

Orchestrating Collaboration

Visual Collaboration Suggestions in Large Research Clusters

André Calero Valdez

Denis Özdemir, Mohammed Amin Yazdi, Anne Kathrin
Schaar and Martina Ziefle

Thinking the Future
Zukunft denken

Agenda

The Aachen House of Production

The Scientific Cooperation Portal

Collaboration Suggestion

Evaluation

Understanding the context

THE AACHEN HOUSE OF PRODUCTION

The Aachen House of Production

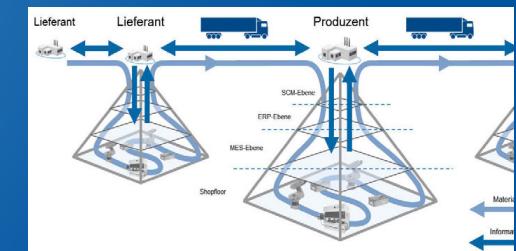
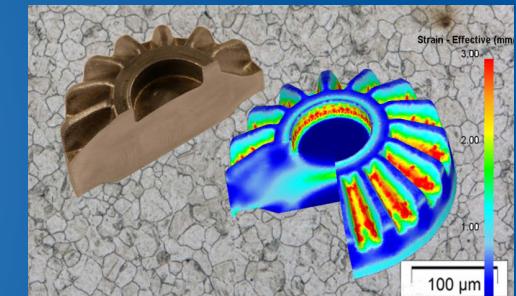
Research Cluster funded by the Excellence Initiative dealing with

“Integrative Production Technology in High Wage Countries”

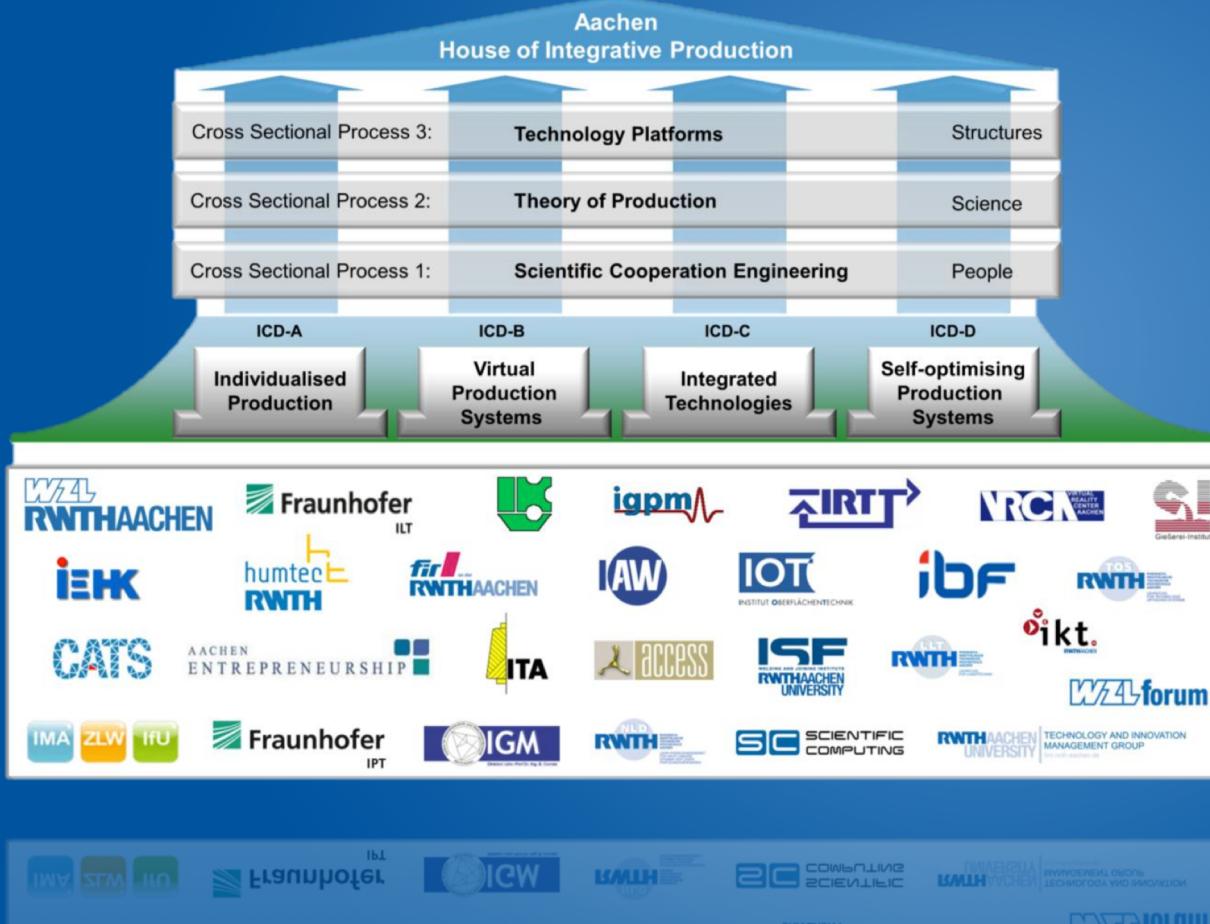
Focus on engineering sciences in production

Covering the full scope from

- Material sciences to logistics
- Planning to cybernetics



Organization of the Cluster



4 Integrated
Cluster Domains

3 Cross
Sectional
Processes

180 Researchers
from 40 institutes

Cross Sectional Processes 1

4 Fields of Action

Interdisciplinary Innovation Management

- Enabling interdisciplinary scientific collaboration in heterogeneous teams
- On- and offline measures
- Use of bibliometric data to understand collaboration processes



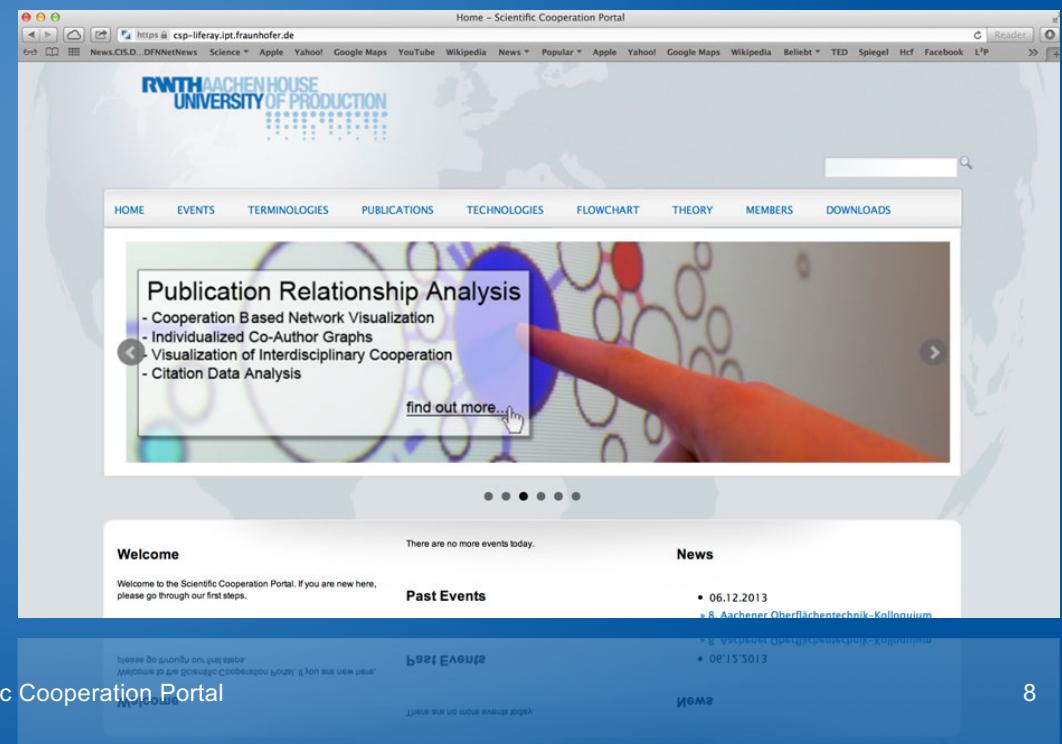
How do we assist collaboration and cooperation?

SCIENTIFIC COOPERATION PORTAL

Scientific Cooperation Portal

Social Portal

- Centralized means of administration
- Central data storage
- User profiles
 - Method competencies
 - Publication lists
- Interdisciplinary support
 - Interdisciplinary glossaries
 - Project planning
 - Technology transfer



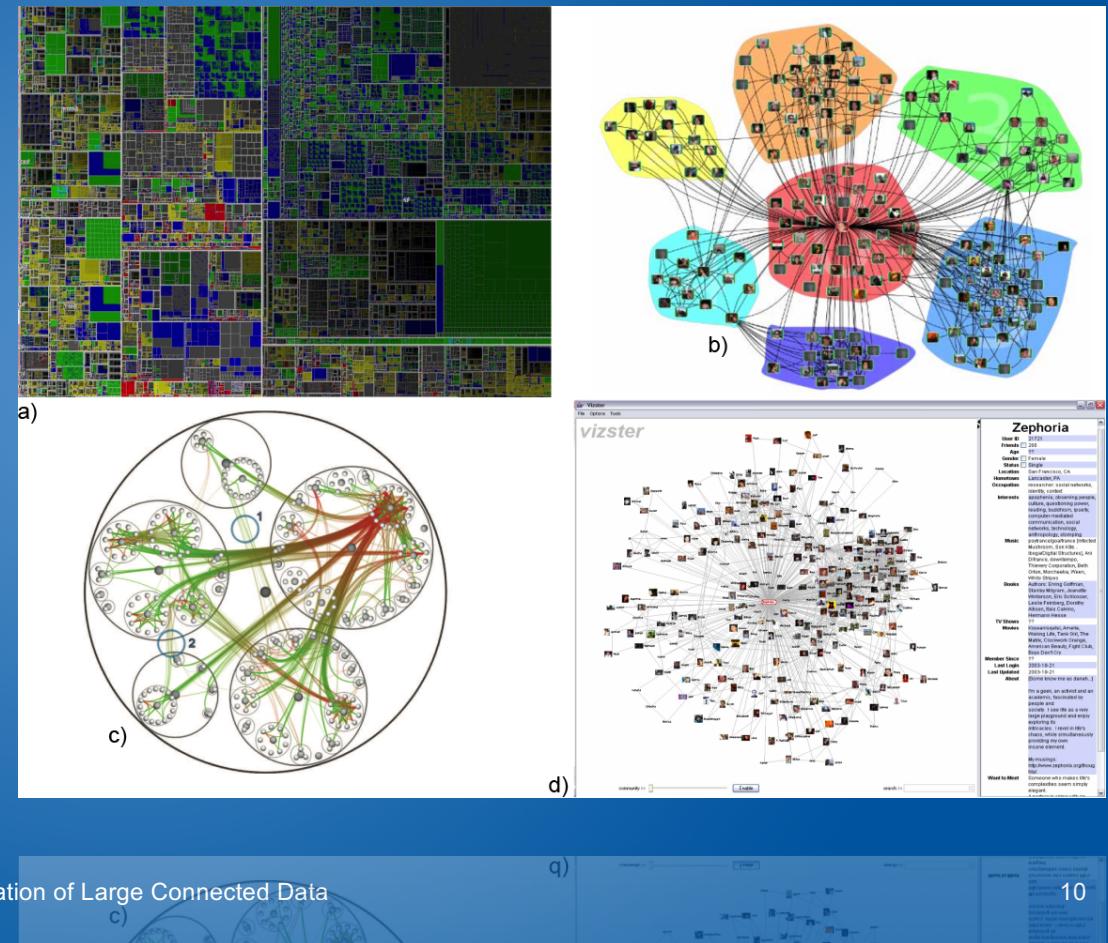
How do we suggest promising collaboration opportunities?

COLLABORATION SUGGESTION

Visualization of Large Connected Data

Related Work:

- Million Item Visualization
- Aggregated Networks
- Hierarchical Edge Bundles
- Vizster



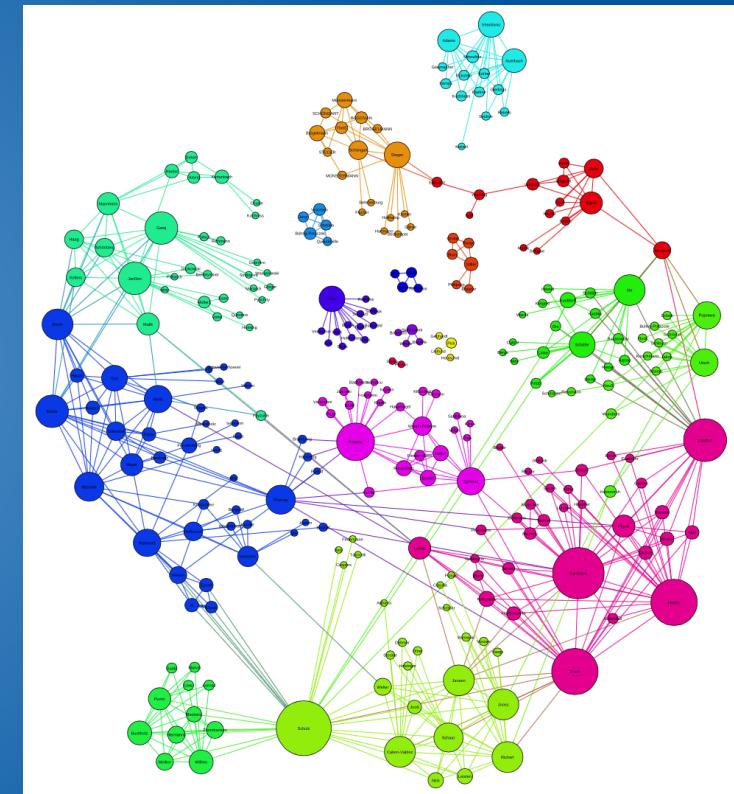
Additional Requirements

Co-Author visualization alone was not helpful

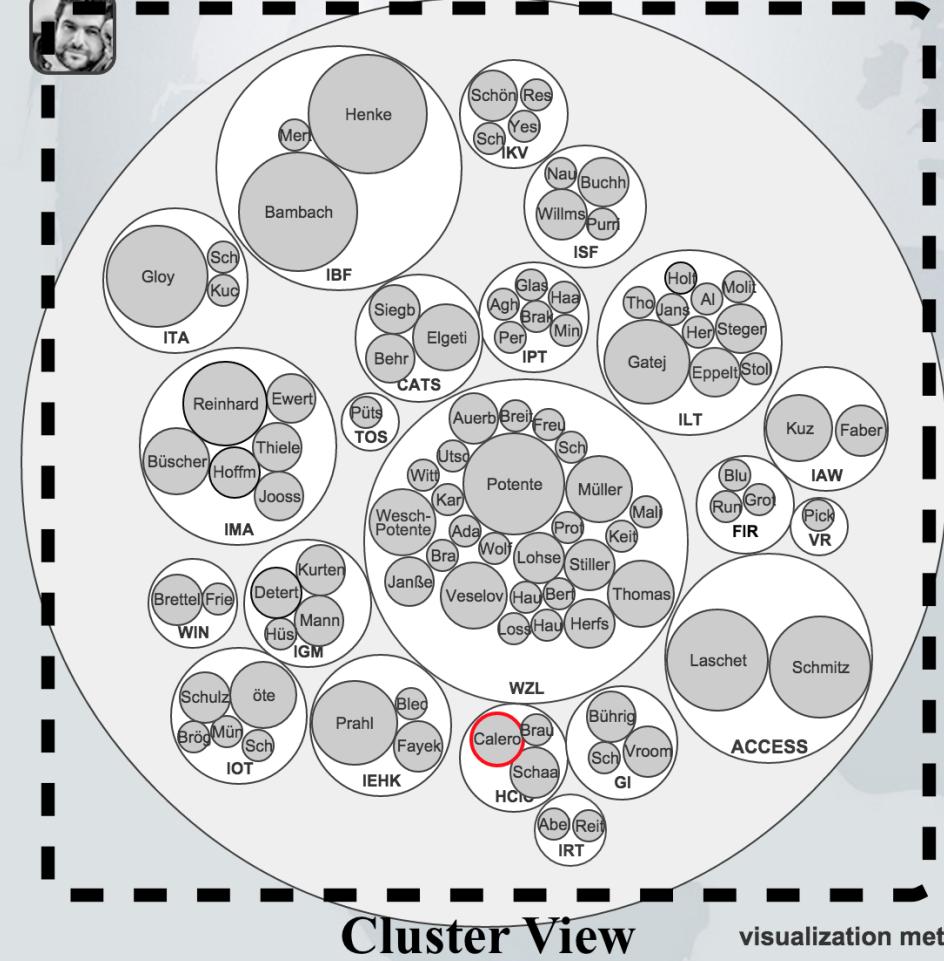
- Visualize departments
- Encode suggestions
- Research topics

Suggestion paradigm

- Birds of a feather, flock together.
- Opposites attract.
- Transitive suggestions.



Logged in as:



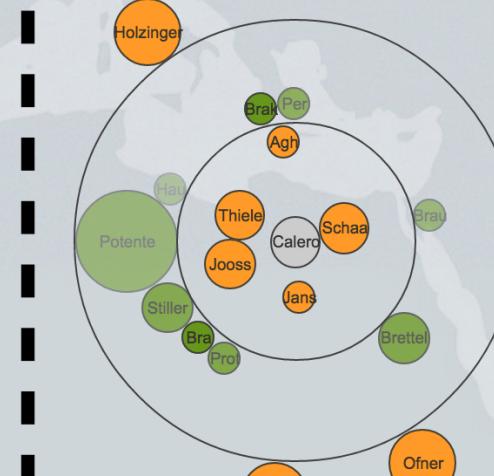
Cluster View

- Previous Co-authors
- Suggested Collaboration
- Strongly Suggested Collaboration

visualization metrics:

- Total number of papers
- Number of papers per year
- Pointing system

Orbit View



Profile Section



Andre Calero Valdez

calero-valdez@comm.rwth-aachen.de

Tel: +49 241 80-92312

Keywords:

- Click All interdisciplinarity, performance, analysing, node, publication, network, graph, entropy, discovery, data, cooperation, cluster, integration, visualisation, management, web, platform, transfer,
2012
2013
2014

Papers:

- "Scientific cooperation engineering in the cluster of excellence integrative production technology for high-wage countries at rwth aachen university." ICERI2012 Proceedings
- "On graph entropy measures for knowledge discovery from publication network data." Availability, Reliability, and Security in Information Systems and HCI. Springer Berlin Heidelberg, 2013. 354-362.

Visualisation of Collaboration in Large Scale Organisations

By: Mohammad Amin Yazdi

Supervised By: Dr. André Calero Valdez, Leonhard Lichtschlag

How well does it work?

EVALUATION

Evaluation Methods

User Study

- 20 members of the cluster, 3 HCI experts, COO
- Task-based analysis: *Find possible collaborators.*

Iterative development

- Paper prototype based
- 10 cycles with continuous improvements (count of remarks)
- Summative evaluation using SUS and NPS

Formative Results

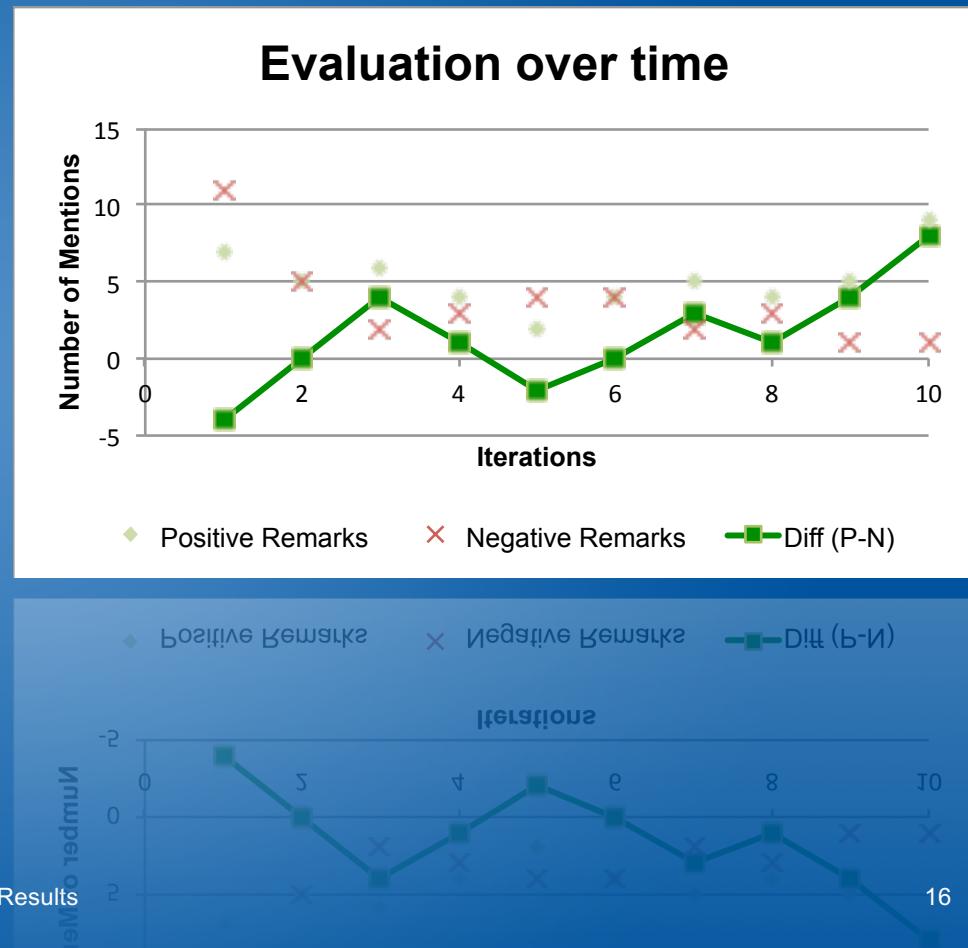
Goals:

- Forming a mental model
- Discovery of new knowledge
- Confirmation of knowledge

„There are meetings [...] but I can only imagine my group.“

9/26/18

Formative Results



Summative Results

System Usability Score: 84.5

- Good Usability

Net Promoter Score: 80%

- High probability of reuse

Limitations and Future Work

Manual efforts

- Synonym detection
- Translation

Implicit Method Knowledge in Publications not explicitly mentioned

- Document clustering

Co-Authorship analysis

- Who works using which methods with whom?

Summary & Contact

The CSPs provide support for the cluster of excellence

- Support for interdisciplinary collaboration
- Off- and online measures
- Bibliometric methods are used to understand collaboration
- Scientific Cooperation Portal used to communicate insights within in across organizational borders



André Calero Valdez

- calero-valdez@comm.rwth-aachen.de
- 0241 – 80 239480

Contact and questions?



André Calero Valdez

- calero-valdez@comm.rwth-aachen.de
- 0241 – 80 239480



Anne Kathrin Schaar

- schaar@comm.rwth-aachen.de
- 0241 – 239481



Martina Ziefle – Head of Institute

- ziefle@comm.rwth-aachen.de
- Campus Boulevard 57
52074 Aachen - Germany