Deliverable 7.4 Project demonstrator v1

Lyndon Nixon, STI International

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Work Package 7: Dissemination

LinkedTV

Television Linked To The Web

Integrated Project (IP)

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Abstract (for dissemination)	*LinkedTV is a project implementing innovative technology and services at every step of the media workflow, in order to enable a seamless interlinking of Web and TV content for the consumer. This technology needs to be seen and to be communicated, hence besides implementation also dissemination is important for the project R&D. This demonstrator collects all project R&D results into a single document, reflecting our online listings of tools, services and*

[1] • PU = Public
• PP = Restricted to other programme participants (including the Commission Services)
• RE = Restricted to a group specified by the consortium (including the Commission Services)
• CO = Confidential, only for members of the consortium (including the Commission Services))

	demos which are kept continually up to date. .

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1 The LinkedTV demonstrator of Tools & Services

This deliverable presents the LinkedTV demonstrator of project-implemented Tools and Services.

LinkedTV is a project implementing innovative technology and services at every step of the media workflow, in order to enable a seamless interlinking of Web and TV content for the consumer. This technology needs to be seen and to be communicated, hence besides implementation also dissemination is important for the project R&D. This demonstrator collects all project R&D results into a single document, reflecting our online listings of tools, services and demos which are kept continually up to date: Web demos or videos published at http://www.linkedtv.eu/demos *and public APIs or software projects which are announced at* http://www.linkedtv.eu/demos-materials/tools-and-services/ *.*

1.1 History of the document

Table 1: History of the document

Date	Version	Name	Comment
09.08.2013	V0.1	Lyndon Nixon	Created initial structure
27.09.2013	V0.9	Lyndon Nixon	Created deliverable based on all inputs collected for LinkedTV demos and LinkedTV tools and services.
03.10.2013	V0.95	Lyndon Nixon	Updates from QA: corrected structure & formatting for better clarity and reference to project work packages.
07.10.2013	V1.0	Lyndon Nixon	Final document

2 LinkedTV demos

In case anyone was wondering what we all have been doing in LinkedTV since two years, the best way to get a real insight into all the work that has been achieved would be to take a look at our Online Demos page[2]… there we proudly list – currently – **twenty six demos** which have been produced within this project.

- **2 scenario demonstrators**, showing the current public demos available for our Linked Cultural Heritage and Interactive News TV scenarios;
- **3 interactive video player demonstrators,** with the project's main toolkit for multiscreen interactive video, and demos of interactivity enabled in front end players by named entity recognition (NER) and gesture recognition, respectively;
- **5 media analysis demonstrators,** showing keyword extraction, shot segmentation, object re-detection, face detection and the project's REST service which aggregates all this functionality plus automatic speech recognition and speaker detection!
- **8 media interlinking demonstrators,** covering the path from entity extraction to connecting media based on those respective extracted entities;
- **A media annotation demonstrator,** where a Web based editor tool allows manual correction and completion of the automatic results from the above media analysis and interlinking;
- **7 personalisation demonstrators,** from manually modeling user preferences to learning those preferences over time by capturing user behaviour and mining their system interactions, as well as filtering the LinkedTV annotations and enrichments for the user based on the resulting user model.

For sure this is not everything that is being done in LinkedTV, simply other tools or services are not yet mature or stable enough for public demonstration – but they will be! We hope you enjoy the demos and get a feeling for the rich and innovative functionalities of LinkedTV.

The above news item was published September 27, 2013 on the LinkedTV project webpage.

The demonstrators are collected into 6 categories, listed below:

- The scenario demonstrators which are the latest online demos from LinkedTV work package 6 of the Interactive News (RBB) and Hyperlinked Documentary (Sound & Vision) use cases;
- The video player demonstrators which show LinkedTV client technology for accessing enriched videos and interacting with the video and its enrichment content (LinkedTV work packages 3 and 5);
- Media analysis demonstrators (LinkedTV work package 1);

[2] http://www.linkedtv.eu/demos

- Media interlinking demonstrators (LinkedTV work package 2);
- Media annotation, focused on the work done on a LinkedTV Editor Tool;
- Media personalisation (LinkedTV work package 4).

2.1 Scenarios

2.1.1 Linked Cultural Heritage TV

Description

This scenario developed by the Netherlands Institute for Sound and Vision is focused on cultural heritage. It uses material from the program Tussen Kunst & Kitsch (similar to the BBC's Antiques Roadshow) courtesy of Dutch public broadcaster AVRO[3]. In the show, people take art objects with them to be assessed by an expert. The objects brought in provide the possibility to add relevant information on questions like Who, When, What, Where and Subject, all related to art history and cultural heritage. This first demo has been showcased at several conferences in 2012.

Homepage

Linked Cultural Heritage TV: http://bit.ly/ZxNIQ7

Responsible partner

Beeld en Geluid (Sound and Vision)

Contact person

Lotte Belice Baltussen

[3] http://www.avro.nl

2.1.2 LinkedTV News application

Description

LinkedTV News is a second screen application for tablets that acts as a companion to viewers when watching the news broadcasts. Its main goal is to enrich television newscasts by integrating them with other media thus, integrating and concentrating the different activities related to getting informed about the news in one interactive multiple screen, and potentially mobile experience. It is designed to accommodate two viewing modes in terms of interaction: a lean back mode and a lean forward mode.

The news application is the basis for the realisation of the LinkedTV scenario “Interactive News” (with the partner RBB). This is the current prototype UI and is not fully functional.

Homepage

LinkedTV News: http://linkedtv.project.cwi.nl/news/

Responsible partner

CWI

Contact person

Michiel Hildebrand

2.2 Interactive Video Player

2.2.1 Multiscreen Toolkit

Description

The Multiscreen Toolkit enables rapid prototyping of multiscreen applications, allowing developers and designers to focus on their concept ideas, rather than having to deal with synchronization and communication between screens. Support and default solutions are provided for sharing and notifications between screen, and functionalities are available for different interface options such as touch screens and traditional remotes.

The toolkit is used in LinkedTV for prototyping and implementing a 2nd screen application, which enables viewing and exploring the enrichments related to a TV program on a touchscreen tablet. The application also supports social interaction between viewers while watching a program.

Homepage

Multiscreen toolkit: http://www.noterik.nl/products/mulitscreen_tootlkit_video

Responsible partner

Noterik BV[4]

Contact person

Daniel Ockeloen

[4] http://www.noterik.nl/

2.2.2 NERD video viewer

Description

The NERD video viewer demonstrates the functionality of the NERD tool by performing entity extraction on a given YouTube or DailyMotion video and showing the results in a Web interface. Entities are highlighted in the video transcript and are linked to explanatory information from the Web.

Homepage

NERD video viewer: http://linkedtv.eurecom.fr/nerdviewer/

Responsible partner

EURECOM

Contact

Raphaël Troncy

2.2.3 Gesture recognition interface

Description

A set of predefined gestures can be recognized in the interactive video player through this gesture recognition interface (play, pause, next, previous, etc.)

Responsible partner

UMONS

Contact person

Matei Mancas

2.3 Media Analysis

2.3.1 Keyword Extraction Tool

Description

This online demo performs keyword extraction on German and Dutch text. The screen is split in two parts (for German and Dutch respectively). The form enables users to fill a text box with some text and indicate a file name, and to submit this file for analysis. The file is then indexed (it may take longer before the file gets uploaded and indexed). After indexing 20 top keywords extracted from the file are displayed on top of the screen. For the keyword extraction, the algorithm employs proper Part of Speech taggers for German and Dutch, also making feasible the identification of key-phrases. Under the form, a list of already uploaded and indexed files is shown. By clicking on the file name, the keywords extracted from this file along with the text of the file are displayed. Moreover, the user can update the text of existing files and re-submit them for analysis. The uploaded files can be deleted by clicking the cross symbol [X] at the end of each filename. The preloaded documents have been built from content provided by LinkedTV partners' RBB (RBB Aktuell) and Sound & Vision (Tussen Kunst & Kitsch, AVRO).

Homepage

Keyword Extraction Tool: http://ner.vse.cz/KeywordExtraction

The system is free to use subject to user registration, contact Tomas Kliegr.

Responsible partner

University of Economics Prague

Contact person

Ivo Lašek

2.3.2 Shot Segmentation

Description

This video demo presents the results of the shot segmentation algorithm on one video of the news show scenario (Rundfunk Berlin-Brandenburg's; RBB Aktuell) and one video of the documentary scenario (Sound & Vision; Tussen Kunst & Kitsch, AVRO). The objective of this algorithm is to segment a video into shots, i.e., sequences of consecutive frames captured without interruption by a single camera, by performing shot boundary detection. The transition between two successive shots can be abrupt (where, one frame belongs to a shot and the following frame belongs to the next shot) or gradual (where, two shots are combined using chromatic, spatial or spatial-chromatic production effects which gradually replace one shot by another). The algorithm performs both abrupt and gradual transition detection. However, for the videos of the news show scenario only abrupt transitions have been considered, since gradual transitions are rarely used. In contrast, for the videos of the documentary scenario, where the use of production effects (e.g., fade in/out, dissolve, wipe) is a common approach, gradual transition detection have been performed. The results are presented in the form of subtitles in the videos, by indicating the starting point of each detected shot.

The video shot segmentation and concept detection demonstrator was developed by CERTH-ITI[5] as part of the MediaMixer EU FP7 CSA Project (http://www.mediamixer.eu), using video analysis algorithms developed in LinkedTV. In this demo, the LinkedTV analysis algorithms are applied to lecture videos, coming from the videolectures.net collection. The videos are automatically segmented into shots, and then 37 concept detectors are applied to each shot, revealing the shots' visual content. These analysis results enable the user to search by concept and access at the shot level the lecture videos.

Homepage

http://multimedia.iti.gr/mediamixer/demonstrator.html

Responsible partner

CERTH

Contact person

Vasilieos Mezaris

[5] http://www.iti.gr/iti/index.html

2.3.3 Object Re-detection

Description

This video demo presents the results of the object re-detection algorithm on a video from the documentary scenario (Sound & Vision; Tussen Kunst & Kitsch, AVRO). Object re-detection aims at finding occurrences of specific objects in a single video or a collection of still images and videos. The algorithm takes as input a picture (query image) of a manually specified object of interest by the user, who marks this object on one frame of the video with a bounding box. Then, this picture is compared against consecutive or non-consecutive frames of the video and the instances of the depicted object are automatically detected and marked with a bounding box. In this video demo, the detected re-occurrences of the object of interest are indicated by a green rectangle around them. The object re-detection algorithm is robust against a range of scale and rotation operations and partial occlusion. However, in some cases, extremely different viewing conditions (due to major modifications in scale and/or rotation), under which the object's re-appearance takes place, lead to significant change of the visual information, and thus detection failure.

Responsible partner

CERTH

Contact person

Vasilieos Mezaris

2.3.4 LinkedTV REST Service

Description

This web-based REST Service integrates the LinkedTV techniques for audio, visual and textual analysis of multimedia content. Specifically, this service performs Automatic Speech Recognition (ASR) and Speaker Identification on the audio channel, Shot Segmentation, Concept Detection, Object Re-detection and Face Detection and Tracking on the visual channel and Keyword Extraction on the video's subtitles or meta-data, or using the output of the ASR analysis.

Responsible partner

Fraunhofer IAIS

Contact person

Daniel Stein

2.3.5 Face Detection

Description

This video demos present the results of the face detection algorithm applied on a S&V video. When a face is detected, the algorithm demarcates it with a bounding box. Face detection is performed by applying Haar-like cascade classifiers, combined with skin color detection, to every frame of the video sequence. This method performs well on images, and we adapted it to videos in order to create face tracks: we use spatio-temporal information to link matching faces, and perform a linear interpolation to smooth the results.

Responsible partner

EURECOM

Contact person

Mathilde Sahuguet

2.4 Media annotation

2.4.1 LinkedTV Editor Tool

Description

The Editor Tool is developed in LinkedTV to allow for visualisation of the annotations and enrichments generated for a video, and their manual correction and completion within the Web browser.

Responsible partner

Sound and Vision

Contact person

Jaap Blom

2.5 Linked media (media interlinking)

2.5.1 NERD Platform

Description

NERD aggregates several named entity recognition services into a single API and Web interface. It is used in LinkedTV to process the annotations generated by the Video Analysis step and extract named entities which are identified unambiguously using Semantic Web URIs (Linked Data). In this demo, we show:

- Apply Named Entity recognition on any text, in different languages including Dutch and German
- Apply Named Entity recognition on timed text, and re-temporal alignment of the named entity in the video … with a video player showcasing the results
- A personalized dashboard for a logged-in user which enables to monitor his NERD activity

Homepage

NERD Platform: http://nerd.eurecom.fr/

Responsible partner

EURECOM

Contact person

Raphaël Troncy

2.5.2 SemiTags

Description

SemiTags performs Named Entity Recognition on Dutch and German text. It has been incorporated into the NERD interface (see above).

Homepage

SemiTags: http://ner.vse.cz/SemiTags/app/index

Responsible partner

University of Economics Prague

Contact person

Ivo Lašek

2.5.3 Targeted Hypernym Discovery (THD)

Description

THD performs Named Entity and Entity Recognition and classification on English, Dutch and German text and disambiguates the entities to Wikipedia articles. Entities are also assigned types from Dbpedia[6] and YAGO[7] ontologies providing semantic interoperability. In addition to DBpedia and YAGO, the system uses the Linked Hypernyms Dataset[8] as the underlying knowledge base, which makes THD produce results complimentary to those produced by wikifiers based only on DBpedia or YAGO. A unique feature of THD is the possibility to extract the type of the entity from live Wikipedia using on-demand hypernym discovery.

Homepage

Targeted Hypernym Discovery: http://entityclassifier.eu/

Screencast

THD Screencast: http://entityclassifier.eu/thd/screencasts/

Responsible partner

University of Economics Prague

Contact person

Tomas Kliegr

[6] http://dbpedia.org

[7] http://www.mpi-inf.mpg.de/yago-naga/yago/

[8] http://ner.vse.cz/datasets/linkedhypernyms

2.5.4 Metadata Conversion Tool

Description

The Metadata Conversion Tool is the primary component to generate the RDF based semantic descriptions of the media. It uses other components such as NERD (see above) to process the different legacy metadata it receives (including the outputs of the EXMARaLDA tool above), and output a RDF description conform to the LinkedTV ontology (http://www.linkedtv.eu/ontology) where fragments of the annotated video are linked to Semantic Web URIs (Linked Data). In this demo, we show:

- Automatic conversion into RDF of legacy metadata attached to video content, while keeping provenance information
- Automatic conversion into RDF of WP1 analysis results performed on this video content, while keeping provenance information
- Automatic interlinking of common resources with LOD resources
- Automatic push of the resulting metadata in the LinkedTV Platform
- Useful SPARQL queries to show what can then be retrieved

Homepage

Metadata Conversion Tool: http://linkedtv.eurecom.fr/tv2rdf

Responsible partner

EURECOM

Contact person

Raphaël Troncy

2.5.5 Live Topic Generation from Event Streams

Description

Social platforms constantly record streams of heterogeneous data about human's activities, feelings, emotions and conversations opening a window to the world in real-time. Trends can be computed but making sense out of them is an extremely challenging task due to the heterogeneity of the data and its dynamics making often short-lived phenomena. We develop a framework which collects microposts shared on social platforms that contain media items as a result of a query, for example a trending event. It automatically creates different visual storyboards that reflect what users have shared about this particular event. More precisely it leverages on: i) visual features from media items for near-deduplication, and ii) textual features from status updates to interpret, cluster, and visualize media items. The prototype is publicly available at http://mediafinder.eurecom.fr.

Homepage

Live Topic Generation from Event Streams: http://mediafinder.eurecom.fr/

Responsible partner

EURECOM

Contact person

Raphaël Troncy

2.5.6 Tracking and Analyzing The 2013 Italian Election

Description

Social platforms open a window to what is happening in the world right now: fragmented pieces of heterogeneous data, such as (micro-)posts and media items, are posted by people that share their feelings or their activities related to events. Such an information is worth to be analyzed in order to get the big picture of an event from the crowd point of view. In this paper, we present a general framework to capture and analyze micro-posts containing media items relevant to a search term. We describe the results of an experiment that consists in collecting fresh social media posts (posts containing media items) from numerous social platforms in order to generate the story of the “2013 Italian Election” from the crowd point of view. Items are grouped in meaningful time intervals that are further analyzed through deduplication, clusterization, and visual representation. The final output is a storyboard that provides a satirical summary of the elections as perceived by the crowd. The system is publicly available at http://mediafinder.eurecom.fr/story/elezioni2013

Homepage

Tracking and Analyzing The 2013 Italian Election:
http://mediafinder.eurecom.fr/story/elezioni2013

Responsible partner

EURECOM

Contact person

Raphaël Troncy

2.5.7 Grab your Favorite Video Fragment: Interact with a Kinect and Discover Enriched Hypervideo

Description

In this demonstration, we propose an approach for enriching the user experience when watching television using a second screen device. The user can control the video program being watched using a Kinect and can grab, at any time, a fragment from this video. Then, we perform named entity recognition on the subtitles of this video fragment in order to spot relevant concepts. Entities are used to gather information from the Linked Open Data cloud and to discover what the vox populi says about this program. This generates media galleries that enrich the seed video fragments grabbed by the user who can then navigate this enriched content on a second screen device.

Responsible partner

EURECOM

Contact person

Raphaël Troncy

2.5.8 Linked Services Infrastructure

Description

LSI makes use of Web APIs for online media platforms such as Flickr or YouTube, defining mapping rules between the semantic query (in terms of a Linked Data resource) and the structural API query to the non-semantic Web API. From semantic to structural query is called “lowering” while the transformation of the structured resource (usually JSON or XML) to a semantic result (RDF) is called “lifting”. The use of mapping rules means that – provided the Web API does not change – media can be retrieved from that source repeatedly with the actual mapping only needing to be defined once. Media resource matches from different APIs is collected in parallel, while a local store of metadata of media resources relevant to a known, expected concept has been added to improve retrieval speed. LSI returns a list of matching media resources in RDF, with additional metadata for each media resource which could be used in subsequent ranking and selection of ‘most relevant’ matches.

Homepage

Linked Services Infrastructure: http://production.sti2.org/lsi

Responsible partner

STI

Contact person

Lyndon Nixon

2.6 Personalisation

2.6.1 Content and Concept Filtering Demonstrator

Description

This web demonstrator serves as the entry point for the content and concept filtering services provided by the f-PocketKRHyper reasoned, developed by CERTH-ITI for LinkedTV. Functionalities supported by this demonstrator include the user creating or updating a preference profile in a designated ontology formalization, receiving recommended content from a plurality of content items available to the system based on his/her profile, and receiving recommended concepts based on the propagation of his/her interests on the LinkedTV personalization concept space (LUMO). Additionally, the user may review the content available to the system and upload/update the semantic description of content items. The web demo is supported by a video presentation of its functionalities.

Homepage

To be announced soon[9]

Responsible partner

CERTH-ITI

Contact person

Dimitrios Panagiotou, Dorothea Tsatsou, Vasileios Mezaris

[9] http://www.linkedtv.eu/demos-materials/online-demos

2.6.2 LinkedTV User Model Editor LUME

Description

The LinkedTV User Model Editor LUME provides an intuitive user interface for end users of LinkedTV to build and manage their user models. It is implemented as a web application and accessible over the Web (with authentication). For this purpose it provides RESTful web services for further integration with other LinkedTV components, in particular with the LinkedTV video player.

Homepage

LUME: http://data.linkedtv.eu:8081/LUME3-war/user.xhtml
(For the user name and password, please contact Fraunhofer IAIS.)

Responsible partner

Fraunhofer IAIS

Contact person

Rüdiger Klein

2.6.3 LinkedTV Semantic Filtering

Description

LSF is the implementation of the LinkedTV Semantic Filtering. It provides an efficient and scalable system to filter media fragment annotations (MFA)1 and enriched media content (eMFA) using personalized user models in a context-sensitive way. The core of LSF is a graph matching algorithm which correlates the active user interest model (aUIM) and the (enriched) media fragment annotations (eMFA).

Homepage

LSF: http://data.linkedtv.eu:8081/LUME3-war/user.xhtmlhttp://data.linkedtv.eu:8081/LUME3-war/user.xhtml - _blank
(For the user name and password, please contact Fraunhofer IAIS.)

Responsible partner

Fraunhofer IAIS

Contact person

Rüdiger Klein

2.6.4 General Analytics INterceptor (GAIN)

Description

GAIN is a stack of web applications and services for capturing and preprocessing user interactions with semantically described content. GAIN outputs a set of instances in tabular form (fixed-length vectors) suitable for further processing with generic machine-learning algorithms.
Within LinkedTV, GAIN is as a component of a “SMART-TV” recommender system. Content interacted with is automatically described with DBpedia types using a Named Entity Recognition (NER) system THD, and user interest is determined based on collected interest clues.

Homepage

General Analytics Interceptor: http://inbeat.eu/demo/

Screencast

Screencast: http://inbeat.eu/screencasts/

Responsible partner

University of Economics Prague

Contact person

Jaroslav Kuchař

2.6.5 EasyMiner

Description

EasyMiner is a web-based rule learning system, producing decision rules and association rules. Its user interface resembles a web search engine, the user poses a query in the form of a pattern of a rule. The data are uploaded via a csv file or accessed as a remote database table. The user can use automatic data preprocessing facility, or define the preprocessing manually. Easy Miner can work with multi-valued attributes, supports negations and conjunctions in the rule and multiple interest measures, which can be used as constraints, including support, confidence, lift and chi-square. The discovered rules can be exported to a business rules system (GUHA AR PMML or Drools DRL format). EasyMiner has a built-in reporting.

Homepage

EasyMiner: http://easyminer.eu/

Screencast

Screencast: http://easyminer.eu/screencasts

Responsible partner

University of Economics Prague

Contact person

Tomas Kliegr

2.6.6 Context Detection

Description

Contextual features (the number of people for the moment) are extracted by using a RGBD camera. Those features are then sent to GAIN through the player server which will identify the videos ID and video time when the change in the number of people occurs.

Responsible partner

UMONS

Contact person

Matei Mancas

2.6.7 Attention Tracker

Description

The viewer head direction is extracted by using a RGBD camera and it is sent to GAIN through the player server which will identify the videos ID and video time when the change in attention occurs. If the viewer is looking towards the TV screen, the approximate coordinates (+/-10cm) are also sent along with the user ID.

Responsible partner

UMONS

Contact person

Matei Mancas

3 LinkedTV tools and services

The LinkedTV project endeavours to make available to external parties the tools and services it develops within the research work. While some tools and services are very specific in their implementation to the LinkedTV workflow and data models, others may be more immediately re-usable in other contexts. Certainly, the individual tools and services generally support one specific functionality that is required for LinkedTV, whether it be performing media analysis, annotation, interlinking, personalisation or management. Similarly, some tools and services are open source / public license and we can provide details of the API endpoints or download links for their code; others are subject to the IP of the respective partner. API or software usage is permitted – at least for non-commercial purposes – if the link is provided here, please check the documentation for the precise license under which the tool or service is provided. Other tools and services are listed here without public links, meaning that partners are willing to grant access when contacted by e-mail.

LinkedTV lists, at the time of writing, 16 tools and services at http://www.linkedtv.eu/demos-materials/tools-and-services/, which is not the complete number of tools and services used in the project – however some must be kept private for now, either due to license restrictions or because they are using partner data which cannot be made public.

- The LinkedTV Platform provides a Web interface, SPARQL endpoint and Faceted Search;
- For our Linked Media work, discover tools for supporting the media annotation and hyperlinking;
- For the personalisation work, several services support user model creation, evolution, management and application for filtering the media annotations and hyperlinks;
- For media analysis, we can release an algorithm for event detection in video and a Web service for keyword extraction from text.

The above news item was published September 30, 2013 on the LinkedTV project webpage.

Public tools and services have been split into four categories: the LinkedTV Platform as a central integrating service for all other components (work package 5), the Linked Media components which handle media annotation and hyperlinking (work package 2), the personalisation components (work package 4) and the media analysis components (work package 1).

3.1 LinkedTV Platform

Description

The LinkedTV Platform is a RDF Repository (Triple/Quad Store) based on OpenLink Virtuoso for the permanent storage of all RDF data for annotated media fragments which are produced by the different LinkedTV components and services. Access to the RDF data is provided through a direct SPARQL endpoint as well as a custom REST API based on the Elda Linked Data API (http://code.google.com/p/elda/)

Download / API

http://data.linkedtv.eu/ (Web interface)
http://data.linkedtv.eu/sparql (SPARQL endpoint)
http://data.linkedtv.eu/fct/ (Faceted Search)

The API access and documentation are currently private.

Responsible partner

Condat

Contact person

Jan Thomsen

3.2 Linked media

3.2.1 NERD

Description

A Framework compiling 10 NER extractors including: AlchemyAPI, DBpedia Spotlight, Extractiv, Lupedia, OpenCalais, Saplo, SemiTags, Wikimeta, Yahoo! Content Analysis Framework and Zemanta (Evri is no longer available). NERD detects automatically the language of the text being analyzed. NERD provides an individual dashboard to monitor logged in user activity.

Download / API

http://nerd.eurecom.fr/api/

Endpoint Documentation

http://nerd.eurecom.fr/documentation

Presentation / tutorial

http://www.slideshare.net/giusepperizzo/nerd-11974343

Responsible partner

EURECOM

Contact

Raphaël Troncy

3.2.2 SemiTags

Description

It is a Named Entity Recognition and Disambiguation Web Service

Download / API

http://ner.vse.cz/SemiTags/rest/v1/recognize

Endpoint Documentation

http://ner.vse.cz/SemiTags/app/static/developers

Responsible partner

University of Economics, Prague

Contact person

Ivo Lašek

3.2.3 THD

Description

THD is advanced hypernym discovery tool. Its goal is not to find all hypernyms in the corpus but rather to find hypernyms for a specific entity. THD also has the advantage of requiring no training and uses up-to-date on-line resources to find hypernyms in real time.

Download / API

http://entityclassifier.eu/thd/api/v1/extraction

Endpoint Documentation

http://www.entityclassifier.eu/thd/docs/

Responsible partner

University of Economics, Prague

Contact person

Tomas Kliegr

3.2.4 Linked Hypernyms Dataset

Description

This Linked Hypernym dataset attaches entity articles in English, German and Dutch Wikipedia with a DBpedia resource or a DBpedia ontology concept as their type. The types are hypernyms mined from articles' free text using hand-crafted lexicosyntactic patterns. The dataset contains 2.8 million entity-type assignments, out of which nearly 2.5 million are novel with respect to DBpedia and 2 million w.r.t. Yago 2s and DBpedia.

Download / API

http://ner.vse.cz/datasets/linkedhypernyms/

Documentation

http://ner.vse.cz/datasets/linkedhypernyms/dataset-description/

Responsible partner

University of Economics, Prague

Contact person

Tomas Kliegr

3.2.5 Wikifier Evaluation Framework for GATE

Description

GATE plugins for evaluation of Wikipedia-based NER systems (also known as Wikifiers), which provide links to Wikipedia articles describing recognized entities, and classify those entities with types from the DBpedia Ontology. The plugins come with two evaluation datasets. The News dataset – consists of a small number of standard-length news articles freely available from the BBC[10] and New York Times[11]. The dataset is a derivative of the originally published WEKEX[12] dataset. This dataset is released under the Creative Commons BY-SA 3.0[13] license.

Download / API

http://ner.vse.cz/datasets/evaluation/

Documentation

http://ner.vse.cz/datasets/evaluation/tools/

Responsible partner

University of Economics, Prague

Contact person

Milan Dojchinovski

[10] http://www.bbc.com/

[11] http://www.nytimes.com/

[12] http://nerd.eurecom.fr/ui/evaluation/wekex2011-goldenset.tar.gz

[13] http://creativecommons.org/licenses/by-sa/3.0/

3.2.6 Linked Services Infrastructure (LSI)

Description

The REST API of the Linked Services Infrastructure provides a programmatic means to integrate LSI functionality into other tools and services. The LSI takes a Linked Data URI and returns a set of relevant media resources from the open Web.

Endpoint

http://production.sti2.org/lsi/api/invoke

Endpoint Documentation

http://production.sti2.org/lsi/docs/index.html

Responsible partner

STI International

Contact person

Lyndon Nixon

3.3 Personalisation

3.3.1 EasyMiner

Description

EasyMiner is a web interface to the association rule mining system LISp-Miner. Its user interface resembles a web search engine. Easy Miner discovers multi-valued attributes, supports full range of logical connectives and 19 interest measures. An experimental relevance feedback module is used to filter rules based on previous user interactions.

Download / API

http://sewebar-demo.lmcloud.vse.cz/izi-miner/

Endpoint Documentation

http://easyminer.eu/

Presentation / tutorial

http://easyminer.eu/feature-tutorial

Responsible partner

University of Economics, Prague

Contact person

Tomas Kliegr

3.3.2 GAIN

Description

Framework for capturing and preprocessing user interaction and implicit feedback

Endpoint

API access is not yet public

Endpoint Documentation

http://inbeat.eu/gain/docs/

Responsible partner

University of Economics, Prague

Contact person

Tomas Kliegr

3.3.3 LinkedTV User Model Editor (LUME)

Description

The User Model Editor provides a RESTful API for further integration with other LinkedTV components, in particular with the LinkedTV video player.

Endpoint

http://data.linkedtv.eu:8081/LUME3-war/service

Responsible partner

Fraunhofer IAIS

Contact person

Rüdiger Klein

3.3.4 LinkedTV Semantic Filtering (LSF)

Description

The LinkedTV Semantic Filter provides a RESTful API for further integration with other LinkedTV components, in particular with the LinkedTV video player.

Endpoint

http://data.linkedtv.eu:8081/LUME3-war/service

Responsible partner

Fraunhofer IAIS

Contact person

Rüdiger Klein

3.3.5 LinkedTV User Model Ontology (LUMO)

Description

The LUMO ontology is developed within the LinkedTV project to semantically represent user-pertinent information, in order to enable semantic personalization and contextualization (i.e. filtering) of concepts and content in the networked media domain. LUMO is currently accompanied by a separate mappings ontology, modelling mappings of LUMO to several existing ontologies and vocabularies.

Homepage

http://mklab.iti.gr/project/lumo

Download / API

LUMO: http://data.linkedtv.eu/ontologies/lumo
LUMO mappings: http://data.linkedtv.eu/ontologies/lumo_mappings/

Endpoint Documentation

LUMO: http://data.linkedtv.eu/ontologies/lumo/lumo_doc/index.html
LUMO mappings:
http://data.linkedtv.eu/ontologies/lumo_mappings/lumo_mappings_doc/index.html

Responsible partner

CERTH-ITI

Contact person

Dorothea Tsatsou, Vasileios Mezaris

3.3.6 f-PocketKRHyper

Description

f-PocketKRHyper is a general purpose fuzzy semantic reasoner, which for the purposes of LinkedTV performs content filtering by semantically matching a user profile against a set of available content items, and concept filtering by expanding the interests of a user along the LinkedTV personalization concept space (LUMO).

Download / API

http://mklab.iti.gr/project/f-pocketkrhyper

Endpoint Documentation

http://mklab.iti.gr/project/f-pocketkrhyper

Responsible partner

CERTH-ITI

Contact person

Dorothea Tsatsou, Vasileios Mezaris

3.3.7 Linked Profiler

Description

Linked Profiler is a semantic profile engineering API, responsible for receiving input by captured or explicitly declared user interests and (a) unifying it under a common personalisation-centric vocabulary LUMO and, based on the uniform input (b) learning a user profile over time and content consumption through its subcomponent Simple Learner. It ultimately produces a fuzzy semantic user profile that can be received by the LinkedTV filtering tools.

Download / API

http://mklab.iti.gr/project/linkedtv-profiling-tools

Endpoint Documentation

http://mklab.iti.gr/project/linkedtv-profiling-tools

Responsible partner

CERTH-ITI

Contact person

Dorothea Tsatsou, Vasileios Mezaris

3.4 Media analysis

3.4.1 Mixture Subclass Discriminant Analysis (MSDA)

Description

MSDA is a supervised dimensionality reduction technique that overcomes the nonlinearity problem of LDA by deriving a subclass data division and the respective lower dimensional subspace suitable for sample discrimination. In the particular implementation the negentopy increment is used to implement a nongaussianity criterion for deriving the best subclass partition. Moreover, the nearest neighbor method is used in the derived subspace for classifying unlabeled observations. This method is generic and can be used in a very wide range of learning problems; in LinkedTV, it is used primarily as part of our solutions to the event detection problem.

Download / API

http://www.iti.gr/~bmezaris/downloads.html

Endpoint Documentation

http://www.iti.gr/~bmezaris/downloads.html

Responsible partner

CERTH-ITI

Contact person

Nikolaos Gkalelis, Vasileios Mezaris

3.4.2 Keyword Extraction Tool

Description

Keyword extraction is a Web application and Web service, which performs keyword extraction from English, German and Dutch text. The system is based on the standard TF-IDF approach, which is extended with language-specific POS tagging and noun-phrase chunking for identification of key phrases.

Download / API

https://ner.vse.cz/KeywordExtraction/rest/v2

Endpoint Documentation

https://ner.vse.cz/KeywordExtraction/developers.html

Responsible partner

UEP

Contact person

Tomas Kliegr

4 Summary and outlook

This deliverable lists all LinkedTV demos and LinkedTV tools and services publicly announced via the project website. Both demos and tools & services are grouped by type of functionality, using the technical work packages 1-5 as a basis for the grouping. The LinkedTV Platform is the integrating layer for all server-side components. An overview of the entire ecosystem of LinkedTV tools and services has been created in the form of an illustration (below), which is introduced and explained in the deliverable D5.4 Final Integration Platform. Apart from those tools and services which cannot be made public due to licensing or copyright restrictions, LinkedTV has taken care to list information and links for all tools and services developed and used within the project online at its website. This deliverable provides a written recording of the status of those online lists as at the month 24 milestone.

Figure 1: The LinkedTV Ecosystem (from Deliverable 5.4)

We also must acknowledge that there are LinkedTV results which cannot be immediately made public, either due to existing licensing restrictions on (part of the) code being used or due to limitations to public dissemination requested by the holders of the copyright on seed video content (RBB, or AVRO in the Sound & Vision scenario). Addressing the former issue, we have sought to provide public information in the form of videos or presentations for tools and services which cannot be publicly made available as software downloads or public APIs. Thus interested persons can still learn about the LinkedTV result and contact the responsible persons if they are interested in access, according to the applied software license or API terms & conditions. In the latter, we encourage LinkedTV partners to also ensure the availability of results using open video contents which can be publicly disseminated online, while appreciating that for the purposes of the LinkedTV work the implementation using RBB or AVRO content takes precedence. As reflected in the table below, all LinkedTV functionalities are now well presented to interested external organisations, with a number of "live" online demos complementing otherwise "passive" information (video, slidesets). The number of public tools and services is slightly lower, with some still needing to be kept private for now. They are however publicly disseminated by pre-recorded demonstrators and can also be potentially used for live demos at events.

Category	*LinkedTV WP*	Public tools & services	Interactive demos (e.g. Web UI based)	Passive demos (e.g. video recording, slides)
LinkedTV Platform & Player	*3,5*	3	1	2
Media analysis	*1*	2	2	5
Media annotation and hyperlinking	*2*	6	7	5
Personal-isation	*4*	6	4	5
Scenarios	*6*	N/A	1	1