Educational Resources as Social Objects in Semantic Social Networks

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DUTH  DUTH  UNICT  OU

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the real-world need

- enormous and fast expansion in S&T knowledge
  - wide and deep

- access to specialized state-of-the-art educational resources is needed
  - by educators:
    - updated
    - synchronized with current trends
    - exposed to alternative resources to introduce refreshed and contemporary educational experiences
  - by learners:
    - self-directed learning, personalized learning pathways, etc...
the real-world need

share educational resources

variety of types:
- conventional
- specific to a domain
- interactive, engaging, participatory, …

variety of types

heterogeneous sources
the real-world need

share educational resources

users:
- educators
- learners
share educational resources
goal: facilitate educational content sharing by creating rich interlinking among resources and users

rich social profile for resources & users

- link resources
- link resources and users

relevance?

reliability?
a semantic social network for educational content sharing

• a double social network of humans and educational resources

• social profiles enriched and linked via semantic technologies
  – controlled vocabularies
  – Linked Data cloud

• resource descriptions are exposed to LOD cloud
persons’ network

attention metadata based on interactions

educational resources network

a resource ‘family’ (based on repurposing inheritance)

tag space

persons’ tags

resources’ tags

persons’ network

repurposed

repurposed
building a ‘social’ profile for resources

- factual data, as expressed by tags
  - common tags among resources
  - common tags among resources and users

- dynamic data, based on users’ actions on resources
  - attention metadata

- resource families based on inheritance/evolution
  - repurposing history

- semantic connections and similarities of metadata
application layer: user interface & social environment

semantic linking of data and services
- service linking & metadata lifting
- RDF store
- metadata enrichment

Linked Data
- sources of educational resources on the web
  - web service
  - LMS
  - web based repository or web pages
http://metamorphosis.med.duth.gr

http://www.meducator.net
(1) based on common tags

a rich profile for users and resources
- emphasis on educational aspects

for users
- FOAF fields
- teaching experience
- research profile & publications
- learning interests

for resources
- general description
  (author, date, URL, ..)
- classification
  (type, domain, specialty, audience…)
- educational aspects
  (goals, outcomes, prerequisites, assessment, …)
(1) based on common tags

• a rich profile for users and resources earning Resource profile : enhanced by enriched metadata annotation

• learning resource A ↔Tag→ learning resource B

• learning resource A ↔Tag→ user A
Social Profile - Tags

Owner Actions

DICOM Standard: An Introduction
- License: Attribution-Non-Commercial-Share-Alike
- Resource Language: English
- Metadata: English
- Quality
- Stamp

Metadata Creator:
- Eleni Kaldoudi
- Affiliation: Democritus university of Thrace, School of Medicine
- Name: Eleni Kaldoudi
- Affiliation: PDAF URI:

Media Types: Multimedia slide/presentation

Resource Types:
- DICOM
- standard
- medical image

Discipline:
- medical informatics, medicine

Specialty of Discipline:
- radiology

Educational Level: postgraduate

repurposed from:

repurposed to:

Latest Activity:
- DICOM Standard: An Introduction has joined the network (363 days ago)
- DICOM Standard: An Introduction updated their profile icon

Teaching Interests/Subjects:
- Medical Physics, Medical Informatics and Telemedicine
- Physics for Molecular Biology, Physics of MRI

Courses I am teaching:
- MSc Course "Informatics for Health Sciences"
- MSc Course "Health and Safety in Workplaces"
- BSc Course: "Physics in Biological Sciences"
- BSc Course "Internet & Health"
- BSc Course "Medical Physics"

Learning Interests/Subjects:
- Spectroscopy, Health related technology standards, pedagogical methods and approaches

Reasons for searching / contributing medical information

Member of the Meducator Project?: Yes

Created Resources:
- Introduction to Radiation Physics
(2) collective usage interaction

- users’ actions on resources
  - create, use, annotate, repurpose, rate, comment on, suggest etc

- users actions and interactions
  - create blogs, comment, create or join groups, make searches etc..

- contextual attention metadata
  - clusters of resources and/or users

- interactions create different perspectives
(3) families based on inheritance

resource inheritance or evolution as a result of repurposing

repurposing:
changing a learning resource initially created and used for a specific educational purpose in a specific educational context, in order to fit a different purpose in the same or different educational context

implemented using the conventional human friendship declaration in social networks
Resource Family Trees based on Repurposing History and Inheritance
(4) semantic linking & enriching

• semantic enrichment of resource profiles by harvesting domain specific controlled vocabularies

• further linking of enriched resources via the Linked Data Cloud
  – e.g. scientific publications, formal curricula, ECTS, etc

• exposing enriched resource profiles to the cloud
Semantic Links between Resources by Harvesting the Linked Data Cloud

The API implementation

- allows keyword searching in more than 260 biomedical ontologies
- applies some level of reasoning
after semantic enrichment

before enrichment
latest statistics

• over 350 educational resources
• 80+ repurposed
• 100+ registered users
• exposing over 17000 triples just for the resources.
### mEducator: Multi-type Content Repurposing and Sharing in Medical Education

**Project Title:** mEducator: Multi-type Content Repurposing and Sharing in Medical Education

**Project Type:** Best Practice Network

**Programme:** eContentplus
- Information Society & Media Directorate General, European Commission

**Contract:** ECP 2008 EDU 418006

**Duration:** 2009-2012

**Consortium:** 14 partners from 9 EU countries, lead by AUTH (GR)

**Budget:** ~4.500.000 €

**Website:** [http://www.meducator.net/](http://www.meducator.net/)
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