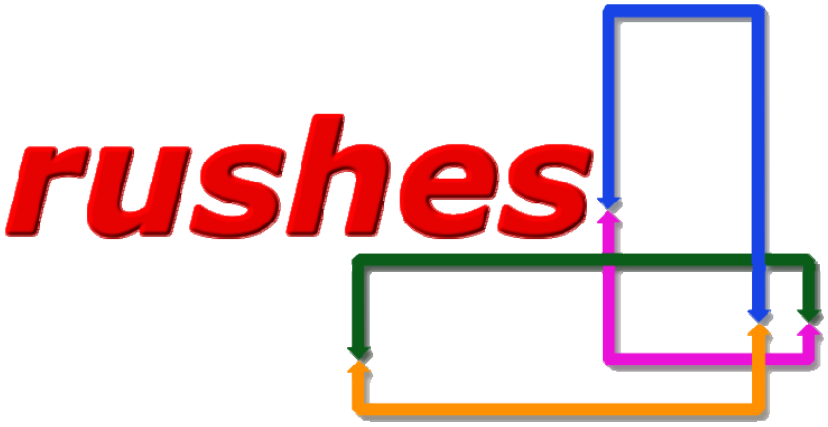
FP6-045189



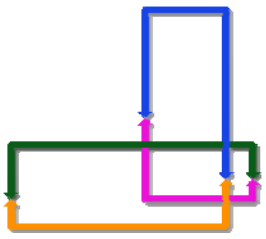
Annual Report 2007

Project Ref. no.:	**FP6-045189**	
Acronym:	**RUSHES**	
Deliverable ID:	**AR1**	
Reporting period:	*February-November 2007*	
Project coordinator:	Name:	Dr. Oliver Schreer
	Organisation:	Fraunhofer Institute for Telecommunications / Heinrich-Hertz-Institut
	Phone:	+49 30 31002-620
	Fax:	+49 30 3927200
	E-mail:	Oliver.Schreer@hhi.fraunhofer.de
	Project web site:	http://www.rushes-project.eu

Content

1 Project logo and project URL

The RUSHES logos are depicted below, with project title and pure.



The project web site is: http://www.rushes-project.eu

2 Short project description

RUSHES brings together complementary expertise of 9 leading EU partners from both academia and industry with view to develop and demonstrate technologies for the semantic retrieval of media from large repositories of raw audiovisual content used by the broadcast industry.

The overall aim of the RUSHES project is to design, implement, and validate a system for indexing, accessing and delivering raw, unedited audio-visual footage known in broadcasting industry as "rushes". This system will have its viability tested by means of trials. The goal is to promote the reuse of such material, and especially it's content in the production of new multimedia assets by offering semantic media search capabilities.

3 Summary of Activities

Initial work on the project included state-of-the-art analysis of requirements and definition of use-cases, which will lead to the design and development of the RUSHES search engine architecture. Once the requirements phase has been finalized, the implementation phase will be undertaken. In parallel, an integration and evaluation plan has been worked out, which is the basis for the implementation-integration-evaluation cycle.

A comprehensive framework for project progress assessment and evaluation has been set up and project-specific metrics for the evaluation of technical and integration activities has been defined.

The core functionalities of the RUSHES search engine has been defined and ended up in a more detailed and refined architecture of the system. The designed architecture was made flexible enough to accommodate further operations at every stage of integration work envisaged.

The collaboration between partners and between workpackages has achieved significant intensity. This results in a very close cooperation between the academic partners responsible for algorithm development and the industrial partners working on the integration of the final system. A highly flexible software and hardware concept allows step-by-step integration of additional components

as soon as they are available. Therefore, the foundation for success in the next year's period is set.

4 *Important work area*

Requirement analysis for professional content providers and home-users

The foundation for the development of the RUSHES search engine architecture was a comprehensive user study for professional content providers and home-users. ETB interviewed their colleagues in the broadcaster archive and journalist departments to get up-to-date information on their requirements concerning a future system for indexing and retrieval of unedited audio-visual footage. Based on their daily work experience a large set of requirements have been identified, which will form the design of the RUSHES search engine. ATC circulated a questionnaire to a large number of home-users in order to capture the user requirements for RUSHES and to improve the understanding of the user behaviour and expectations with regards to the objectives of the project. Once the questionnaires were filled, the results have been analysed and a number of basic requirements from the user side could be derived. The complete set of user requirements and the derived use-cases is documented in the public deliverable *"D5 Requirement Analysis and Use-Cases Definition for Professional Content Creators or Providers and Home-Users"* available on http://www.rushes-project.eu/?page=deliverables.

Development of modules and tools

Audio-visual semantic timeline representation

Position-based sliders are inappropriate working with large multimedia files since the velocity of the slider is high due to slider size, and hence its resolution, is limited by the screen resolution. The basic idea is to make the browsing behaviour independent on the length of the video file.

A study on the state-of-the-art of audio and video semantic timeline representation with special emphasis on interfaces with dynamic zoom capabilities have been performed. Based on the gathered approaches, a proof-of-concept prototype has been developed and current efforts are focused on adding semantic temporal structure information.

Interface for AV timeline semantic representation

First definition of RUSHES system architecture

The specification of the Search Engine architecture is driven by the two main industrial partners, ATC and FAST. The main purpose of the architecture is to enable scalable analysis, search and retrieval of raw multimedia units. A Service-Oriented (SO) Architecture has been defined to provide the required functionality and to ensure a seamless integration of the multiple video and image analysis components developed in the project, many of which have very different hardware and OS requirements.

One of the core distinguishing features of the architecture is the handling of metadata modelling, which enables semantic inference between low– and high-level multimedia descriptors and goes some way towards bridging the semantic gap. The currently developed test bed architecture is shown to be flexible enough to accommodate further operations should the project require so at a later stage.

Preliminary developments on Knowledge Extraction and Automatic Semantic Annotation

One of the most important goals in RUSHES is to provide techniques for the semantic analysis, annotation and retrieval of multimedia content. Extensive background research in this field has been carried out, mainly focusing on semi-automatic inference and annotation approaches. Initial or tentative implementations of some potentially useful functionality have been conducted. Some additional achievements and contributions include:

- Metadata model specification;
- Definition of the requirements for the GUI;
- Specification and initial implementations of defined ‘mid-level’ classifiers.

Although much of the realisation is still at an initial stage, the background research and experiments are extensive and concrete. This part of the work forms a fundamental and strong basis for the second-stage development.

A large set of dissemination activities

Immediately after project start, the RUSHES consortium came up with the installation, web design, content population and finally the launch of the RUSHES project website www.rushes-project.eu. The web portal contains the aims and objectives of the project, the structure and organization and the partner descriptions. The web portal is used to disseminate project results by provision of public deliverables and other public material. Relevant links to other European projects and upcoming events can be found as well.

For dissemination of the project at conferences, meetings and workshops, the RUSHES project flyer has been created. It provides in compact form all relevant information about the project and required contact details (see http://www.rushes-project.eu/?page=publicity).

For periodical information of the community about the progress of the project, the RUSHES project newsletter has been produced (see http://www.rushes-project.eu/?page=newsletter). A first issue has been published by mid of October via different dissemination channels. The newsletter will be published quarterly after each project meeting.

Set-up of a framework for project assessment and evaluation

At the very beginning of the project, general guidelines for the quality assessment and monitoring of the RUSHES project activities have been defined. Several qualitative and quantitative criteria for evaluating the progress of work were set and a plan for regular assessment and evaluation has been worked out. This plan provides the foundation for project monitoring and risk management during the RUSHES lifetime. It is recognized that an external view on the project work is necessary. Therefore the consortium was able to attract three external experts acting as members of the so-called advisory board. The colleagues are namely:

- Prof. Philippe Salembier, Technical University of Catalonia, Barcelona, Spain
- Prof. Ferran Marqués, Technical University of Catalonia, Barcelona, Spain
- Prof. Thomas Sikora, Technical University Berlin, Germany

To assure a continuous quality assessment and monitoring of the integration work, an integration and evaluation board (IEB) has been set-up. It consists of one member of the technical management team, and representatives from the industrial partners ATC and FAST.

5 User Involvement, Promotion and Awareness

The RUSHES consortium contains ETB as an important partner representing the end-user from professional point of view. They are providing the consortium with their expertise and the requirements from user perspective. Furthermore, an unlimited amount of rushes video material can be provided according to the needs of the other partners in the project. So far 160GB of rushes material is available on a project server for algorithm development and testing.

RUSHES is strongly involved in the integrating activities of the FP6 project Chorus. As no RUSHES partner is directly involved in this coordination activity, the coordinator is representing the direct link to Chorus. The project contributed to the working groups on “Audio-visual content indexing and retrieval technologies” and “Use-Cases and New services” with its first project results. In addition, we are in contact with Circom Region, which is an international Audiovisual Network in Europe consisting of 376 Public Regional Television Stations from 38 countries.

RUSHES is a supporting project for the following scientific events:

- Int. Conf. on Visual Information Engineering (VIE), 29 July – 1 August 2008, Xi'an, China
- 6th Int. Workshop on Content-Based Multimedia Indexing (CBMI) 18-20 June 2008, London, UK

Finally, a special session is planned at the next Int. Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS) 2008 in Klagenfurt, Austria. The special session will be entitled by "Rushes - Multimedia Indexing and Retrieval of Unedited Audio-Visual Footage" and is organised by Dr. Oliver Schreer.

6 Future Work or Exploitation Prospects

The major challenge of RUSHES is to align the development of algorithms and the integration of all components into a common framework resulting in the final RUSHES search engine. The consortium is aware of the effort being spent on integration. Hence, we will come up with a first version of an integrated system by end of 2007 in order to show the potential of the envisaged system. Some already available basic components will be integrated in order to get a realistic view on further challenges. Based on this initial version a step-by-step integration can be applied to further extend the system towards the final RUSHES search engine.

The integration effort is required in order to show preliminary results at the first project review meeting, which is due in March 2008. The broadcaster in the RUSHES consortium, Euskal Irrati Telebista (ETB) will host the review meeting in their brand-new premises in Bilbao, Basque country.

7 Further Information

The RUSHES web portal: http://www.rushes-project.eu

Link to RUSHES public deliverables: http://www.rushes-project.eu/?page=deliverables

Link to RUSHES public material: http://www.rushes-project.eu/?page=publicity

Link to the RUSHES newsletter: http://www.rushes-project.eu/?page=newsletter

Link to the CA Chorus: http://www.ist-chorus.org