

# Intelligent Community Lifecycle Support The VICO approach

- IKNOW 2005

Graz, 2. July 2005



AIFB



FZI

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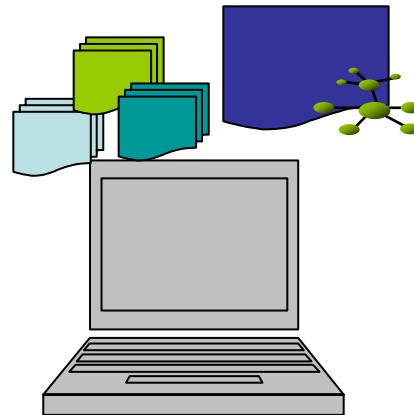
<sup>1</sup>University of Karlsruhe

<sup>2</sup>FZI Karlsruhe

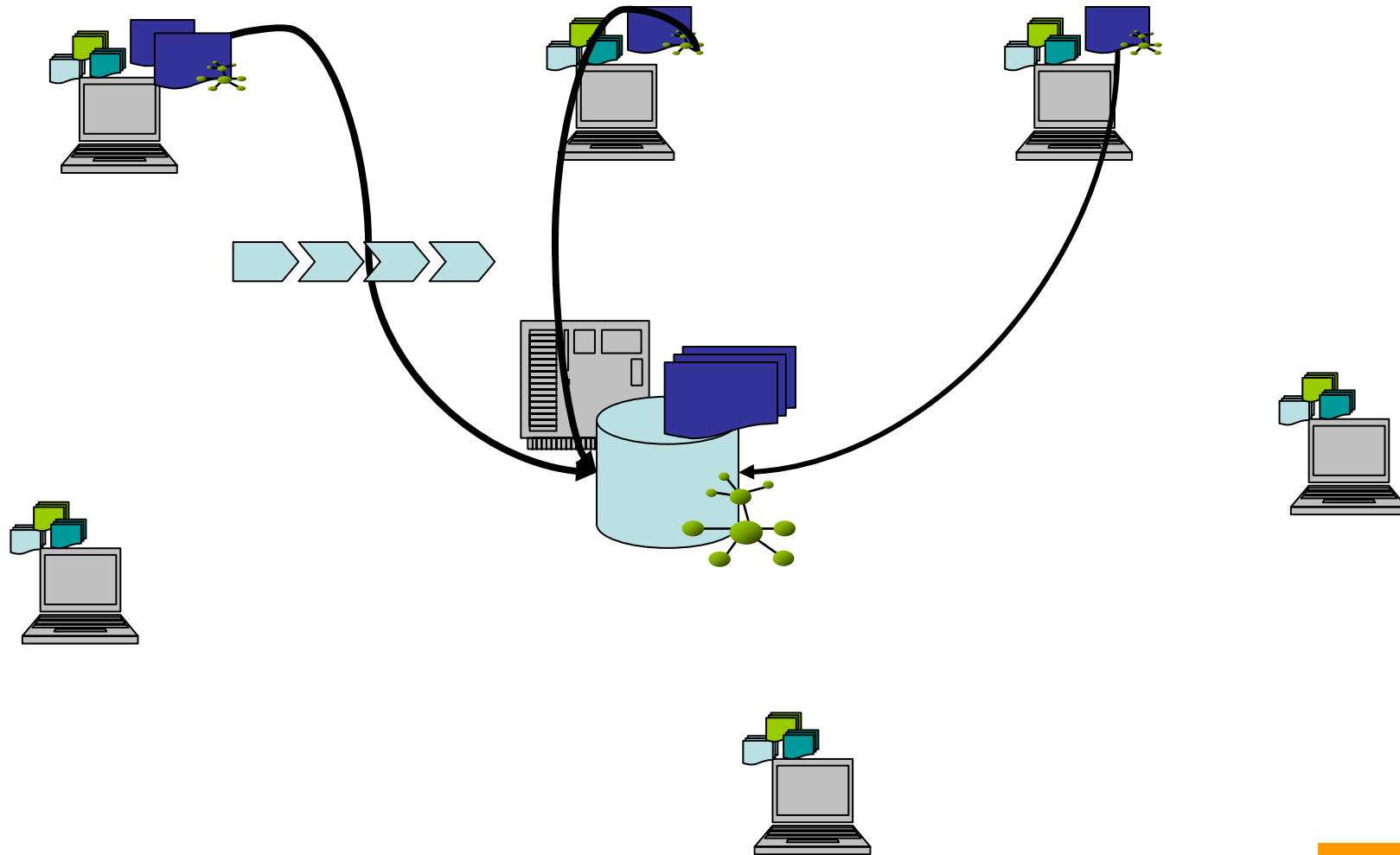
# Agenda

- Motivation
  - Current Situation
  - The P2P vision
  - VICO Vision
- The community ontology COIN
- Prototypical implementation
- Discovering Communities
- Conclusion

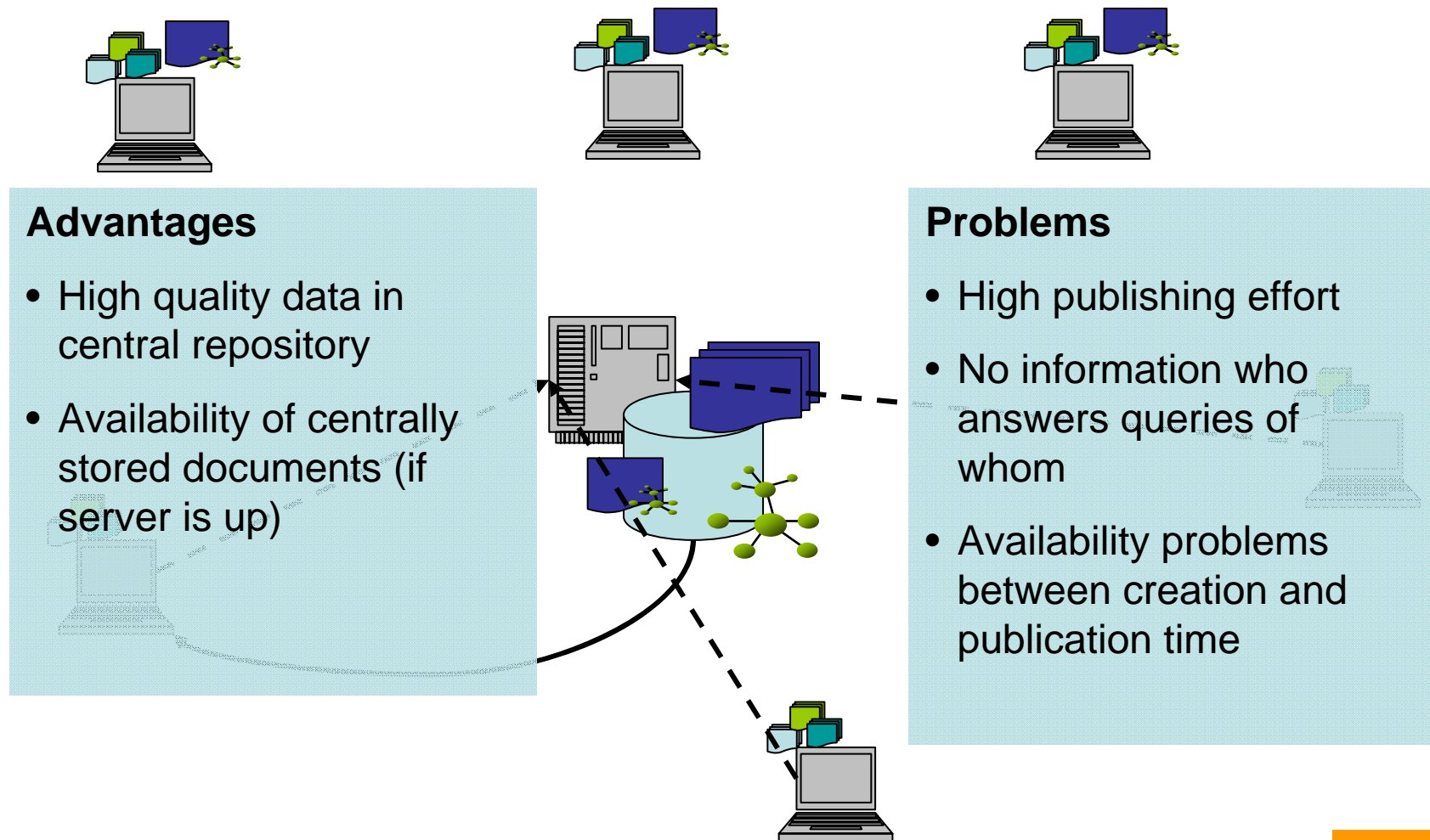
# Current Situation



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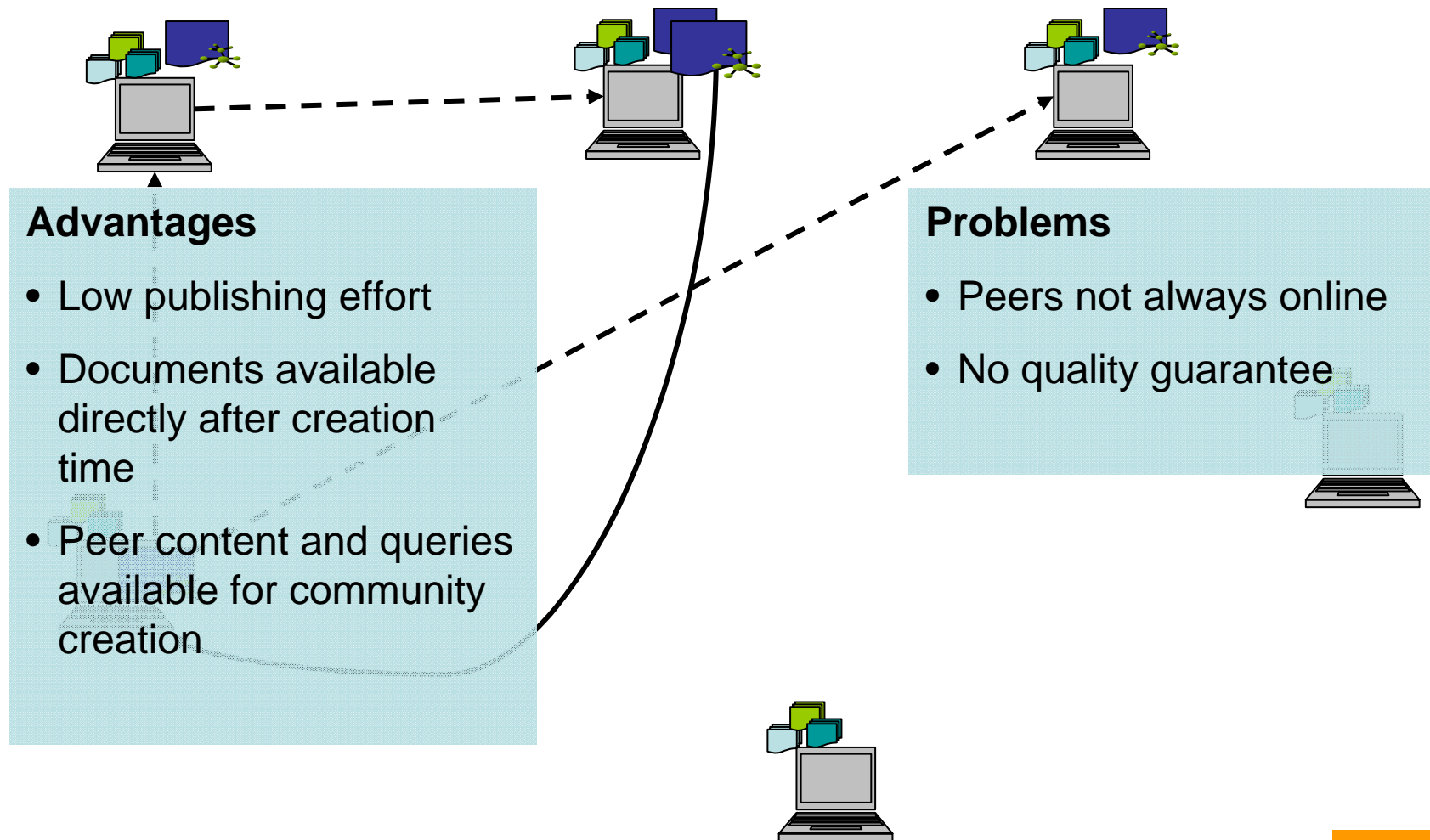
# Current Situation



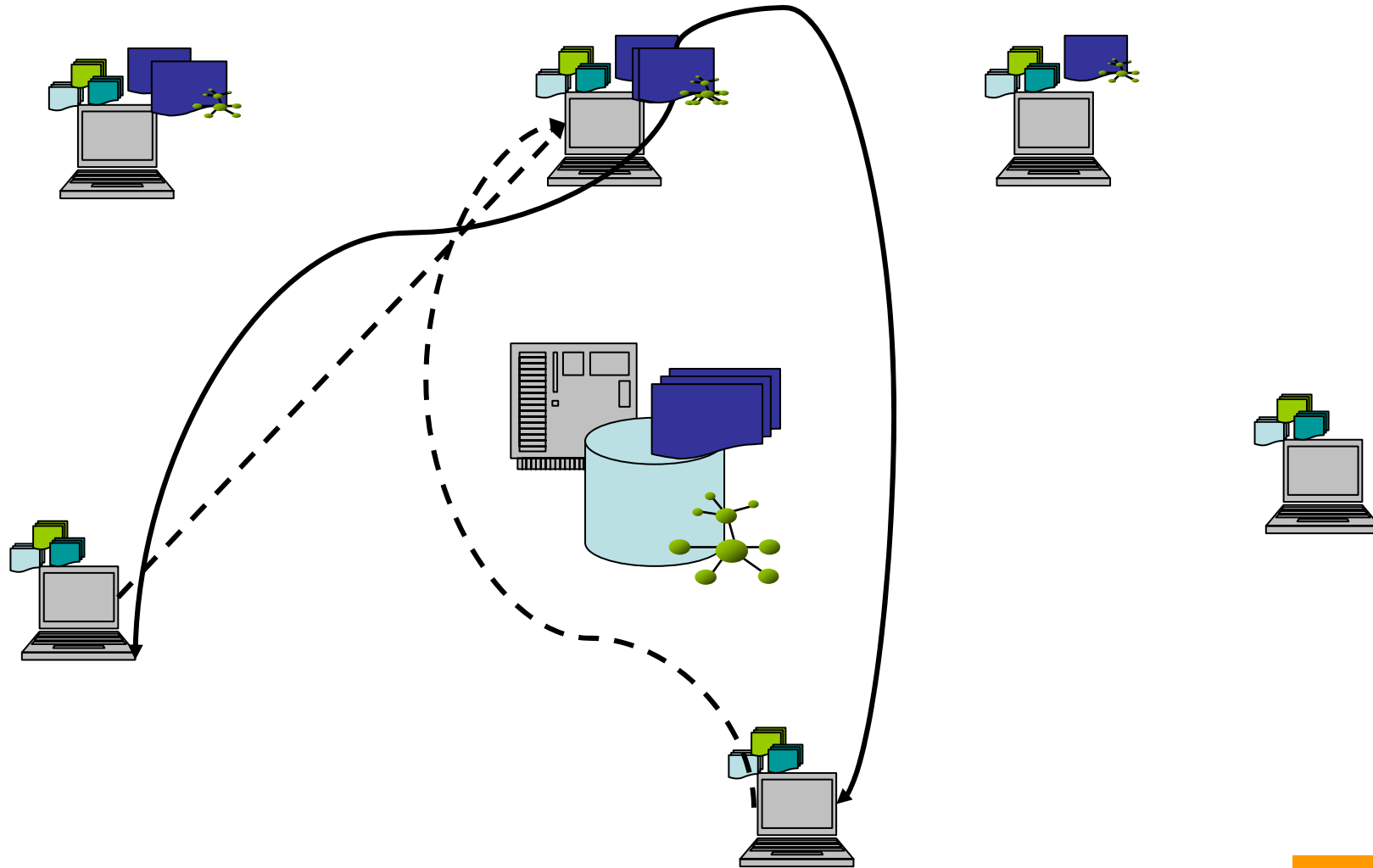
# The P2P vision



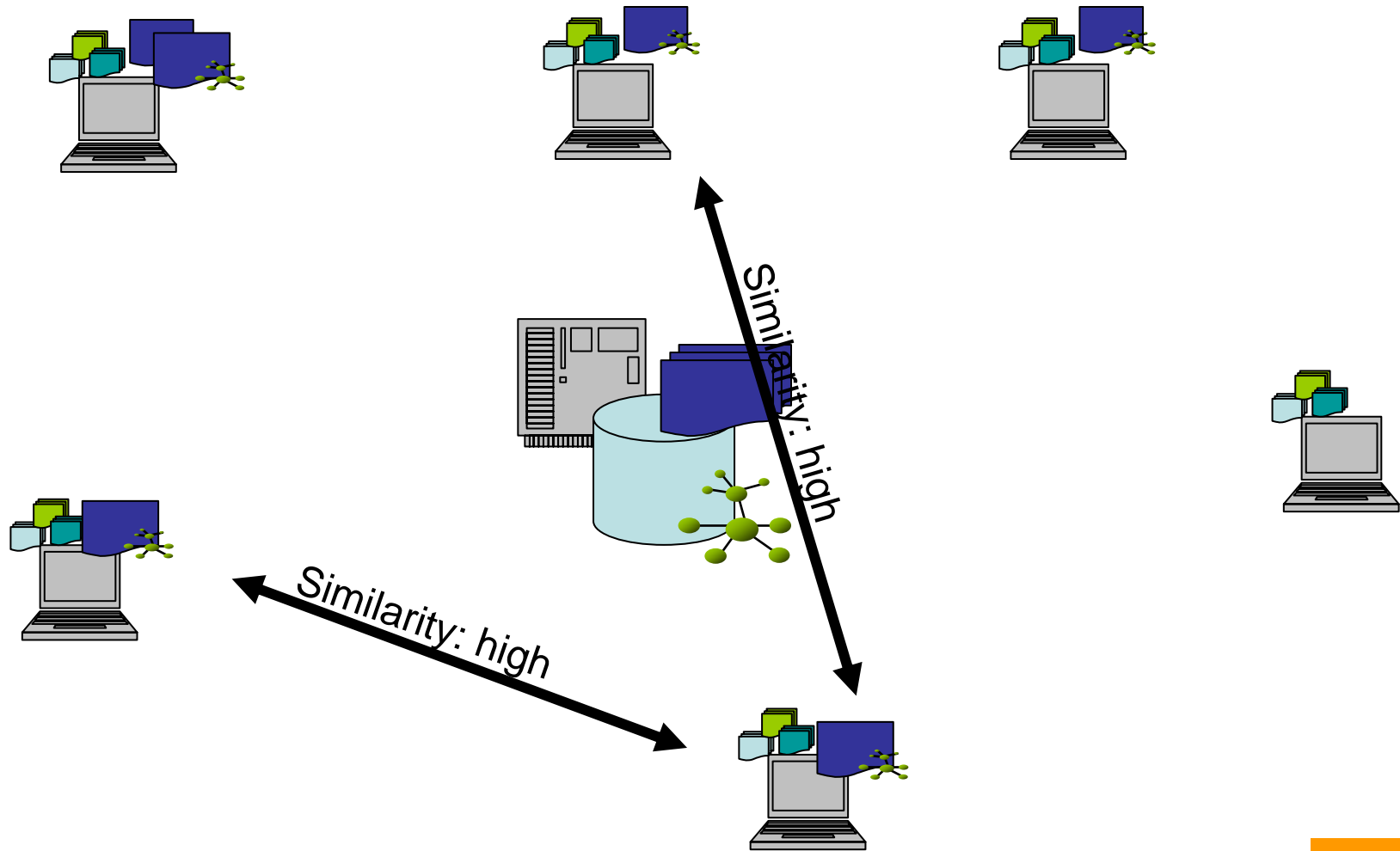
# The P2P vision



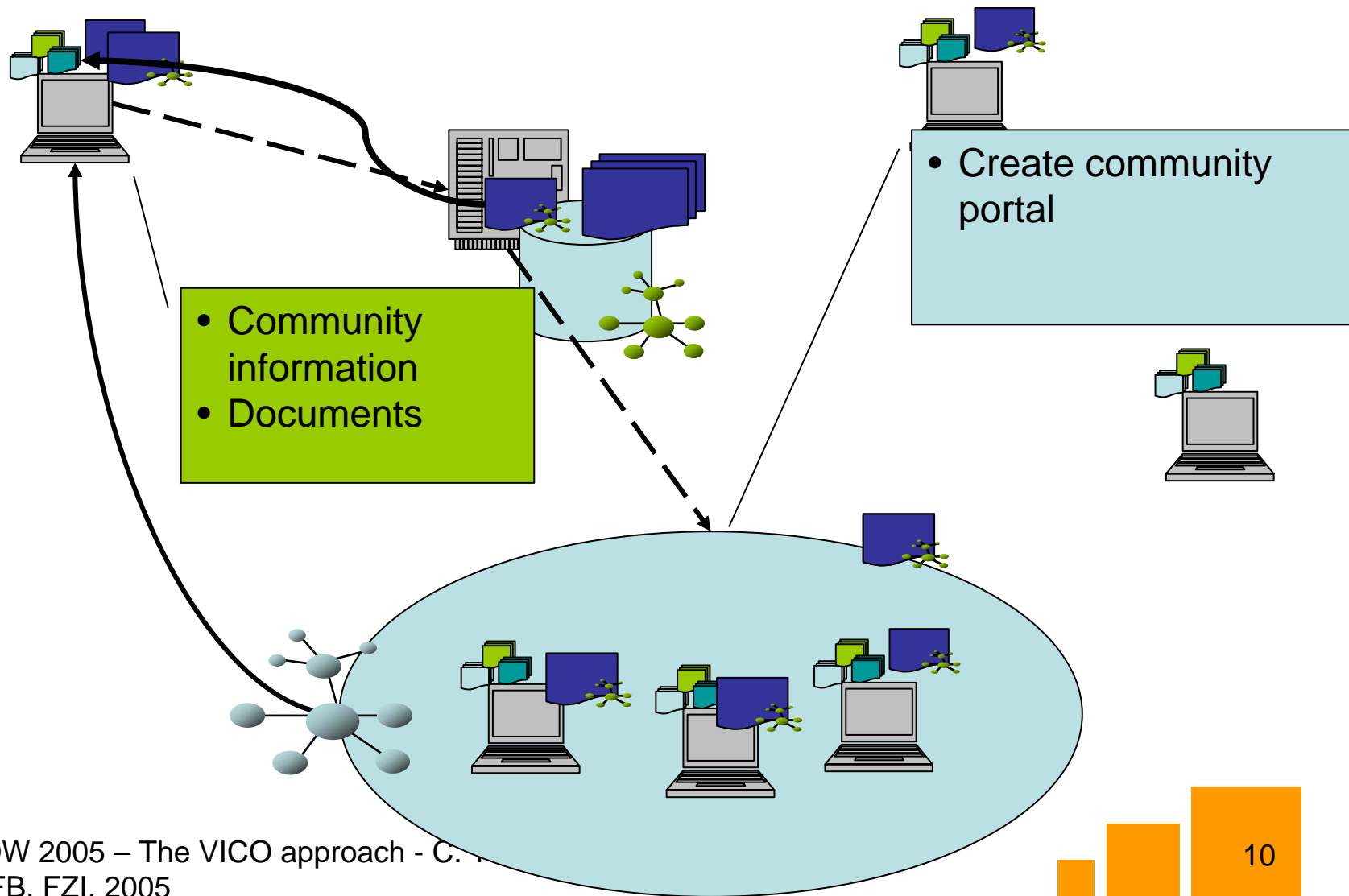
# VICO Vision



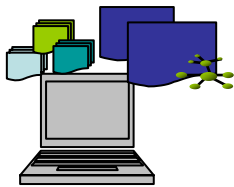
# VICO Vision



# VICO Vision

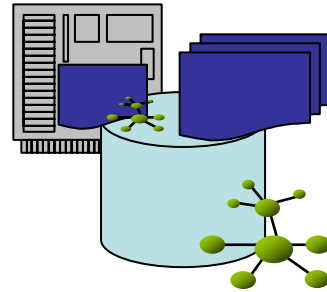


# VICO Vision



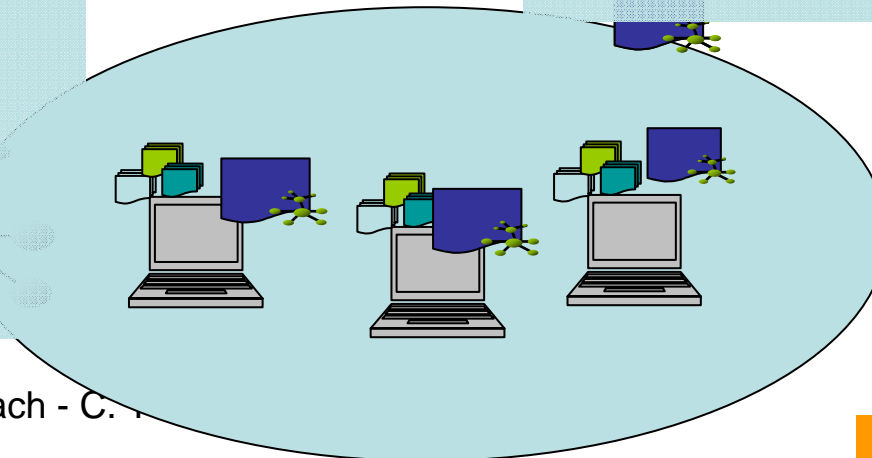
## Advantages

- High availability of most important documents
- High availability of recent documents
- High quality due to community process
- Community creation

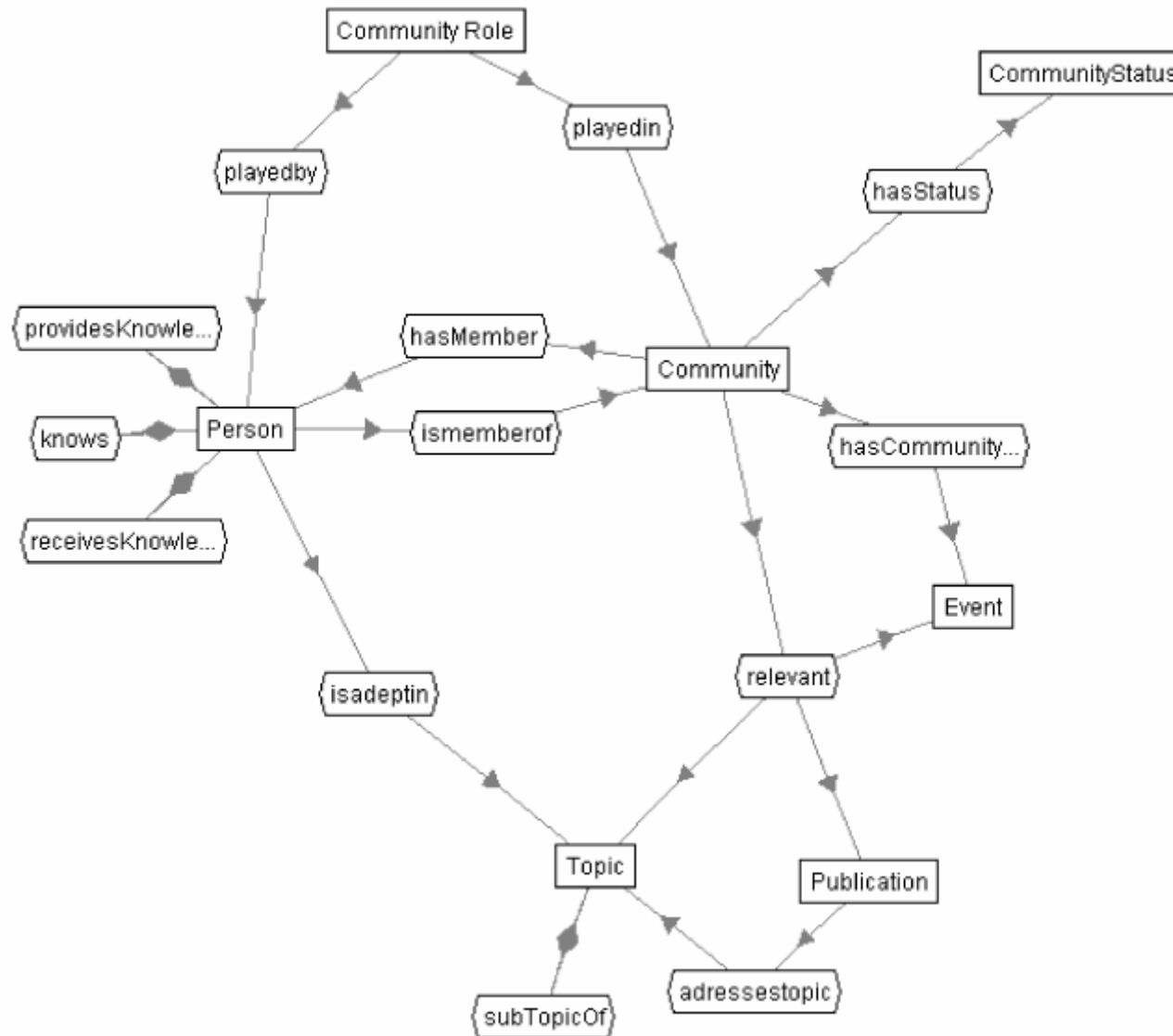


## Problems

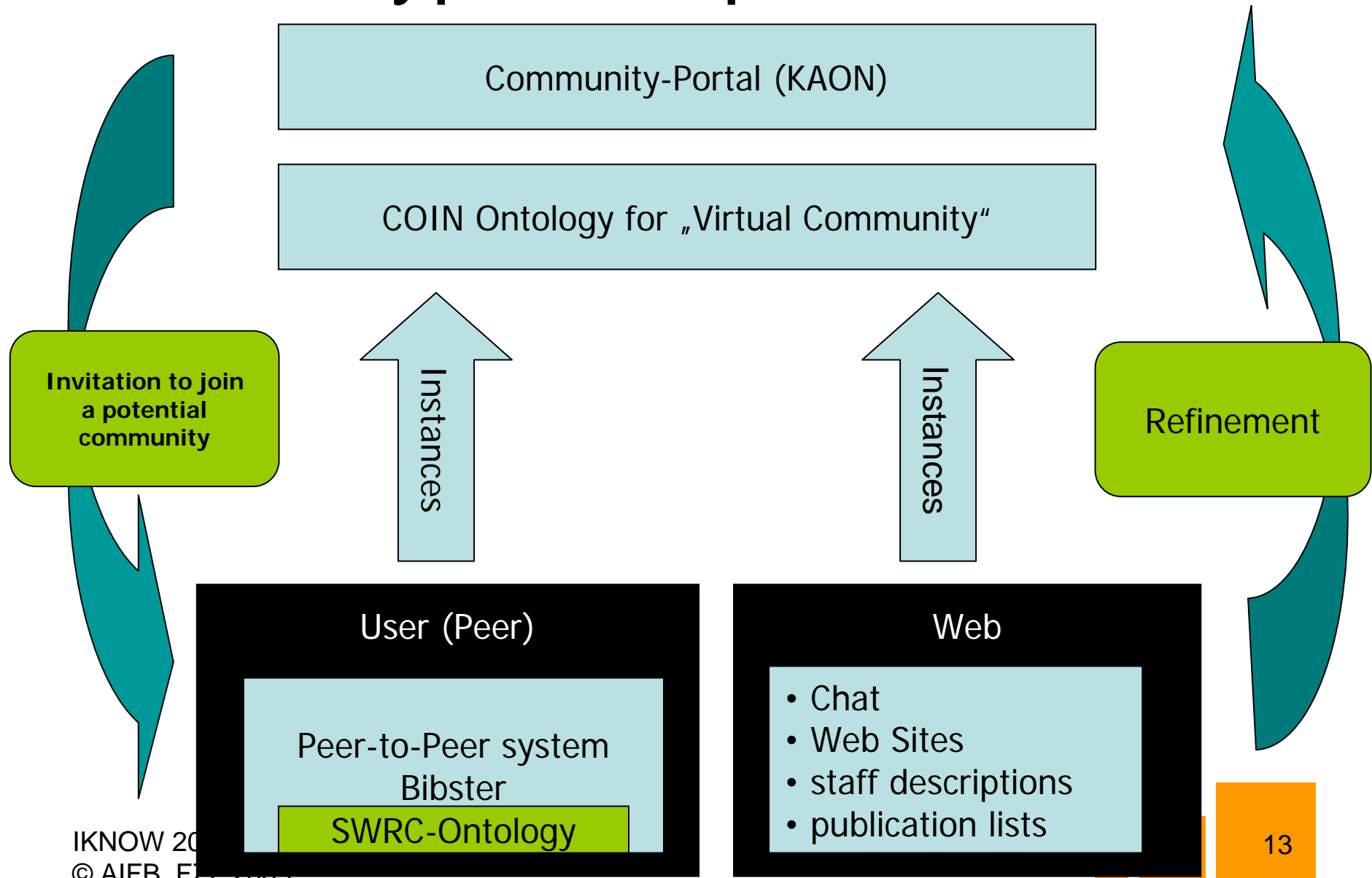
- Additional administrative effort
- Decision to query centrally or dezentrally



# The COIN ontology

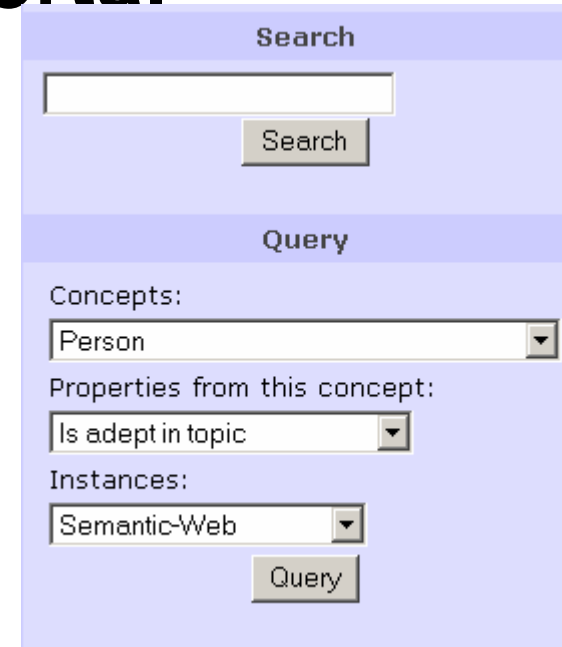


# Prototypical implementation



# Querying the Portal

- Based on KAON Portal
- Queries following COIN ontology
- Example:
  1. Searching for Persons
  2. Who are interested in a certain topic e.g. “Semantic Web”
  3. Portal returns all matching Persons



Search

Search

Query

Concepts:

Person

Properties from this concept:

Is adept in topic

Instances:


Semantic-Web

Query



Results	
<a href="#">Studer, Rudi</a>	<a href="#">Stumme, Gerd</a>
<a href="#">Staab, Steffen</a>	

# The VICO approach



VICO - Virtual Community Portal

### Login

Name:

Password:

### Shortcuts

[Choose Ontology](#)  
[Top Concepts](#)  
[Matching](#)

### Language

[Español](#)  
[français](#)  
English  
[Deutsch](#)

### Search

### Matching

#### Matching Results

**Similarity computation for Rudi Studer:**

Rudi Studer and Steffen Staab : 0.7255922307570776

Property: <http://swrc.ontoware.org/ontology#isadeptin> (weight = 5): 1.0  
Property: <http://swrc.ontoware.org/ontology#ismemberof> (weight = 3): 0.0  
Property: <http://swrc.ontoware.org/ontology#plays> (weight = 3): 1.0  
Property: <http://swrc.ontoware.org/ontology#knows> (weight = 1): 0.7071067690849304

Rudi Studer and York Sure : 0.39381401737531024

Property: <http://swrc.ontoware.org/ontology#isadeptin> (weight = 5): 0.5208895802497864  
Property: <http://swrc.ontoware.org/ontology#ismemberof> (weight = 3): 0.0  
Property: <http://swrc.ontoware.org/ontology#plays> (weight = 3): 0.7071067690849304  
Property: <http://swrc.ontoware.org/ontology#knows> (weight = 1): 0.0

Rudi Studer and Gerd Stumme : 0.38866395751635235

Property: <http://swrc.ontoware.org/ontology#isadeptin> (weight = 5): 0.9327934980392456  
Property: <http://swrc.ontoware.org/ontology#ismemberof> (weight = 3): 0.0  
Property: <http://swrc.ontoware.org/ontology#plays> (weight = 3): 0.0  
Property: <http://swrc.ontoware.org/ontology#knows> (weight = 1): 0.0

# Discovering Communities based on Query Profiles

- Idea: cluster users based on their communication profiles to detect community structures in the network.
- Operationalized variant:
  - Collect queries and answers issued by peers
  - Construct query profiles as feature vectors
  - Instances of *swrc:Topic* correspond to features
  - k-Means clustering

# Discovering Communities based on Query Profiles

- Experimental Setting
  - k-Means clustering with 10 clusters
  - qualitative analysis: 9 of 10 clusters were formed by small groups of peers with 1 to 15 members with similar research interests.



# Conclusion

- New architecture combining P2P with central repositories
- Community ontology
- Community portal creation
- Community formation algorithms
- Upcoming: Implementation beyond prototype

# Thank you!

- **IKNOW 2005**

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Idea was generated in the workshop

**“The Semantic Web in One Day”**

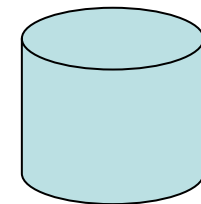
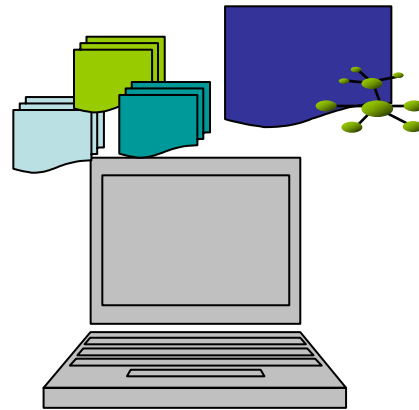
**Description at IEEE Intelligent systems:**

<http://www.computer.org/intelligent/>

**Project home page:**

<http://km.aifb.uni-karlsruhe.de/projects/swsc>

# Current Situation



# The SWRC ontology

