Evaluation in Quaero

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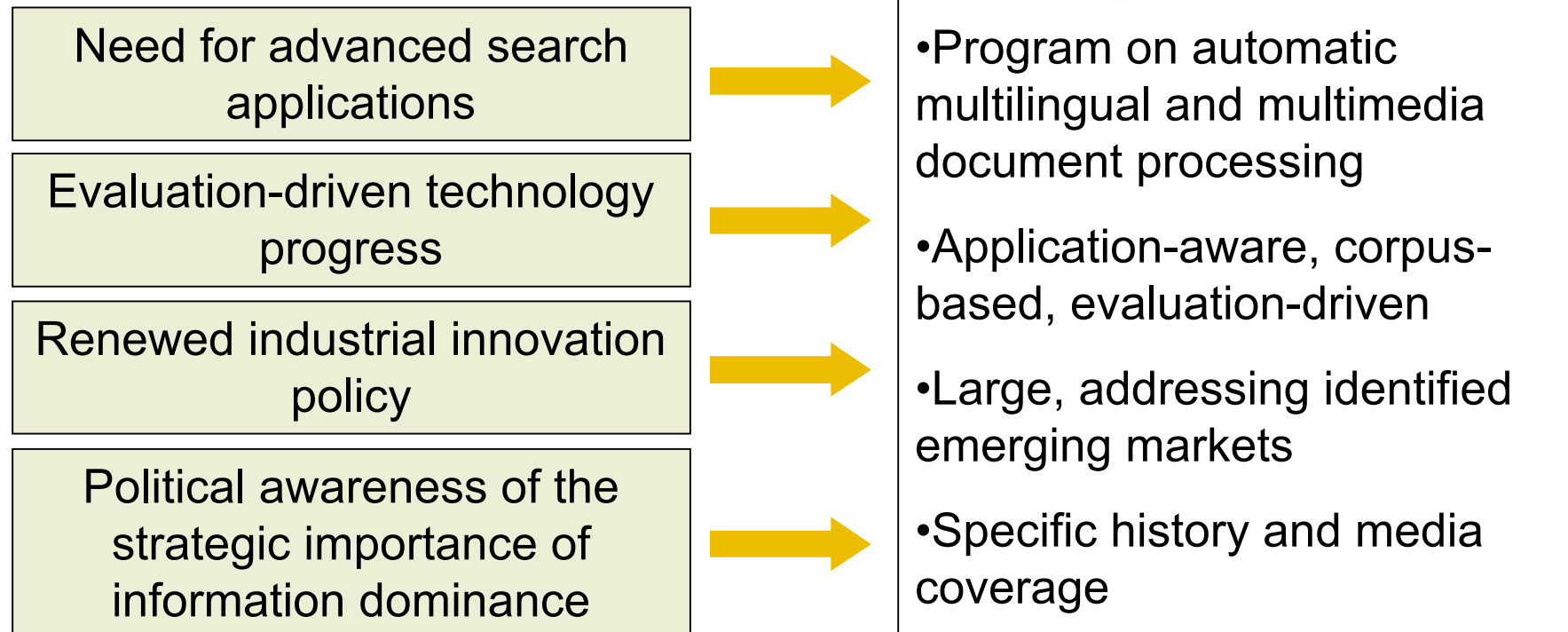Quaero Technology Evaluation Manager

Quaero/imageCLEF workshop
Aarhus, Denmark
Sept 16th, 2008

Presentation outline

- ## The Quaero program
  - Context, scope and approach
  - Consortium, budget
  - History and timeline

- ## The Quaero evaluation infrastructure
  - Organization
  - Current activities

- ## Coordination with other campaigns
  - Types of coordination
  - The Quaero/imageCLEF cooperation

- ## Conclusions and perspectives

Context and overview

Need for advanced search applications	→
Evaluation-driven technology progress	→
Renewed industrial innovation policy	→
Political awareness of the strategic importance of information dominance	→

- Program on automatic multilingual and multimedia document processing

- Application-aware, corpus-based, evaluation-driven

- Large, addressing identified emerging markets

- Specific history and media coverage

Scope

- A collaborative research and development program

  - Focused on automatic extraction, analysis, classification and use of multimedia, multilingual content
  - To develop 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

From content providers…   **…to consumers**

	1- Digitization and content enrichment	2- Digital media asset management	3- Personalized 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 analyzing audio, speech, music, image, video content.
Technologies for natural language analysis and translation
Content protection technologies

Two research projects

- **CTC project (coordinated by CNRS)**
  - Improve the state of the art in terms of structuring and indexing multimedia, multilingual documents
  - Develop generic models and technologies for program application projects

- **Corpus project (coordinated by RWTH Aachen)**
  - Collection and annotation of data required for developing and benchmarking (evaluating) technologies
    - "Ground truth" for statistical and machine learning based algorithms.
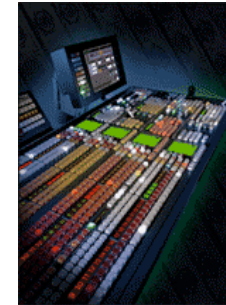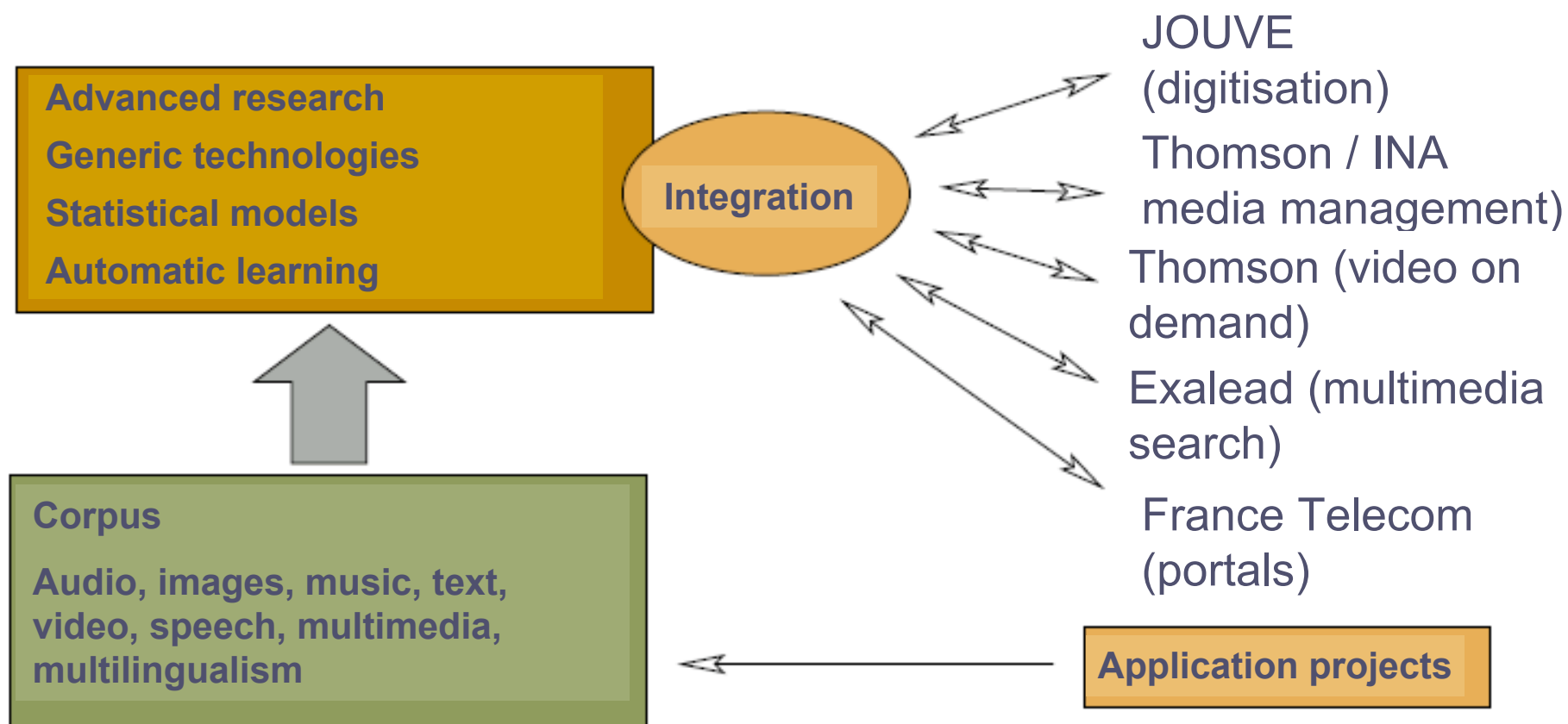
Covered technologies
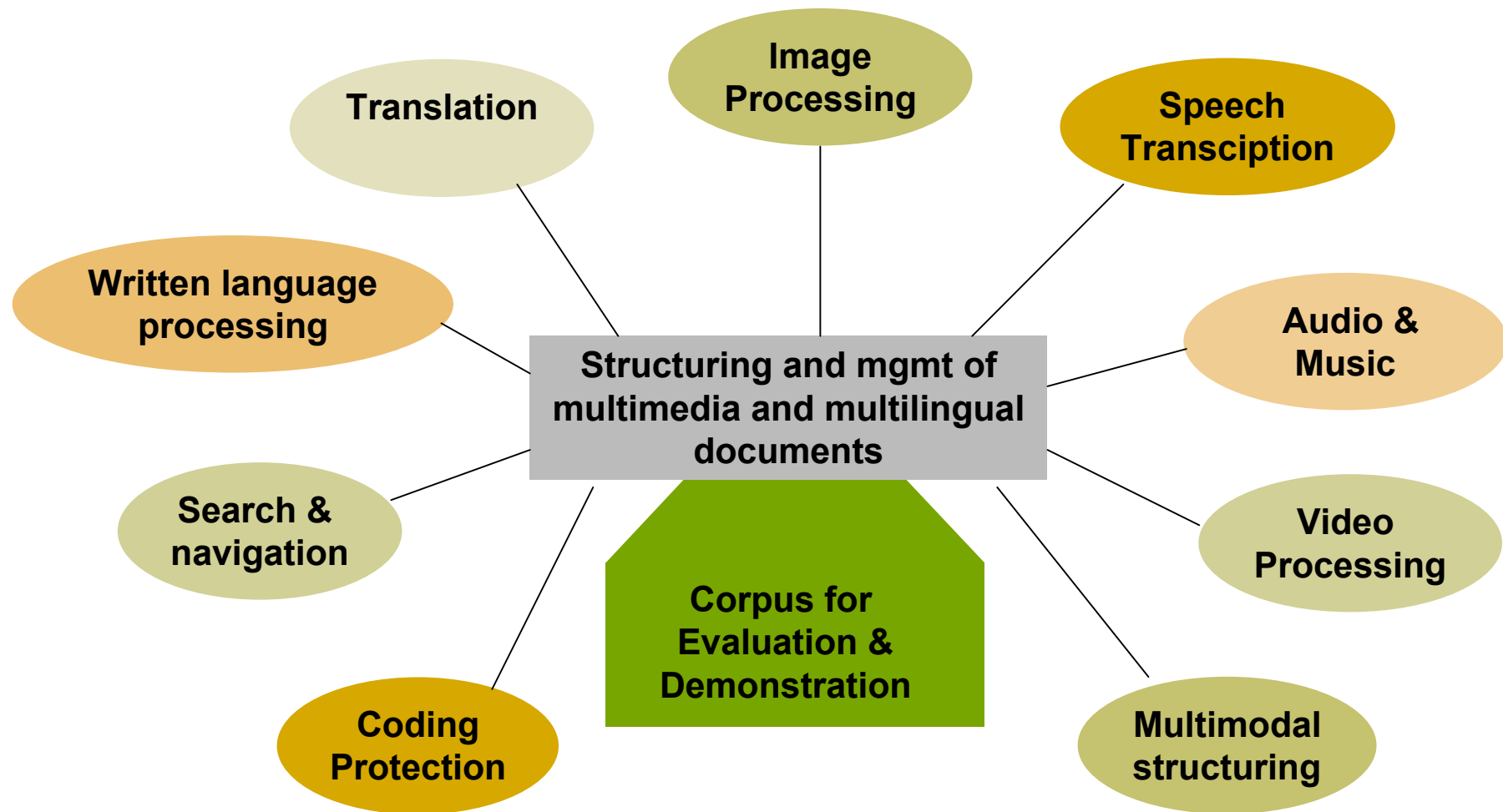
Examples of targeted innovations

- Extensions of information search to a wide range of media
  - e.g. radio broadcasting, podcasts, images, video and music

- Search for multimedia documents in all kinds of terminals
  - e.g. television sets, cell phones

- Automatic text generation from audiovisual documents
  - e.g. transcription of the sound track of a film

- Automatic selection of relevant video extracts
  - e.g. selection of goals scored during a soccer match

- Cross lingual search of information
  - e.g. search a sound track in Polish using French key words

An integrated program

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

Development approach

- **Derive technical and scientific objectives directly from the application requirements**
  - Application-driven technology roadmap
  - Yearly alignment of the technological objectives between partners
- **Foster coopetition on strategic technological subjects**
  - Multiple partners may develop concurrently on the same subjects using their own approaches with regular workshops to openly exchange findings and evaluation results
- **Conduct periodical performance evaluation to assess progress**
  - Build on most advanced evaluation procedures developed by national and international bodies and programs
- **Use evaluation to facilitate technology transfer**
  - Discussion on tangible objectives and results between technology developers and integrators

Consortium

- ## Coverage of the whole value chain

    - Technologies benchmarked in international assessments (Technolangue, Techno-Vision, NIST/TREC, CLEF…)

    - Experience in technology transfer

    - Access to large markets

- ## Balanced composition

    - Large companies and SMEs

    - Public research laboratories

    - Public institutions

Consortium members

- **Private companies**
  - 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

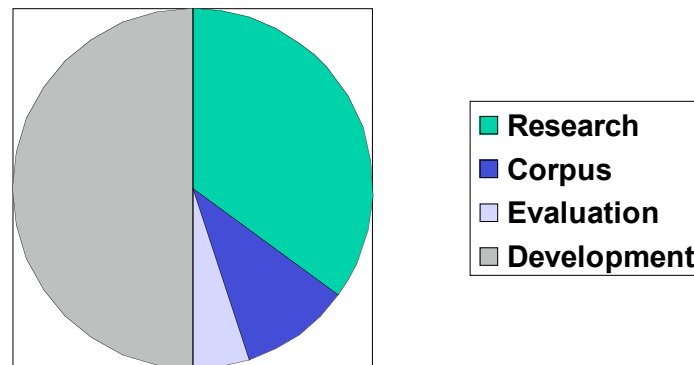- **Public institutions**
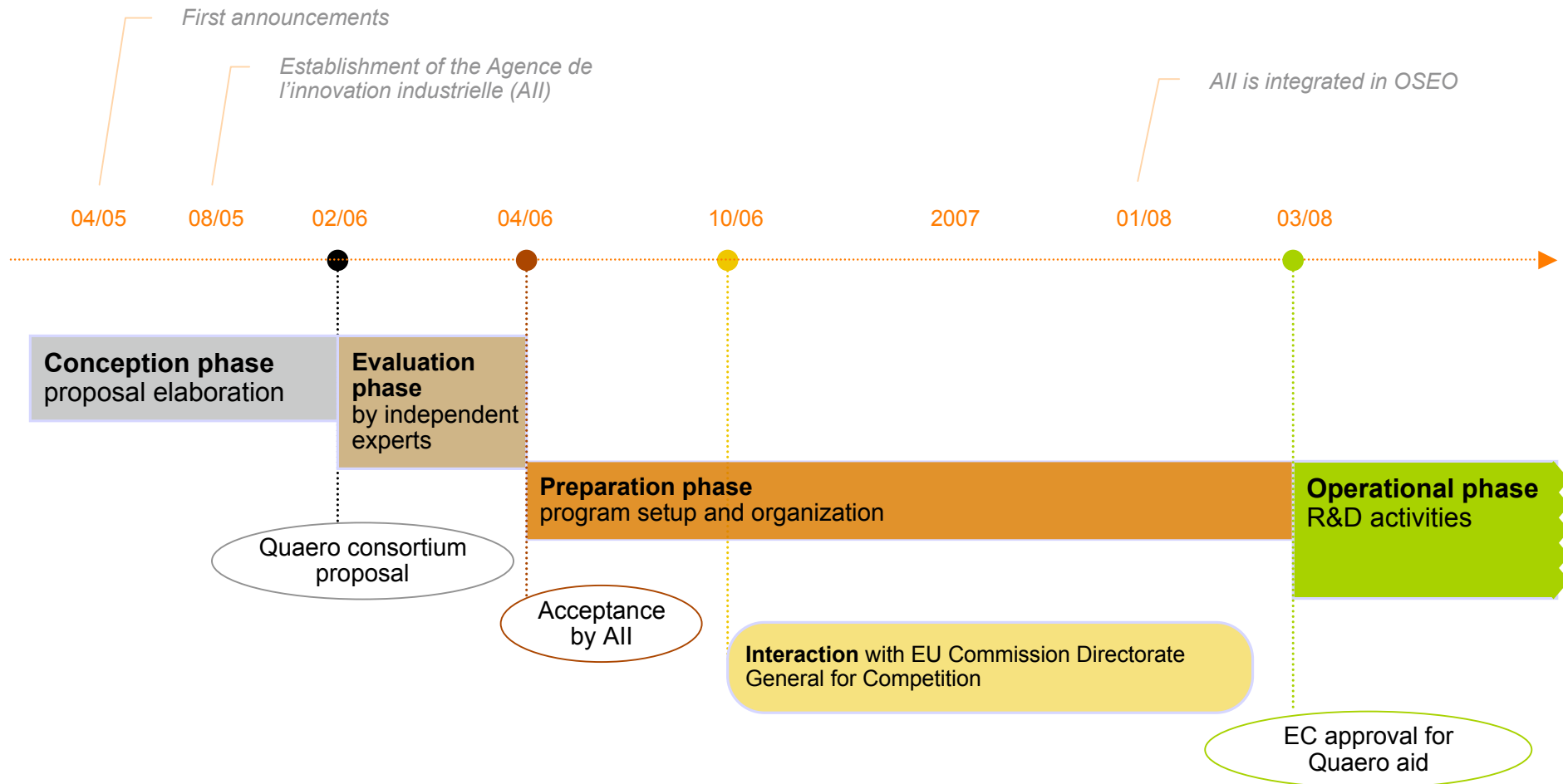 - BnF, DGA, Ina, LNE

Coordinated by Thomson

Budget
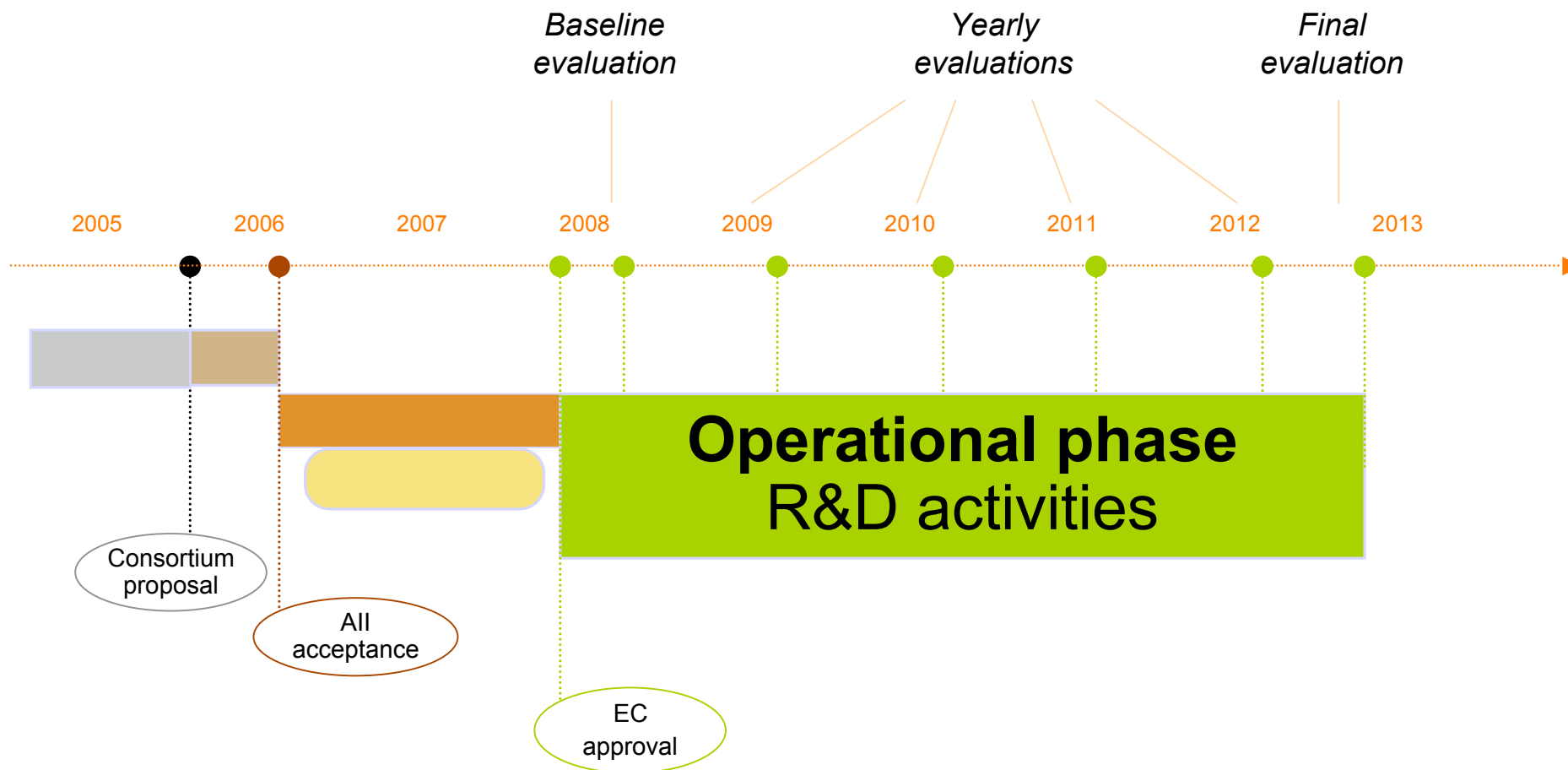
- 99 M€ funding from **oséo**
- 200 M€ total budget
- over 5 years

Budget by type of activity

Legend:
- Research
- Corpus
- Evaluation
- Development

History

First announcements

Establishment of the Agence de l'innovation industrielle (AII)

AII is integrated in OSEO

04/05   08/05   02/06   04/06   10/06   2007   01/08   03/08

Conception phase proposal elaboration

Evaluation phase by independent experts

Preparation phase program setup and organization

Operational phase R&D activities

Quaero consortium proposal

Acceptance by AII

Interaction with EU Commission Directorate General for Competition

EC approval for Quaero aid

Timeline

Baseline
evaluation

Yearly
evaluations

Final
evaluation

2005   2006   2007   2008   2009   2010   2011   2012   2013

Operational phase
R&D activities

Consortium
proposal

AII
acceptance

EC
approval

Evaluation infrastructure

- Over 35 tasks (or tracks), each of them including one or more sub-tasks
- About 20 persons involved (8 FTE) for the program duration, distributed over 6 partners (DGA, LNE, IRIT, UJF/LIG, INRIA/LEAR, LIPN)
- Acting together with corpus creators, technology developers and integrators in per-technology committees
- Organizing yearly evaluation campaigns

Example of active tasks

- Q&A (Fr, En)
  - Using a fixed web corpus
  - Questions correspond to real user requests
- Speech to text (Fr, En, Ge)
  - On broadcast and podcast
- Translation
  - On web pages
- Beat detection in music
  - Evaluated at MIREX
- Face detection
  - Cf. www.exalead.com
- …

Current activities

- ## Baseline technology assessment

  - ### Testing the existing technologies at program start

    - On Quaero specific data when already available
    - On existing similar data otherwise

- ## Preparation of upcoming evaluation campaigns

  - ### Corpus production is ramping up

  - ### Evaluation plans are expected early 2009

Coordination with other evaluation campaigns

- ## Need for coordination

  - If tasks is identical or similar, results can be compared only if common evaluation

- ## Types of interaction

  - R&D conducted in Quaero can be evaluated through existing campaigns

  - Evaluation campaigns organized by Quaero can be opened to external participants bringing in their know-how

  - Quaero and another program can organize common evaluation campaigns

The Quaero/imageCLEF cooperation

- ## Quaero members already involved in imageCLEF

    - RWTH in the "Visual Concept Detection" track
    - UJF/LIG in the "Photo Retrieval" track

- ## Quaero program sponsors the imageCLEF workshop

    - Fostering the CLEF evaluation efforts
    - Investigating possibilities of common campaigns

Conclusions

- Quaero is a collaborative program on multilingual and multimedia processing

- Evaluation is a strategic approach for Quaero

  - Use evaluation to select core technologies, foster innovation and measure progress

  - Built-in evaluation infrastructure

  - Cooperate with other evaluation campaigns

Perspectives

- 5-year work program just starting

- Quaero members participating in various evaluation campaigns

- Various Quaero-organized evaluation campaigns welcoming new participants

- Joint evaluation campaigns

Thank you for your attention!

More information on

http://www.quaero.org