

Creating Medical eLearning Resources through Repurposing Procedures, Social and Semantic Web Functionalities

Medical Education Informatics

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Teodor Ștefănut, Dorian Gorgan,
Nikolas Dovrolis, Eleni Kaldoudi, Stefan Dietze

Outline

- Repurposing
- Repurposing types
- Challenges
- Proposed solution
 - Metamorphosis+
 - mEDIS
- Conclusions

Repurposing

- create new, improved and highly adapted teaching resources based on previously created learning materials
- a repurposing activity is described by:
 - parents – resources that are repurposed
 - repurposing context – what type of changes are applied
 - repurposing description – how are the changes applied

Repurposing types identified in mEducator (1)

- Changes in the content itself
 - modify some of the text, images or other components of the resource(s)
- Repurposing to different languages
 - translate and adapt the materials to a new language
- Repurposing to different cultures
 - adapt presented data to the cultural background of the targeted audience
- Repurposing for different pedagogical approaches
 - change learning material to present same notions in a different pedagogical approach: ex. for simple presentation to problem based learning
- Repurposing for different educational levels
 - adjust the prerequisites and desired outcomes of the learning resource

Repurposing types identified in mEducator (2)

- Repurposing for different disciplines or professions
 - replace the elements specific to the initial discipline, with the ones of the new discipline
- Repurposing to different content types
 - replace text elements with images, videos with 3D representations etc.
- Repurposing for different technology
 - change the user interaction from text-based to graphical annotation based
- Repurposing for people with different abilities
 - adapt the materials for visually impaired people by improving accessibility
- Repurposing to Educational Content
 - transform data obtained from experiments for didactical purpose

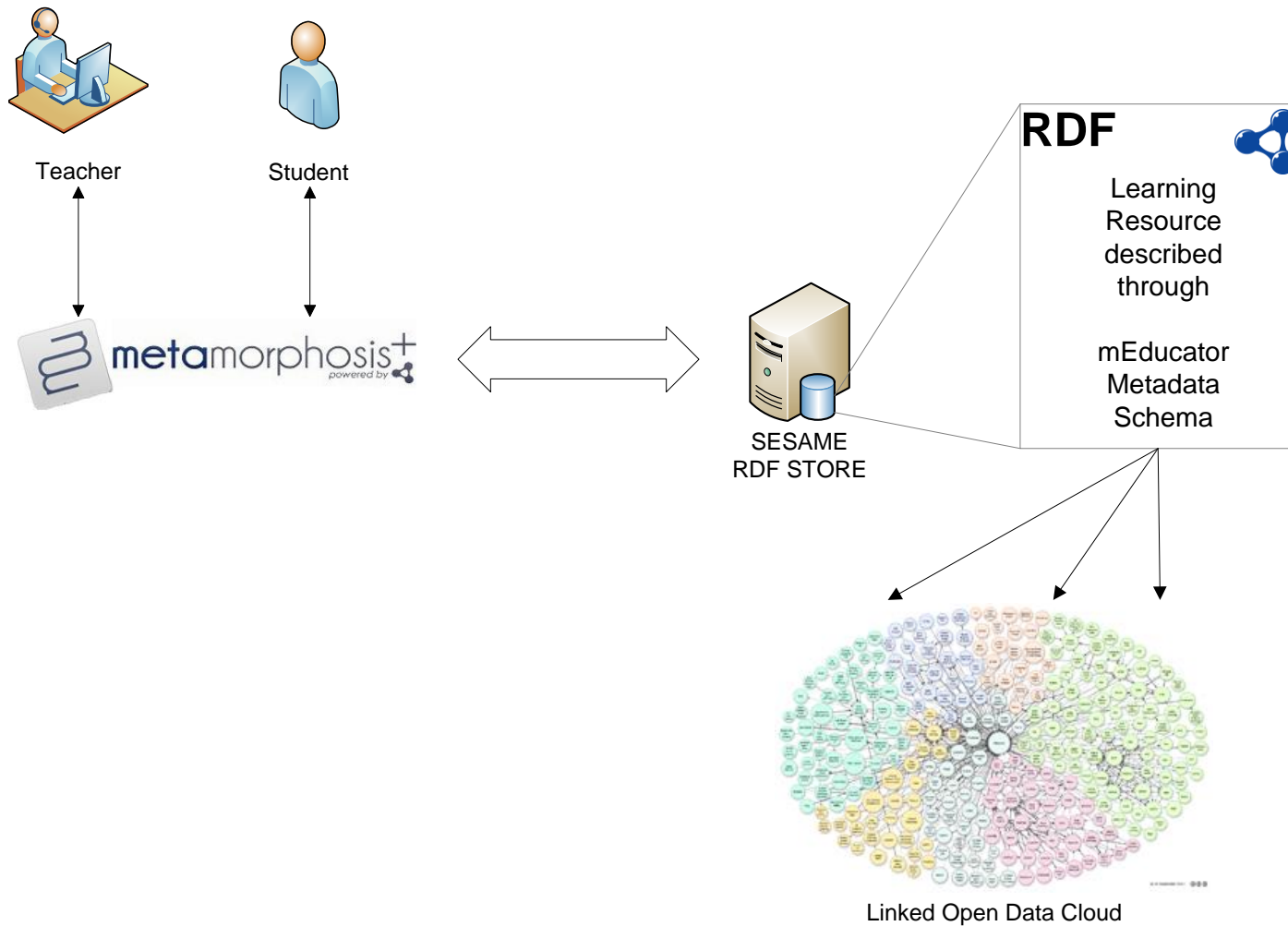
Challenges

- identify valuable materials for repurposing
- retrieve the chosen resources
- reuse and repurpose resources
- describe repurposing actions taken
- publish the new created resource for others to use & repurpose

Metamorphosis+: identify resources

- part of mEducator 3.0 semantic web network
- provides complex functionalities for
 - resources metadata description and management in mEducator schema format
 - social relations between users and/or learning resources
 - semantic and social enabled/enhanced resources search
- complete description of the repurposing process

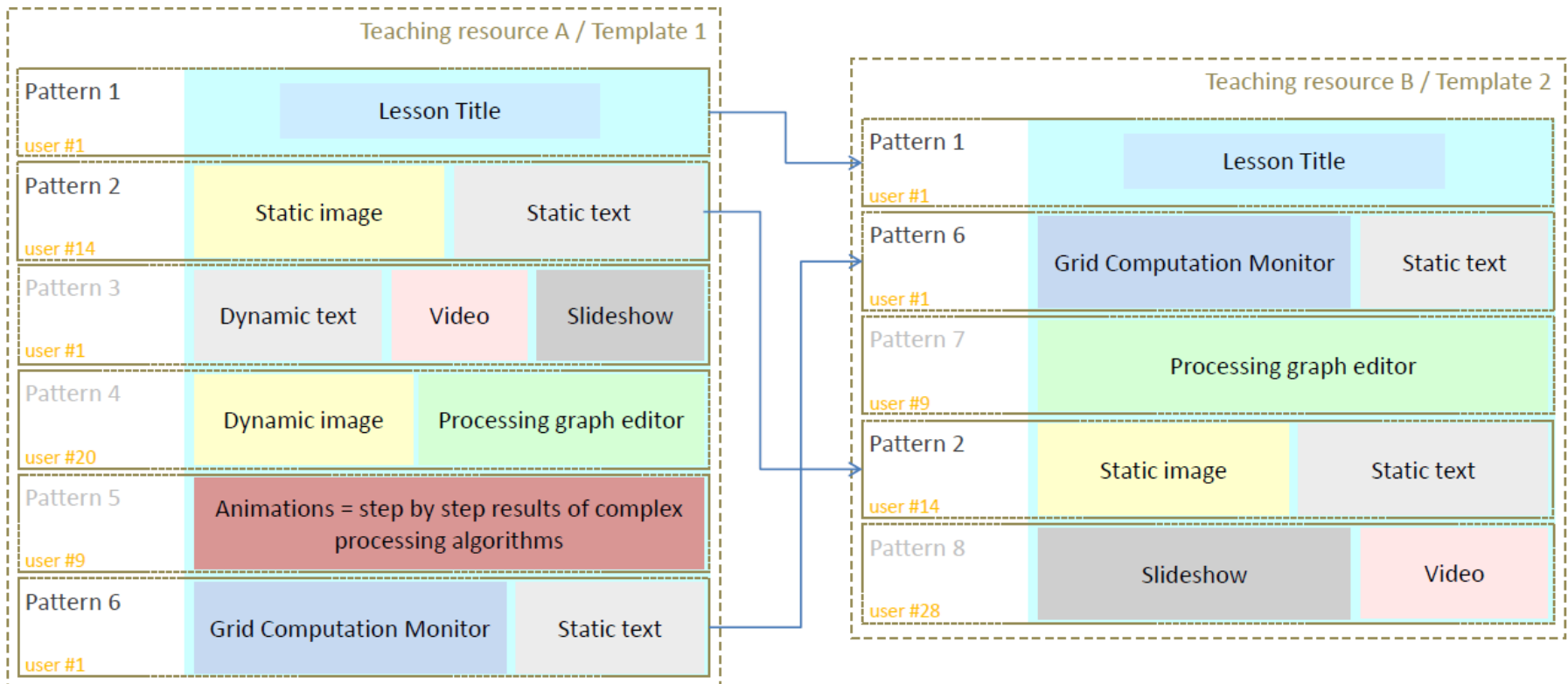
Metamorphosis+: identify resources



mEDIS: create new resources through repurposing

- tools based environment for developing teaching resources
- support for distributed resources access
- meta-design oriented application for medical professionals
- provides functionalities for user interaction customization (adapt user interaction techniques to the specificity of each content type)

mEDIS: create new resources through repurposing



mEDIS: create new resources through repurposing



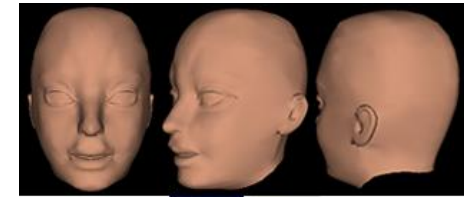
Pictures



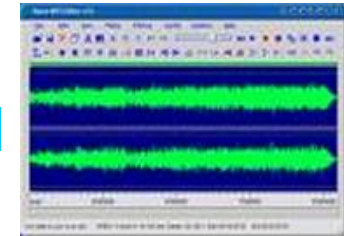
Videos



Documents



3D Objects



Sounds



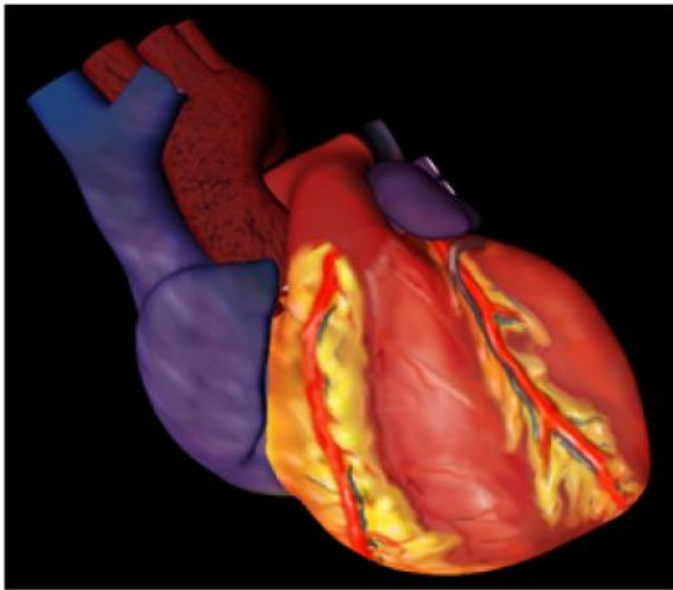
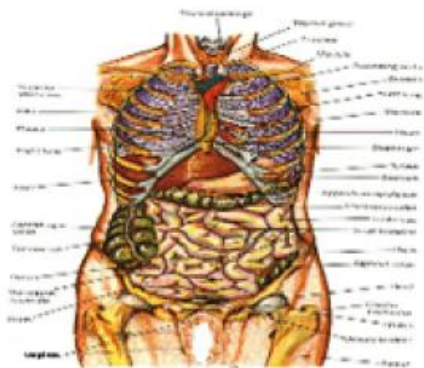
Other multimedia content

mEDIS: create new resources through repurposing

Pattern 0 ▲ ⚙ ✕

General presentation of internal organs

Pattern 1 ▲ ⚙ ✕



+ - | Switch to: [View mode](#)

Image URL:

Width: Height:

Pattern 2 ▲ ⚙ ✕

Metamorphosis+: describe the new resource

Edit profile

educational resource

General Description Classification Educational Repurposing **Vocabularies** Companion

Resource Title
http://meeting.com/private/files/meeting_hCHmBX.pptx

Identifiers

	URI
	-- identifier type --
[-]	-- identifier type --

[add]

-If the resource is protected by a Creative Commons licence, please choose which one. (If your resource is not protected by any IPR licence, please get one by visiting the Creative Commons website, and then state which licence you acquired below).

If the resource is protected by any other IPR license please state which one:

Quality stamp

[add]

Resource Language
-- select language --

Language of metadata
-- select language --

Save

Metamorphosis+: describe the new resource

Edit profile

educational resource ▾

General Description Classification Educational Repurposing **Vocabularies** Companion

Enter your search term: Your search found 191 hits from 17 ontologies

Bio-portal response:

- Addiction Medicine - Psychiatry & Neurology - Physicians - NUCCProviderCodes | NCI
- Admission to neurology department | NCI Metathesaurus
- Admission to neurology department | Read Codes, Clinical Terms Version 3 (CTV3)
- Admission to neurology department | SNOMED Clinical Terms
- Admission to paediatric neurology department | Read Codes, Clinical Terms Version 3
- Admission to paediatric neurology department | NCI Metathesaurus
- Admission to paediatric neurology department | SNOMED Clinical Terms
- Admit neurology emergency | NCI Metathesaurus
- Admit neurology emergency | Read Codes, Clinical Terms Version 3 (CTV3)
- Admit neurology emergency | SNOMED Clinical Terms
- Admit neurology emergency | SNOMED Clinical Terms
- Admit neurology emergency | SNOMED Terminos Clinicos

Filter by ontology (one or many):

- CRISP Thesaurus, 2006
- FDA Medical Devices (2010)
- Galen
- Health Level Seven
- HOM-CPT
- HOMERUN Ontology
- ICPC-2 PLUS
- Logical Observation Identifier Names and Codes
- LOINC
- Medical Subject Headings
- Metathesaurus CPT Hierarchical Terms
- NCI Metathesaurus

Ontology:

URL:

Chosen keywords:

Chosen disciplines:

Chosen specialities:

Metamorphosis+: describe the new resource

Edit profile

educational resource ▾

General Description Classification Educational **Repurposing** Vocabularies Companion

If the Resource is a repurposed one, use this section to connect it with it's parents.

Selected parent resources:

<<

<<

Parent resource that is not in the system:

Parent title:

Parent identifier:

Parent resource that is in the system:

- 3D stomach model with description of the main sections
- A rare case of intestinal obstruction
- A research facility for habitation questions to be built at the German
- Abdominal Aorta Aneurysm (AAA)
- acid base balance**
- Actor Simulated Patient Interview
- Acute Upper Extremity Ischemia
- An e-learning platform for Aerospace Medicine
- An Introduction to DICOM Standard
- Anna-Lena Olofsson Branched Virtual Patient

Filter:

Conclusions

- using social and semantic web functionalities relevant resources can be identified more easily
- through mEDIS, medical specialists without technical knowledge can reuse existing learning resources, even from distributed sources, and have the possibility to create new materials through repurposing
- through repurposing information one can provide better description for the new resources

Questions?

Thank you !