Exposure and Support of Latent Social Networks Among Learning Object Repository Users

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Outline

❑ Context & Motivation

❑ Data Analysis

❑ Survey

❑ Summary & Future Work

Context

- ❑ CampusContent

  - ☐ Competence Center for Research Information

    (DFG-Leistungszentrum)

  - ☐ Cross-institutional technical Infrastructure for:

    - ■ Reusable Learning objects

    - ■ Codified pedagogical experience

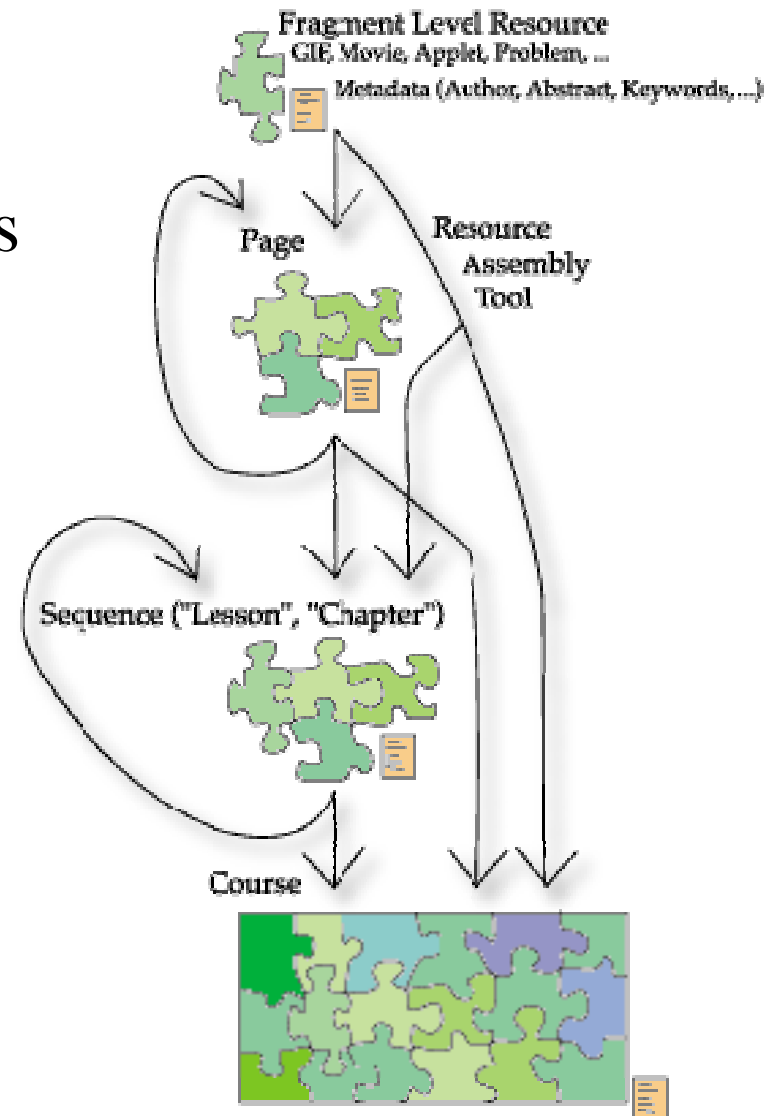   - ■ Flexible integration of pedagogy & content

Context

- Existing Learning Repositories
  - Merlot
  - Connexion,
  - LON-CAPA,
  - Ariadne
  - ...
- Practice of Reuse
  - Different Level
  - Higher Level, Higer Value, Higher Difficulty

Fragment Level Resource
GIE, Movie, Applet, Problem, ...
Metadata (Author, Abstract, Keywords,...)

Page

Resource Assembly Tool

Sequence ("Lesson", "Chapter")

Course

Motivation

- LON-CAPA as *Reference System*

  - Network of shared resources from <u>over 70 participating institutions</u>

  - <u>Shared repository of around 250,000 resources</u> including assessment questions and multimedia content

  - Less than 50% of the resources in the repository are actively reused

Objective

❑ Whether & how the sharing & reuse behavior will be influenced & enhanced by the social context of end users

   ☐ Does there exist certain community of practice in the resource sharing & reuse

   ☐ How to profile the community

   ☐ How to facilitate the sharing & reuse under the context of community of practice

Data Analysis

- ❑ LON-CAPA Log Data
    - ☐ 253,972 learning resources
    - ☐ 539 authors
    - ☐ used in 2,275 courses
    - ☐ composed by 2,120 instructors
- ■ Log Data Format
    - ☐ Description Information
        - ■ ID, Subject, Author, Keyword
    - ☐ Reuse infomormation
        - ■ Which courses use the learning resource

Result 1

❑ More resources contributed, More reused

⟶ *It's NOT True!*

Result 1

☐ The first **10** Authors with highest reuse index generated more than **40%** of reuses but only own **6%** of all resources

Table 1: Top 10 most contributing authors

Author ID	Number of Contributed Resources	Contribution Rank
001	89086	1
002	10831	2
003	10408	3
004	6672	4
005	4643	5
006	4167	6
007	3919	7
008	3816	8
009	3731	9
010	2943	10

Table 3: Top 10 Authors with the Highest NCP

Author ID	Contributed Resources	Re-Use Instances	NCP	Contribution Rank
018	1930	52586	27	18
010	2943	60212	20	10
065	646	10902	16	65
077	513	7752	15	77
014	2413	25837	10	14
054	835	7726	9	54
029	1317	12266	9	29
091	404	3128	7	91
048	919	6726	7	48
011	2937	18093	6	11

What is the criteria of choosing reusable resources?

Generation of Author and Course Profile

res A	res B	res C	res D
Subject/Keyword	Subject/Keyword	Subject/Keyword	Subject/Keyword

Res E	res F	res G
Subject/Keyword	Subject/Keyword	Subject/Keyword
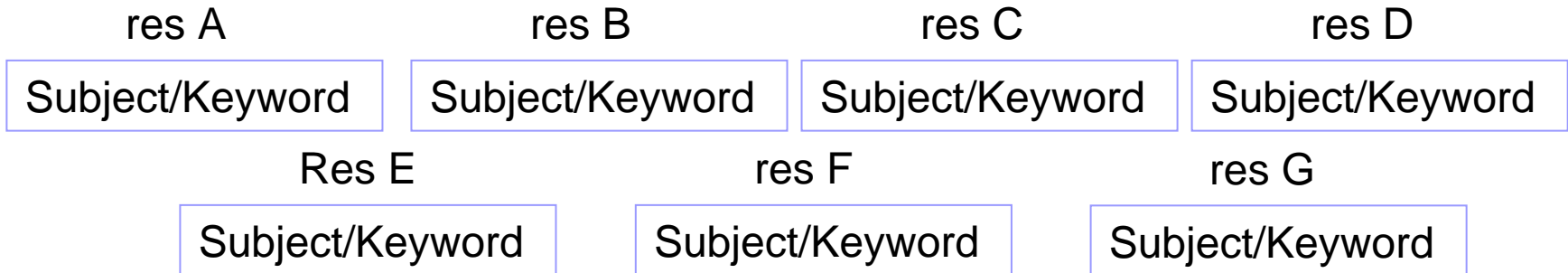
Author	
Sub 1	Ocurrence
Sub 2	Ocurrence
Sub 3	Ocurrence
Key 1	Ocurrence
Key 2	Ocurrence

Course	
Sub 1	Ocurrence
Sub 2	Ocurrence
Sub 3	Ocurrence
Key 1	Ocurrence
Key 2	Ocurrence

Result 2

❑ Metadata from subject and keyword should **NOT** be the **ONLY** criterion when considering reuse

  ☐ Take out each course, find out the authors whose profiles match best with its profile

  ☐ Compare the selected authors with the real authors from whom the course takes the resource

 ☐ For more than 70% courses, more than 70% resources are not from the top 10 "*Profile-Relevant*" authors

Result 3

- There exist apparent connected communities among those users whose resources are frequently reused.
  - Basis:
    - Co-contribution to courses
  - SAC: strongly,
    - WAC: weakly connected author community

User 66

User 31

WAC 6
energy
force
speed

User 18

SAC 1
acceleration
length
velocity

User 10

SAC 2
temperature
number
pressure

User 29

User 48

User 65

Legend:
▲ - members of SAC 1 and WAC 6
▲ - members of SAC 2 and WAC 6
△ - members of WAC 6

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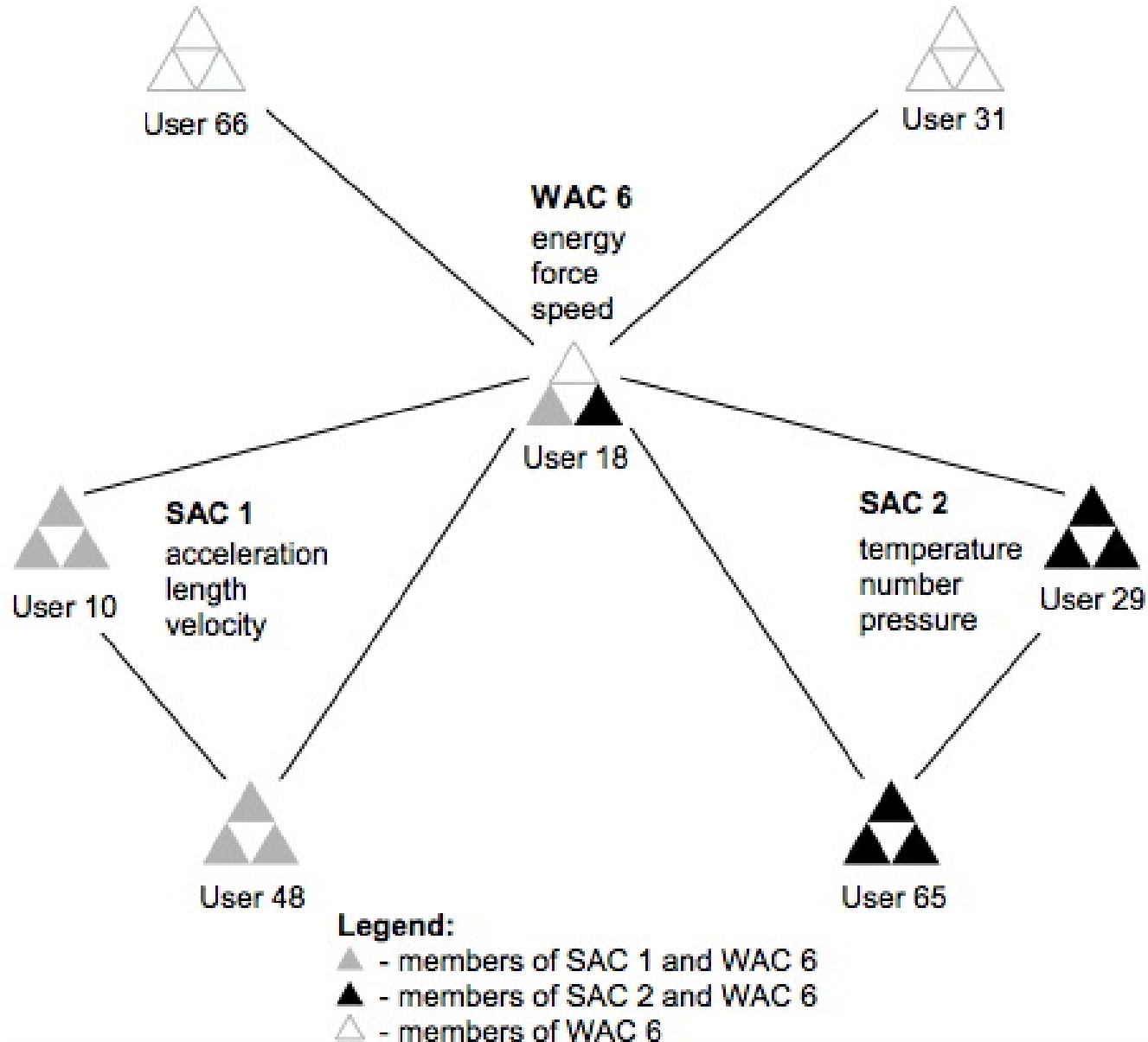
Assumption

- There exist some important context information during the process of reusable learning objects selection, which can **NOT** be adequately described by the keyword based metadata

- The exposure and description of latent community of practice may help reveal the context information, thus facilitate the process of reuse
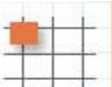
Survey

- Personal background

- Motivation to use & experience with learning resource repositories (LRR)

- Impact of LRR on course development process

- Expected potential of community support

Faceted Search

Summary & Outlook

❑ Sharing & reuse of digital learning resources has potential

❑ Current learning resource repositories should be improved, both content & interface

❑ Communities of practice do exist but are not well supported yet

❑ Prototype solution adding community facet to keyword search & browsing facilities of LON CAPA under development

❑ Will be tested & evaluated to impact design of next version of CampusContent Portal