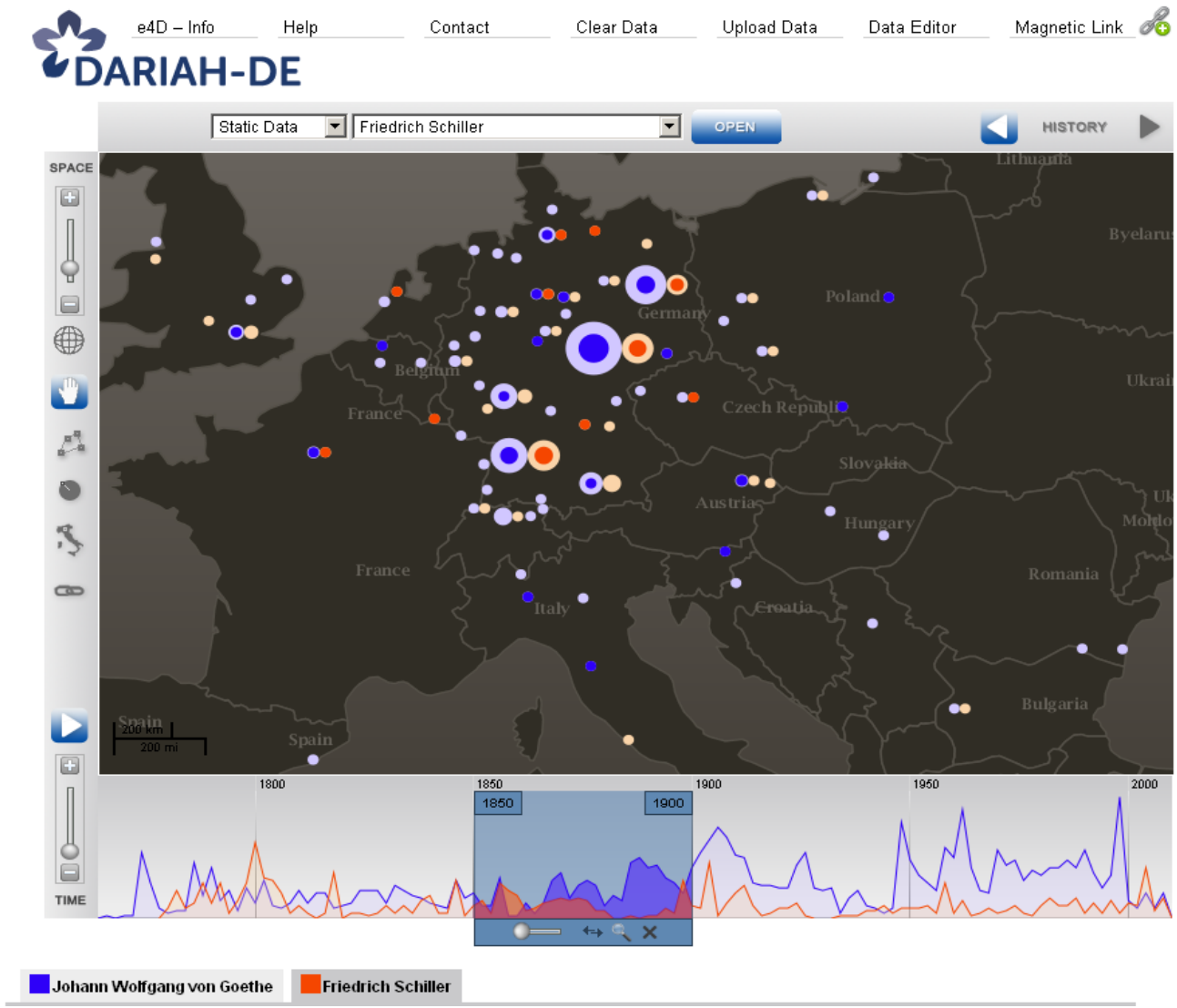
eResearch components

share and reuse

CRC 990 EFForTS: INF-Project

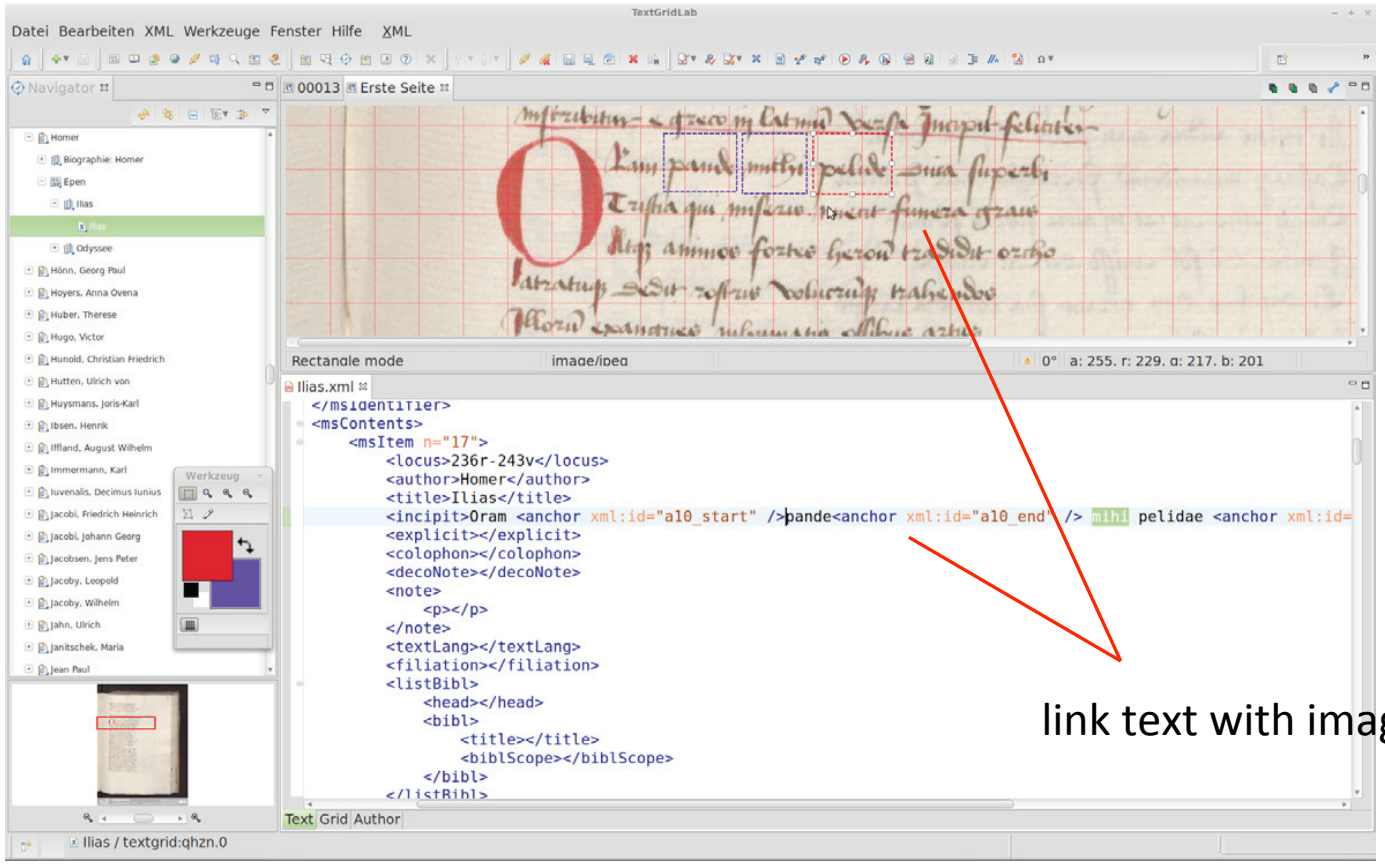
- Large interdisciplinary research project (CRC) with integrated service project for information & infrastructure (INF)
- 100+ researchers, field work: Indonesian Rainforest
- Lots of different data require management
- Provide an information system for research data, write an Excel transformation script, moderate sharing agreements, …
- „Embedded Data Managers“ know:
  IT Basics, data modelling, concepts of metadata, …
  and how to:
  analyse requirements, moderate discussions, search information, learn new things rapidly …

Humanities: Geo-Browser – space-time-visualization

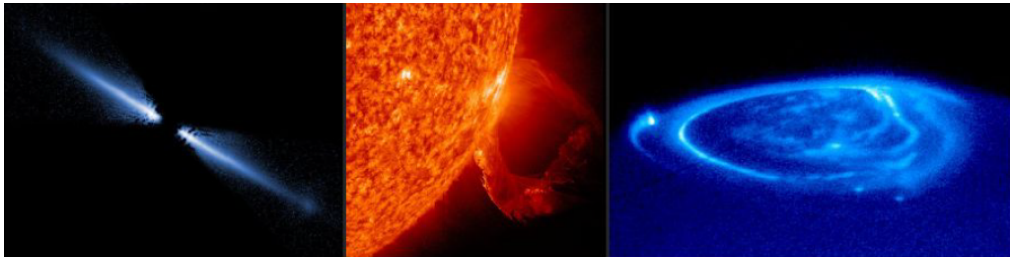


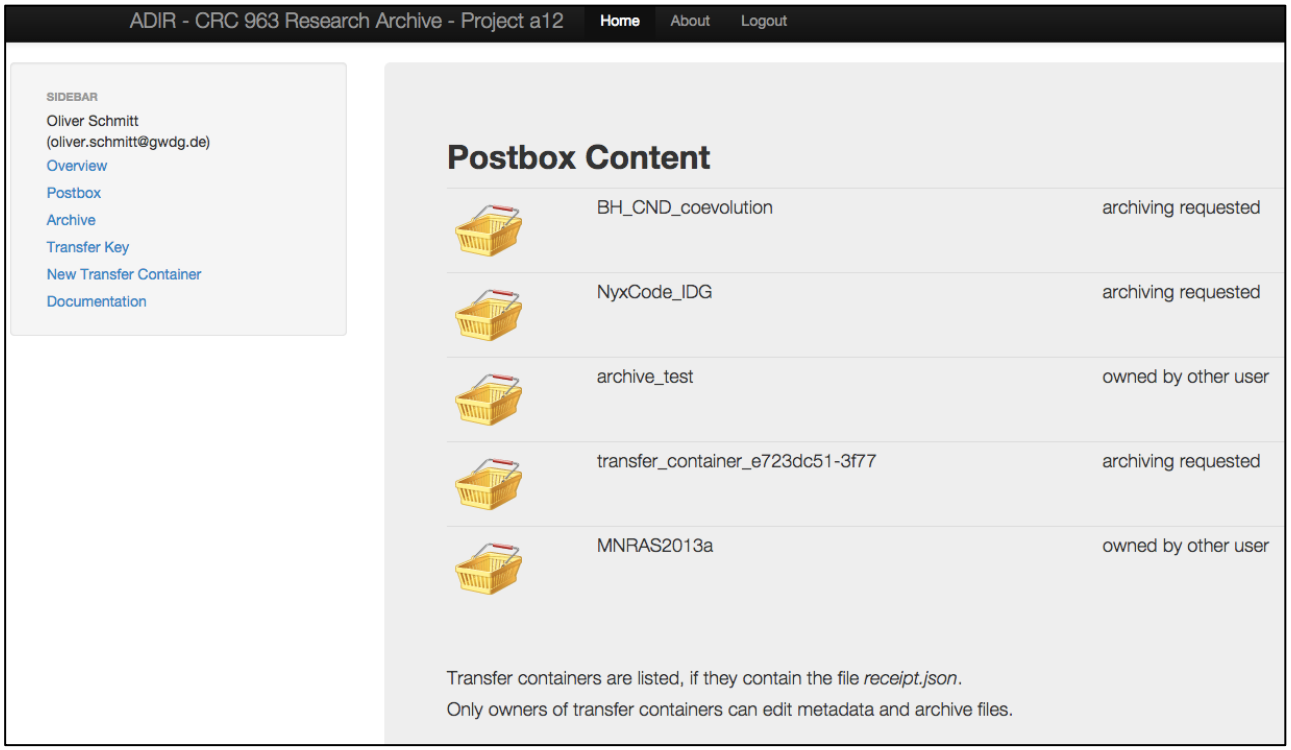
Publications of/ about Goethe und Schiller between 1850-1900, based on catalog data at SUB Göttingen

Text-image-link-editor



CRC963 Astrophysical flow instabilities and turbulence





- Archiving of simulation and experimental data of 16 sub-projets
- Direct data transfer from parallel or lab computers
- Allocation of Persistent Identifiers and annotation of metadata in web browser

28 August 2014

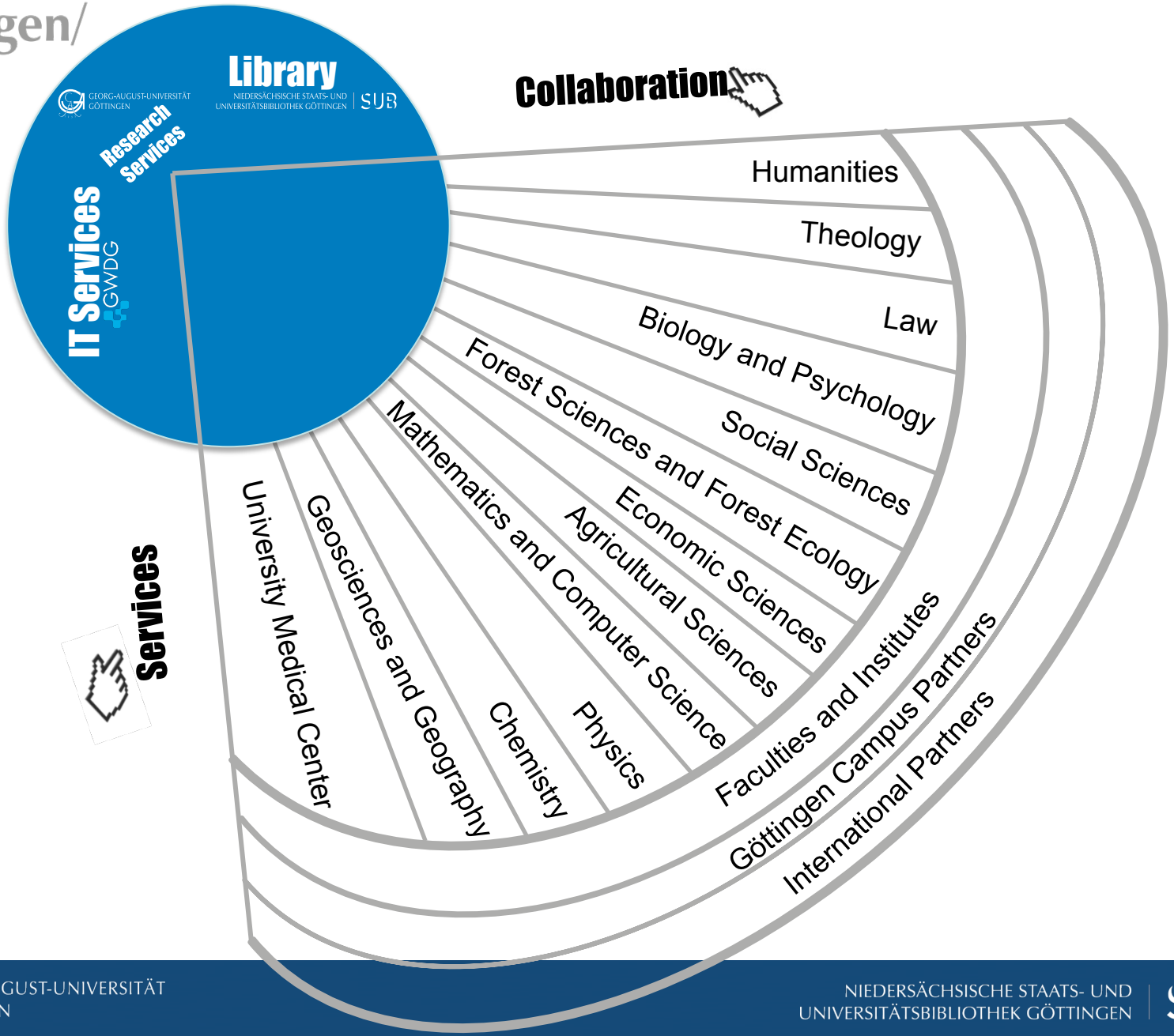
Research data policy of the Georg-August University Goettingen (incl. UMG)

Preamble

The Georg-August-University Goettingen is committed to diligently preserve results of scholarship, to produce novel results through research, and to make results accessible and reusable for academia and the wider society, now and for future generations. The management, protection, preservation and sustainable provision of research data must therefore be carried out in accordance with recognized standards, meet high expectations and fulfil legal and ethical obligations. The University acknowledges that the implementation of this guideline will depend on the settings and requirements of each subject area.

1. The University promotes and supports open access to research data.
2. Research data are those data collected, observed, simulated, derived, or generated during the course of research.
3. Management of research data includes their planning, collection, processing, and preservation. It ensures the access to, and the reuse, reproducibility, and quality assurance of all research data underpinning research results.
4. Research data management is generally the responsibility of the person leading a project and the researcher who is acting in an individual capacity. A particular responsibility is the adherence to good practices of research as well as standards in their subject area.
5. Research projects with research data require a data management plan that includes but is not restricted to the topics of access rights to research data and necessary precautions for handling them.
6. The University provides support and advice for research data management in the preparatory stages of research projects, during their conduct and after their completion, and provides appropriate training.
7. The University implements and maintains essential services for research data infrastructure that ensures adequate storage and technical availability of digital research data. Specific requirements have to be aligned among all stakeholders and may involve additional funding.
8. Storage and archiving of digital research data is carried out within the technological and informational infrastructure of the University or in acknowledged external or internal subject repositories.
9. The University and its researchers adhere in their research data management to given conditions of ethics, data protection, intellectual property, privacy and disclosure. This leaves regulations untouched that relate to an assessment of research data according to the German employee invention act and specific contractual agreements.
10. If exploitation or publication rights of data were transferred to third parties, it should be a precondition that research data remain openly and freely available for research purposes.

Göttingen/eResearch Alliance



Göttingen/eResearch Alliance

- Proposals
- Data strategy
- Open access
- Requirement analysis
- Publication strategy
- ...

- Staff Pooling
- Software Dev.
- Data Curation
- Project as a service
- ...

- Standard & tailored
- Curricular & Advanced
- RDM

... to resources

- IT services
- Publication services
- Experts

Presseinformation: Rat für digitale Forschungsmethoden gegründet

Nr. 134/2015 - 03.06.2015

eResearch-Rat des Göttingen Campus nimmt Arbeit auf – Etablierung und Ausbau von Infrastrukturen

(pug) „eResearch“ unterstützt innovative Forschung durch die optimale Verwendung neuer digitaler und technologischer Methoden. Am 2. Juni 2015 hat der eResearch-Rat des Göttingen Campus mit seiner konstituierenden Sitzung im Tagungszentrum an der Historischen Sternwarte der Universität Göttingen seine Arbeit aufgenommen. Als strategisches Beratungsorgan der Göttingen eResearch Alliance – einem Gremium für Fragen zur digitalen Forschung – wird der eResearch-Rat kontinuierlich disziplin- und institutionsübergreifende Aktivitäten für zukunftsorientierte „eResearch“-Themen und -Methoden für den Wissenschaftsstandort Göttingen begleiten, um sie nachhaltig in Forschung und Lehre zu etablieren. Dem ehrenamtlichen Gremium gehören rund dreißig Vertreterinnen und Vertreter aller Fakultäten der Universität Göttingen und der außeruniversitären Forschungseinrichtungen am Wissenschaftsstandort Göttingen an.

„eResearch ist für die Stärkung der Forschung am Göttingen Campus und die Rolle des Rates für die zukünftige strategische Ausrichtung von enormer Bedeutung“, unterstrich Prof. Dr. Norbert Lossau, Vizepräsident für Infrastrukturen an der Universität Göttingen, auf der konstituierenden Sitzung. Der Göttinger

CONCLUSION

Summary

- **Digital transformation** refers to the changes associated with the application of digital technology in all aspects of human society
- **Information Infrastructure** comprises all of the people, processes, procedures, tools, facilities, and technology which supports the creation, use, transport, storage, and destruction of information
- Digital Transformation of Information Infrastructure **in research institutitons** is primarily a task for libraries (IT is already digital)
- **Development** of Information Infrastructure is subject-specific and generic, at the international, national, local level and supports openness
- Virtual, multidisciplinary groups are the future of research – but **sustainability** of information infrastructure is local
- **Cooperation** between researchers, IT, Libraries and Administration will be key to the success

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Thanks!