JOANNEUM RESEARCH DIGITAL

DIGITAL - Institute for Information and Communication Technologies

Enhancing Annotations and Content Retrieval Through Semantic Linking

Wolfgang Halb

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Mission Statement of JOANNEUM RESEARCH

- Commitment to applied research and technology development
- Major contribution to securing the competitiveness of Styria as a centre for research, innovation and business
- Knowledge and technology transfer to business and administration through research and development
- Close cooperation with companies and institutions, Styrian universities and universities of applied sciences, institutes of the Austrian Academy of Sciences and the public sector

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JOANNEUM RESEARCH Forschungsgesellschaft mbH

Executive Board

JOANNEUM RESEARCH

Research Units

MATERIALS
Institute for Surface Technologies and Photonics

- Micro- and Nanostructuring
- Light and Optical Technologies
- Laser Processing
- Sensor Systems
- Functional Surfaces

HEALTH
Institute for Biomedicine and Health Sciences

- Biomedical Technology and Monitoring
- Bioanalytics and Metabolomics
- Nanotoxicology and Nanomedicine
- eHealth and Health Sciences

DIGITAL
Institute for Information and Communication Technologies

- Remote Sensing and Geoinformation
- Machine Vision Applications
- Space and Acoustics
- Audiovisual Media
- Intelligent Information Systems

RESOURCES
Institute for Water, Energy and Sustainability

- Water Resources Management
- Laboratory Centre for Isotope Hydrology and Environmental Analytics
- Geophysics and Geothermy
- Energy Research
- Industrial Water Management and Wastewater Technologies
- Plant Materials Sciences and Utilisation

POLICIES
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- Technology, Innovation and Policy Consulting
- Technology, Foresight and Planning
- Statistical Applications
- Regional Science, Risk and Resource Economics

Affiliated Companies

- ACIB GmbH[2]
- BIOENERGY 2020+ GmbH[1]
- BioNanoNet Forschungsgesellschaft mbH
- FH JOANNEUM Gesellschaft mbH
- Human.technology Styria GmbH
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- Kompetenzzentrum für wissensbasierte Anwendungen und Systeme Forschungs- und Entwicklungs GmbH[1]
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- WATERPOOL Competence Network GmbH
- Materials Center Leoben Forschung GmbH[2]
- NanoTecCenter Weiz Forschungsgesellschaft mbH
- Polymer Competence Center Leoben GmbH[1]
- Research Center Pharmaceutical Engineering GmbH[1]

[1] K1 Centre [2] K2 Centre

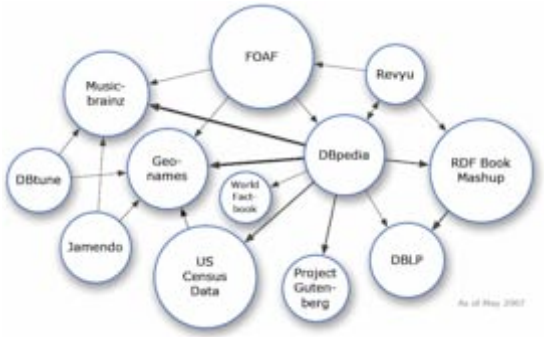
As of: January 2011

Linked (Open) Data Background

- Linking Open Data W3C SWEO community project started in 2007
- Based on ideas by
  - Sir Tim Berners-Lee (Linked Data)
  - Open Data Movement - aims at making data freely available to everyone
- LOD goal is to extend the Web with a data commons by publishing various open data sets as RDF on the Web and by setting RDF links between data items from different data sources
- Making data available for efficient human and machine consumption

Linked Open Data

- Based on „Semantic Web“ idea
- Linked Data Principles
  1. Use URIs as names for things
  2. Use HTTP URIs so that people can look up those names
  3. When someone looks up a URI, provide useful information, using the standards (RDF, SPARQL)
  4. Include links to other URIs so that they can discover more things



2007

2011

LOD cloud diagram
by Richard Cyganiak and Anja Jentzsch
http://lod-cloud.net/

CaMiCatzee (Catch Me If You Can) Proof-of-Concept

- Multimedia interlinking concept demonstrator
- Search person descriptions in flickr
- Allows flexible retrieval based on Linked Data, query can also include common sense knowledge

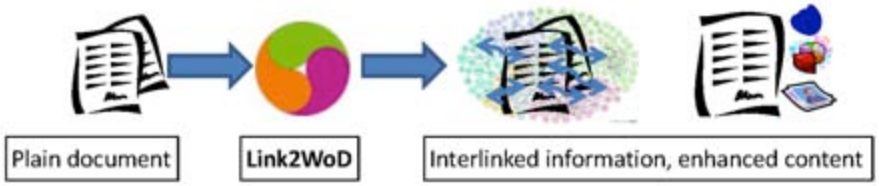
SALERO Demonstrator

- Generating RDF by annotating multimedia files (SALERO Intelligent Media Annotation & Search)

SALERO

Media Industry

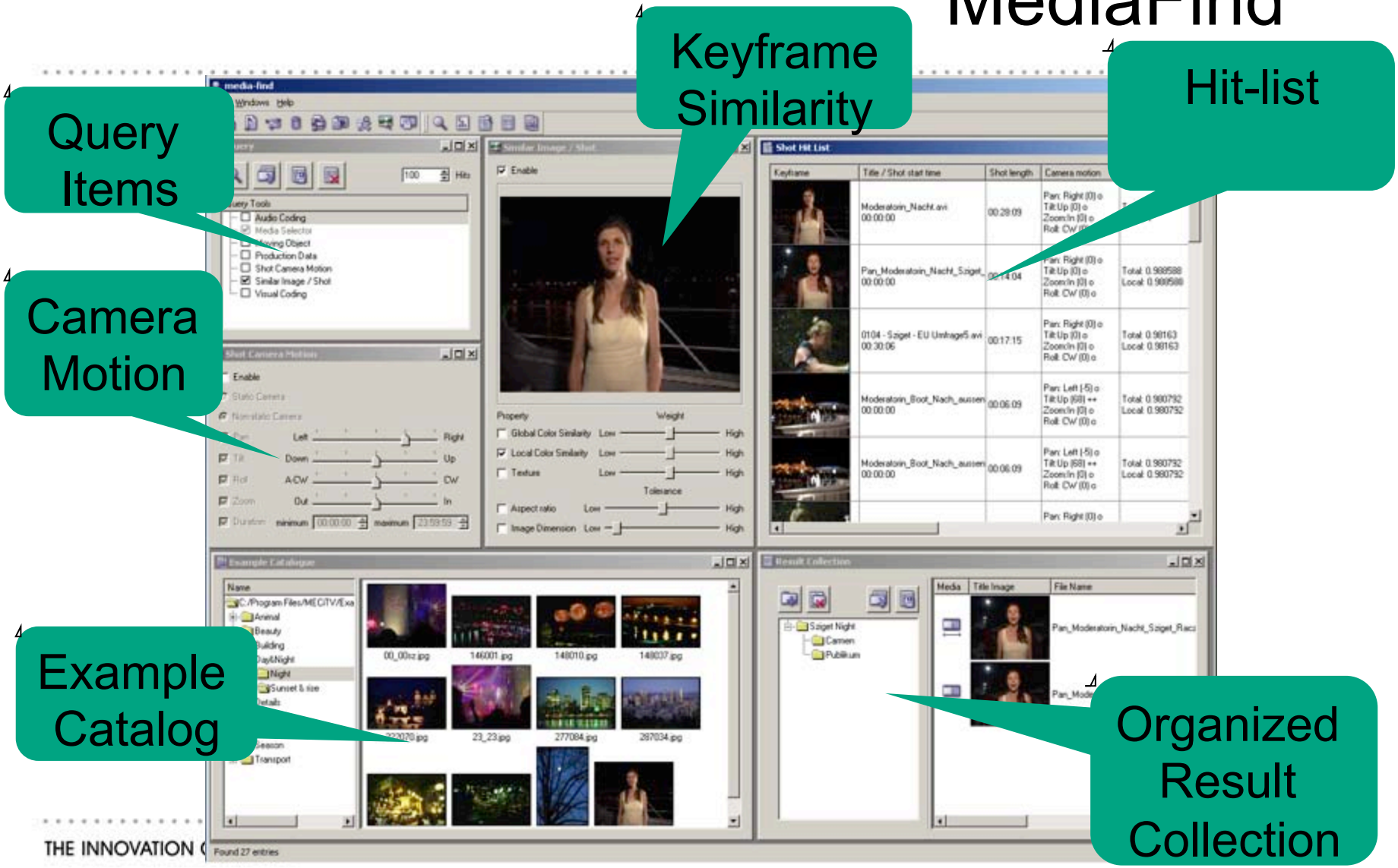
- Several online content providers going in the direction of providing Linked Data (BBC, NYT, ...)
- Demonstrator with Link2WoD



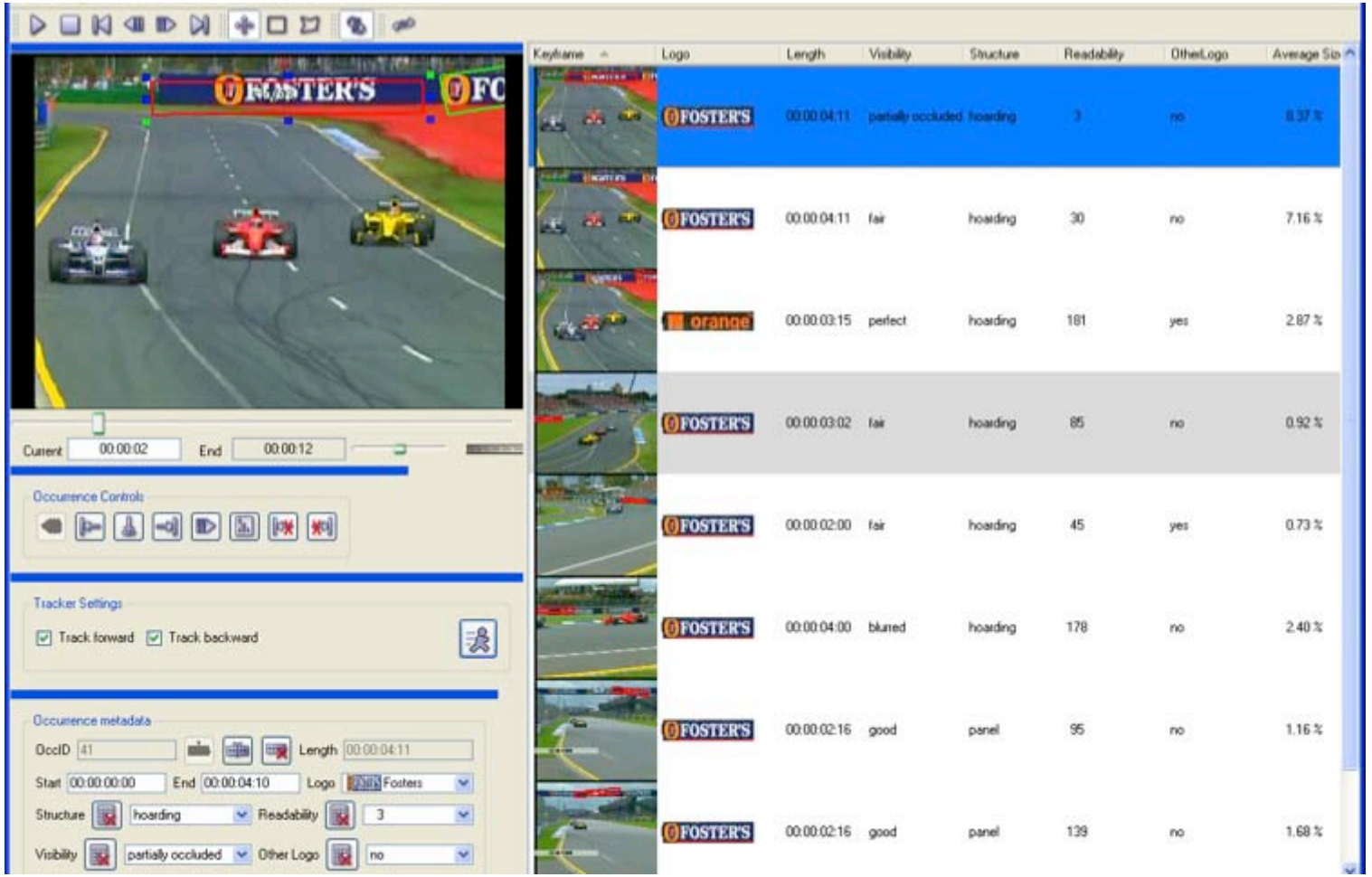
Baseline AV analysis modules at JRS

- Shot boundary detection
- Key frame extraction
- Key frame feature extraction, low-level features (color, texture, etc.)
- Stripe image extraction
- Camera motion estimation
- Object/concept/scenario identification (with limitations)

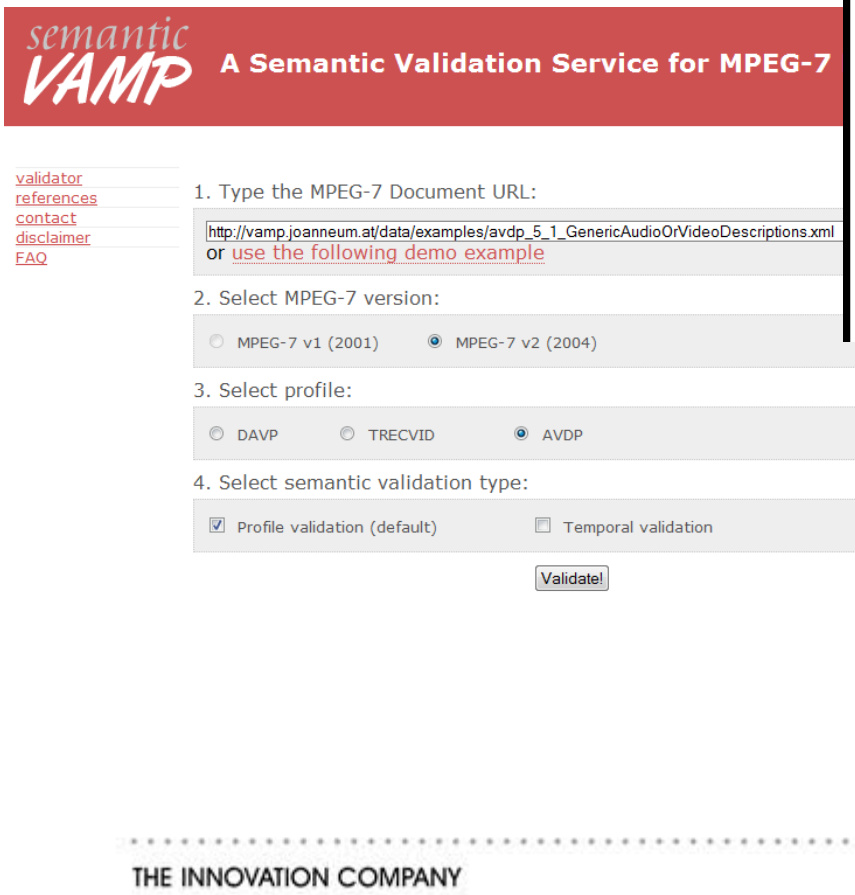
Multimedia Mining Toolbox MediaFind

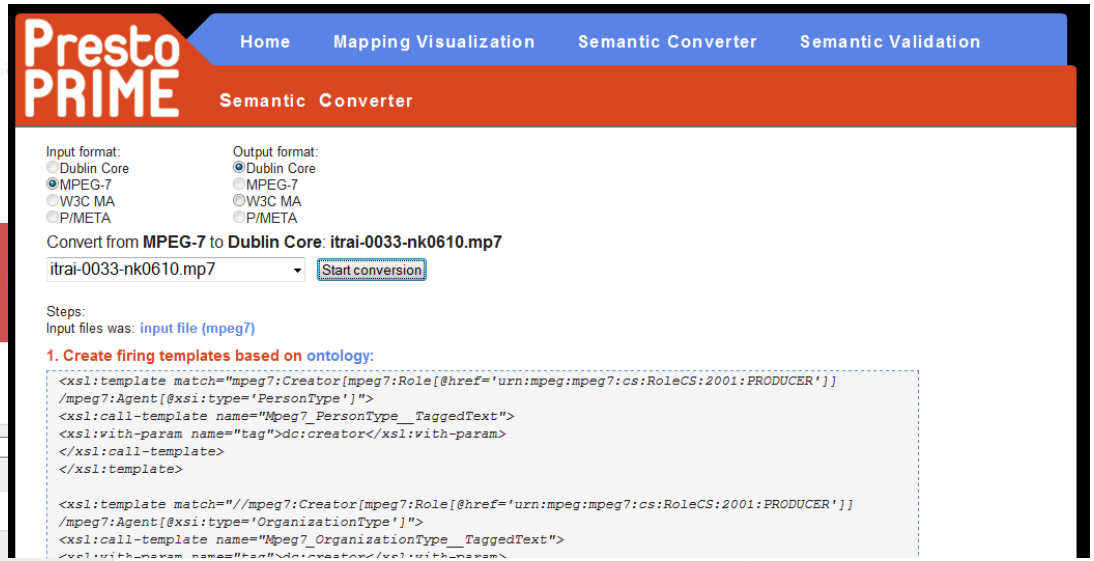


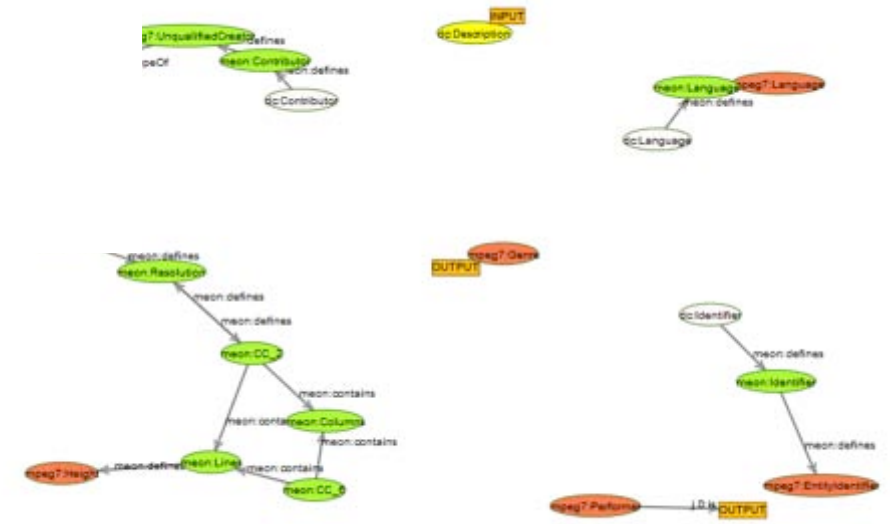
BrandDetector



Metadaten Mapping etc.







Inspiration machine

Standardisation activities at JRS

- W3C
  - Media Annotations WG
  - RDB2RDF WG
- EBU
  - MPEG-7 Profile for Content Analysis in media producation
- MPEG
  - MPEG eXtensible Middleware (MXM): Implementations for GenericMetadataEngine

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