Brief status

- Following the European approval, the core developments started in May 2008.
  - Research and development program stretching over five years
  - A budget of about €200 million
  - Assisted by the French State through the public agency
  - Involving 24 partners

- First year achievements
  - More than 100 scientific publications
  - Exalead and LTU face detection in images service
  - Orange 2424actu.fr Beta service
  - And several other technology demonstrators available
    - Voxalead, Face recognition, Translation, Image search, Celebrity search
Partners

- **Private enterprises**
  - Bertin, Exalead, France Télécom, Jouve, LTU Technologies, Synapse Développement, Thomson, Vecsys

- **Public research laboratories**
  - CNRS-LIMSI, CNRS-IMMI, CNRS-INIST, INRIA, IRCAM, IRIT, Institut Telecom, LIPN, MIG-INRA, Université Joseph Fourier, University of Karlsruhe, RWTH university, Aachen,

- **Public institutions**
  - BnF, DGA, Ina, LNE

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Coordinated by Thomson
An observation about the market and underlying trends:

- The volume of universally available digital information has exploded
- New consumer media (PC, TV, handheld devices, etc.) have proliferated and multiplied
- Internet becomes the privileged information space.
- Search tools are the standard for accessing and using content.
  - Video search is a reality today
The Program

- A collaborative research and development program
  - Focused on automatic extraction, analysis, classification and use of multimedia, multilingual content
  - To facilitate access to content

- Five application projects
  - Multimedia search on the internet
  - Enrichment of access services to audiovisual content on portals
  - Personalised video selection and broadcasting
  - Professional audiovisual asset management
  - Digitisation and content enrichment for libraries, audiovisual heritage and scientific publishing

- A shared research structure
  - A broad research scope
  - Systematic evaluation of scientific and technical progress
  - Extensive resources for annotating large collections of multimedia data
Five projects with application targets
From content providers to consumers
Sharing resources and know-how

1- Digitisation and content enrichment
2- Digital media asset management
3- Personalised video
4- Search engines
5- PC, Mobile portals

Who steers
Jouve
Thomson / INA
Thomson
Exalead
France Télécom

Expected results
Software and services for editors, patent offices and libraries
Software for broadcasters, media companies, audiovisual archives
Software for telecom operators, retailers and enterprise video
Multimedia search engine
New generation of access services to audiovisual content

Shared research structure
Coordinated by CNRS and RWTH

Technologies for analysing audio, music, image, video content.
Technologies for natural language analysis and translation
Content protection technologies

May 26th, 2009
Close interaction between research and industry

- Industrials and research organizations cooperate actively and effectively to develop demonstrators aiming at identified business targets and increase the state of the art in concerned technology domains.

- Strong investment in production of large corpora
  - Data representative of the target applications sectors
  - Manual and computer assisted annotation

- Objective measurement of results through systematic benchmarking
  - Establishment of an objective assessment on the gap between industrial demand of and capacities of technology supply.
Technology transfer organization

Advanced research
Generic technologies
Statistical models
Automatic learning

Integration

Corpus
Audio, images, music, text, video, speech, multimedia, multilingualism

JOUVE (digitisation)
Thomson / INA (media management)
Thomson (video on demand)
Exalead (multimedia search)
France Telecom (portals)

Application projects
Technology Domains
Technologies for a wide range of applications.

- Translation
- Image Processing
- Speech Transcription
- Audio & Music
- Video Processing
- Multimodal structuring
- Written language processing
- Search & navigation
- Protection

Structuring and mgmt of multimedia and multilingual documents

Corpus for Evaluation & Demonstration
Video search technology

What’s up?

- Current deployments mainly rely on keyword search using textual context for web and editorial metadata for media applications
  - Some pioneering applications using audio transcription search from Blinkx, Exalead, Google….

- Over the next years significant progress is expected on base technologies
  - A result of the combination of algorithmic improvement, enhanced methodologies and international cooperation, researcher genius and increasing computer power.
  - Nevertheless technologies are expected to remain far beyond human brain.
  - Some examples:

<table>
<thead>
<tr>
<th>Sample technology</th>
<th>Status</th>
<th>5 year likely improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object recognition</td>
<td>90% success on rigid objects/random results on non rigid objects.</td>
<td>Non rigid objects to catch up with rigid object.</td>
</tr>
<tr>
<td>Scene segmentation</td>
<td>&lt;60% success best case.</td>
<td>20-25% improvement.</td>
</tr>
<tr>
<td>Speech transcription</td>
<td>50-60% success on conversational speech</td>
<td>Improvement by 20-25%</td>
</tr>
<tr>
<td>Translation</td>
<td>30-35% score BLEU</td>
<td>10% increase.</td>
</tr>
</tbody>
</table>

Most of these technologies have been investigated for a long time*. A technological disruption is fairly unlikely. We should expect a continuous series of improvements of technological capabilities.

*) In 67 Marvin Minsky assigned a student to solving the computer vision problem over the summer.
Video Search

First examples of results

Face tracking and recognition technology by University of Karlsruhe
Hazim Kemal Ekenel

Voxalead, Audio track transcription and search demo by Exalead.

2424actu.fr, News portal beta by Orange Labs.
Video Classification & Search
A peek into Future TV services.

Using Audience Characterization
- How many
- Who, Gender/Age
- Mood.....

Video recommendation and targeted advertising

And model based classification
Many Thanks

More information on

http://www.quaero.eu

(http://www.quaero.org)