Media Mixing for e-learning

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• Start: support service
• Now: largest web portal with video edu&open access
  • 18,000 videos (1-1.5h)
• 11,900 authors
• 10,000 unique visitors/day
Facts

- Informal learning channel
- Promoting science, fostering knowledge
- OER
- Mobility
- Award-winning
  - UN WSA for „e-science & technology“
  - 2009 – WSA, 2013 – WSA of the decade
- Aims
- OpeningUpEducation Initiative
OpeningUpSlovenia

Slovenia is proposing to take a lead in OpeningUpEducation initiative set by EU by:

• Providing EU state level commitment for the programme by all stakeholders and

• offering Slovenia as a national test bed to develop, test and deploy best practices

„The OpeningUpSlovenia case study - Slovenia has strategically committed to open education on all levels and over complete scale“
Initiators

- Jožef Stefan Institute
- Knowledge 4 All Foundation Ltd.
- University of Maribor
- University of Primorska
- University of Ljubljana
- University of Nova Gorica
- Ministry of Education, Science and Sport
- OS Savsko Naselje primary school, representative of the national primary schools cluster
- Vrtec Trnovo kindergarten, representative of the national kindergarten cluster
- Chamber of Commerce and Industry of Slovenia
- The Managers' Association of Slovenia
- Chamber of craft and small business of Slovenia

ALL ACTORS in SLOVENIA BROUGHT TOGETHER

research, research connections and infrastructure
Slovenian public universities
government
national primary schools cluster
national kindergarten cluster
industry, business
MediaMixer Project and VideoLectures MashUp

How media fragments and their re-mixing can enable new experiences for e-learners
Media creation & re-use in e-learning

• E-learning materials are increasingly multimedia: more video recordings, more accompanying materials such as slides
  – E-learners need to be able to search and retrieve the material they are looking for (based on its subject)
  – Consumption trends towards mobile and on-the-go means interest focuses on the parts of the material of particular interest
The MediaMixer hub

- Video analysis tools
- Video annotation tools
- Video metadata creation and publication
- Digital rights management
- Media search and retrieval
- Media negotiation, purchase and re-use

1) AV material analysis and annotation
2) Fragment Definition
3) Rights and Cost Assignment
4) Fragment Upload
5) Clearing (Sell)
6) Search, Browsing
7) Rights and Cost Assessment
8) Download
9) Composition of new AV materials
10) Clearing (Buy)
Current USER workflow
Problems

- Search (text matching only over titles, descriptions)
- Users looking for learning materials on specific topics - unique requirements
- Users looking for very specific information - fragments, not entire lectures
- Lack of time for watching, the need for mobile version
- The need for meaningful structures, curriculums
- Videolectures.NET strategy includes continuous introduction of new technologies - important initiative to provide users with access to the semantically enriched content fragments...
Current CM workflow

1. SIGN-IN AS ADMINISTRATOR
2. MODIFY EVENT
3. MODIFY CONTENT
4. ADD NEW EVENT
5. ADD NEW LECTURE
6. ADD CONTENT
7. ADD EVENT INFO
8. ADD LECTURE INFO
9. DATABASE
10. VIDEO
11. SLIDES
12. VIDEO & SLIDES SYNC
13. REVIEW
14. PUBLISH EVENT
Problems

• From manual to automatic
• Save CM‘s time, employer money
• The need for new functionalities

(automatic textual transcriptions from speaker audio, translations (FP7 transLectures), concept extraction from slides (not just titles but textual content), video analysis, semantic annotation - video annotation process, segmentation...)
• Manually make meaningful structures, curriculums (takes too much time!)
Benefits from MediaMixer technology

• **Simplify** existing workflows
• **Improved** search and browsing in general and **retrieval of fragments**
• Fragments of learning materials from the site, ordered in a meaningful way
• **Content on demand**: easier and quicker access to specific topics of interest
• Direct intuitive access to a **single learning channel** built around the topic searched for
• Producing **new learning materials - curriculums**
• Content specifically **addressable** and hence **bookmarkable/saveable** for subsequent reference and viewing
• **New contexts** -> dynamic provision of such learning resource would be particularly useful in mobile consumption contexts
• These could subsequently form **new distribution channels** for VideoLectures (e.g. video streams / TV channels on selected topics)
• This could drive to **more repeated access and win new users**!
New User Workflow
New CM Workflow

1. Sign-in as Administrator
2. Add Event
3. Add Event Info
4. Add Lecture
5. Add Lecture Info
6. Add Content
7. Segmentation
8. Logical Structured Fragments
9. Add Structure (Curriculum)
10. Video & Slides Sync
11. Video
12. Slides

- Automatic Textual Transcription
- Concept Extraction
- Video Analysis
- Semantic Annotation

14. Review
15. Publish Event
**VideoLecturesMashup - demo**

- MM technologies (semantic annotation, media fragment URIs)

Search lectures

Search for a correct DBpedia title, like Statistics, Machine learning, Kernel methods, Structure, ...

MediaMixer | Community set-up and networking for the reMIXing of online MEDIA fragments
Co-funded by the European Union, Nov 2012 - April 2014
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Search results: Learning

- Sparse Methods for Under-determined Inverse Problems [1/3]
  Rémi Gribonval, 2011 (904 views)
  t=36.62,43.66 t=55.17,62.12 t=1665.45,1672.1 t=3884.84,3890.18

- Kernel Methods [1/3]
  Bernhard Schölkopf, 2011 (2432 views)
  t=127.8,131.74 t=601.12,604.27 t=802.72,808.51 t=913.37,920.9 t=1513.2,1517.61 t=1710.45,1716.16

- Bayesian Inference [1/3]
  Peter Green, 2011 (3979 views)
  t=146.62,151.25 t=276.1,279.8 t=384.13,389.21 t=420.25,427.48 t=565.67,568.86

- The Biology of the Language Faculty: Its Perfection, Past and Future
  Noam Chomsky, 2007 (745 views)
  t=389.5,397.48

- Sparse Methods for Under-determined Inverse Problems [2/3]
  Rémi Gribonval, 2011 (904 views)
  t=417.57,426.08

- The Idea of Universality in Linguistics and Human Rights
  Noam Chomsky, Elizabeth S. Spelke, 2005 (964 views)
  t=665.1,672.89 t=4166.35,4162.07

- Fast global convergence rates of gradient methods for high-dimensional statistical recovery
  Alekh Agarwal, 2010 (398 views)
  t=1116.12,1121.85

- Bayesian Nonparametrics [2/3]
  Yee Whye Teh, 2011 (3083 views)
  t=1429.07,1433.08 t=2650.0,2696.08 t=3152.13,3160.84 t=4464.04,4472.06 t=5072.36,5078.12 t=6263.26,6257.6

- Kernel Methods and Support Vector Machines [3/3]
  John Shawe-Taylor, 2009 (2356 views)
  t=1848.48,1855.82

  Jure Leskovec, 2007 (6608 views)
  t=1977.02,1982.26

- Bayesian Nonparametrics [3/3]
  Yee Whye Teh, 2011 (3083 views)
  t=2441.8,2449.84 t=2549.15,2564.38 t=3386.8,3393.0 t=3393.56,3398.2 t=3475.31,3480.82 t=3522.42,3527.86
Sparse Methods for Under-determined Inverse Problems

Structure of the course

- Session 1: Panorama
  - sparsity: compression, inverse problems, learning
  - introduction to compressed (random) sensing
- Session 2: Algorithms
  - review of main algorithms & complexities
- Session 3: Guarantees for Deterministic vs Random dictionaries
  - compared success guarantees for different algorithms
  - robust guarantees & Restricted Isometry Property
  - explicit guarantees for various inverse problems

http://videolectures.net
http://mediamixer.videolectures.net/
Welcome to the MediaMixer community portal!

Making Media more valuable for its owner and more useful for its consumer

Free sign-up

Intro to all technology at community.mediamixer.eu/about

Updated with latest materials on all Media Mixer topics:
- Technology use cases
- Demonstrators
- Tutorials
- Presentations
- Software
- Specifications

Discussion fora for conversations on Media Mixer topics
- Events calendar

http://community.mediamixer.eu
Thank you for your attention!

Say hello  @project_mmixer