



The context and landscape of EU efforts on Multimedia Search Engines

Results, Trends and Prospects

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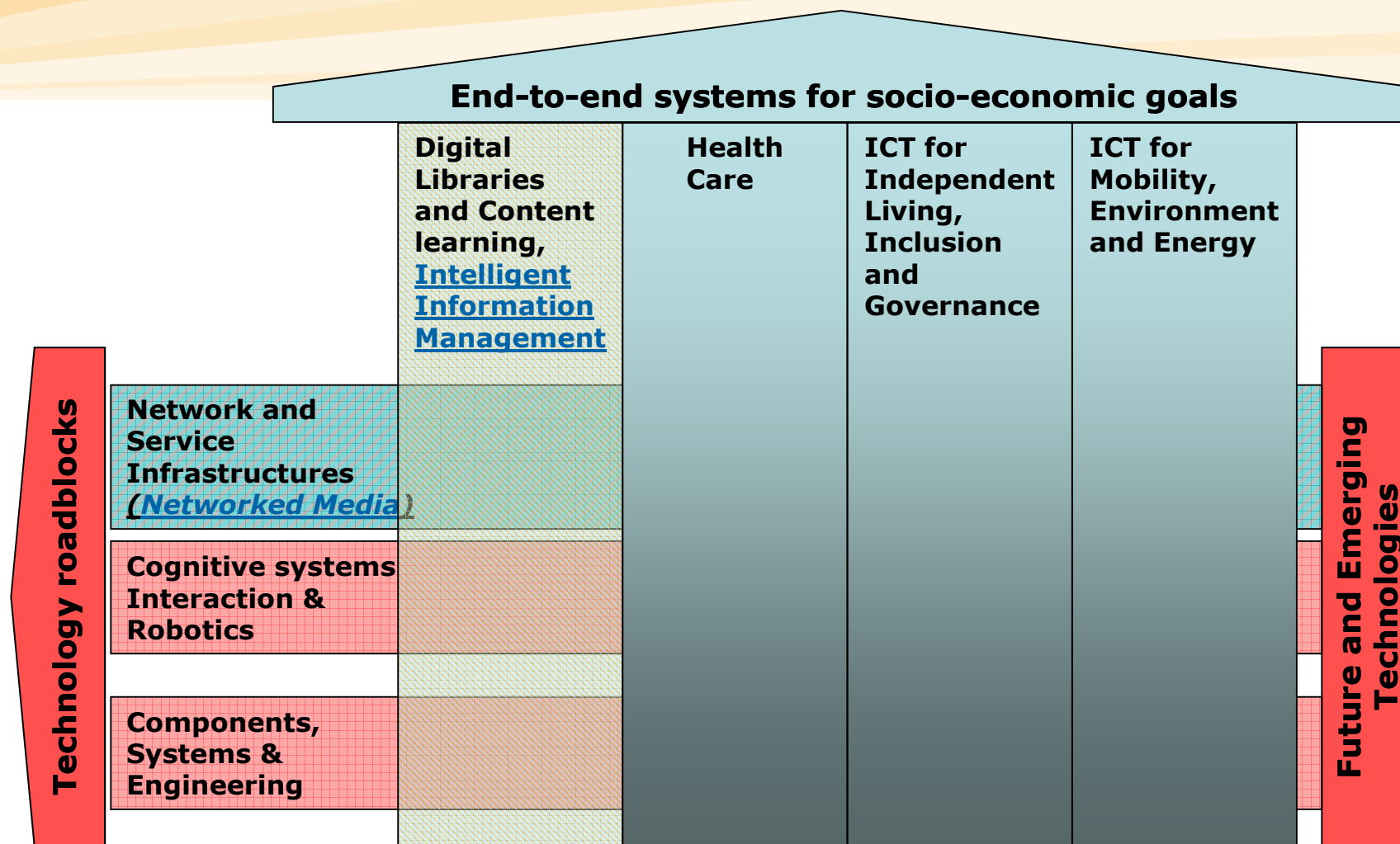


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FP7 ICT Work Programme: the Challenges

Search Engines at the crossroads of Content and Networks



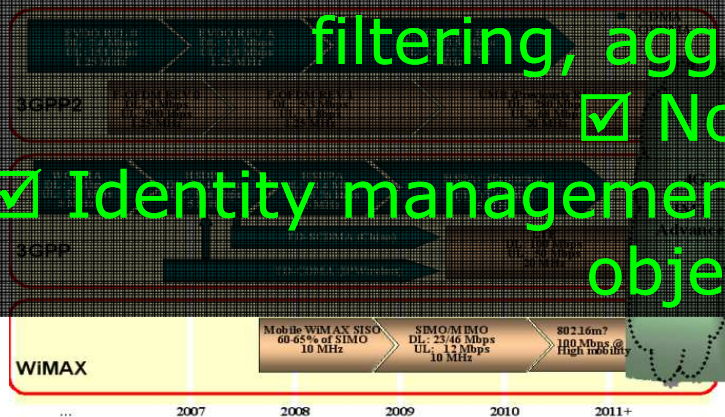
Networked Media a driver for the Future Internet

Internet of Services, Service Web

3D & Media Internet

For a Future Internet of creative media based on:

- ☑ Media-centric networks
- ☑ Collaborative user-generated content
- ☑ 3D innovative applications (gaming, virtual worlds...)
- ☑ New requirements for information representation, filtering, aggregation and networking
- ☑ Novel search tools
- ☑ Identity management, ownership and trading of digital objects, right to use



Networks of the Future



Internet of Things

Sources: 3GPP, 3GPP2, Qualcomm, WiMAX Forum
<http://www.alexandria.unisg.ch/EXPORT/DL/38496.pdf>
<http://www.itu.int/osg/spu/publications/internetofthings/Second Life>

Towards User Generated Content ... and User Generated Services

Present

Limited providers of content/services

Centralized creation

Tied to a network/device/form factors

Separate Media/Services

Not aware of context

One-size-fits-all content aggregation

Authenticated distribution channel

Basic user profile controlled by Provider

Mass Media and Services

Emergent and Future

Users created content/services

Collaborative creation

Follow users on any device/screen

Elusive convergence of media and Services

'Awareness enabled'

Personalized content filters

Authenticated users

Rich user profile controlled by User

Complex, dynamic, volatile,
collaborative media and self-Services

Towards a new wave of innovative media and services

Multimedia

Geo- visualization

Virtual Worlds

How to archive, categorize and search this flood of data objects "anytime - anywhere"?
How to transform them into personal/community media services?

Social networks

On the move

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WP 2009-2010: R&D on Networked Media and 3D Internet

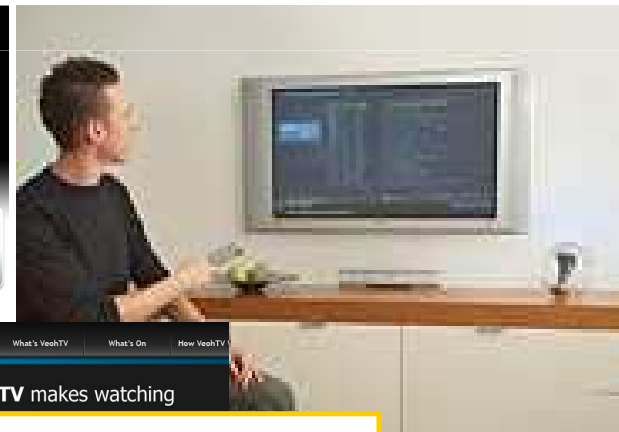
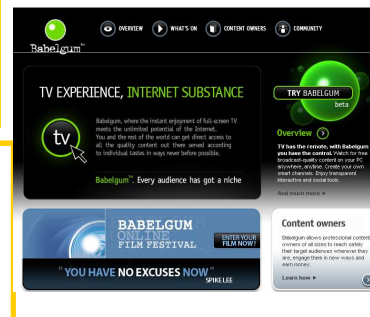
• Networked Search and Retrieval:

- ❑ Optimised search in large-scale distributed digital MM content from diverse sources and scenarios (including links to the physical world, e.g. nomadicity)

- ❑ Interaction with content

- ❑ Media-to-network and to device dynamic adaptation to context and application (P2P, mobile)

- ❑ Adaptive technologies for personalised search (relevance, user contexts, perception, feedback, usage profile)



- ❑ Coordination of activities at EU level on MM Search
- ❑ Cooperation with 3rd countries
- ❑ Research roadmaps
- ❑ Policy and socio-economic aspects



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Scope, Challenges and Impact

- ❑ Media Search as part of the E2E chain of Networked Media as an enabler
 - ❑ Search in the context of everyday life, diversity, multilingualism, light-weight solutions for personal media (long tail), accessibility for all, fixed/mobile search
 - ❑ Use-case scenarios (novel service development)
 - ❑ Innovative approaches, high-risk, high potential impact, disruptive, with stakeholder participation in design and realization of real world scenarios, exploiting user contributions (tags, ratings, comments, community structure...)
 - ❑ Gains in SE accuracy, indexing, completeness, automation, improving query matching, personalisation... meeting user's needs and expectations,
 - ❑ Comprehending the full information space ("non-Web" dark information space – geospatial, history, cadastre...), time dimension
-
- Reinforced positioning of industry in Europe
 - Wider uptake and market opportunities (including for content-related SMEs) from innovative business and societal applications (e.g. games, entertainment, education, culture, service creations...)

Overcoming fragmentation



Networking and co-ordination of research and innovation activities

- Exchange of Best Practice, dissemination of "good practices"
- State of the Art ,R&D Roadmap, Gap Analysis
- CHORUS CONFERENCE



Search in Audio-Visual

P2P SE



**Geo
Indexed
Semantic
Search**



Semantic Search



Audio-Visual Content Search and Retrieval in a Distributed P2P Repository

3D SE

Generate the new knowledge: fill the "semantic gap"
Integration of a critical mass of activities and resources within
a high scale collaborative European dimension.



Lighting the way for European audiovisual search

AV Search



Video & image Indexing and reTrievAl in the Large Scale

AV Search



Raw Media material Search



VIDIVIDEO

Semantic Video Search



Direct AV SE



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Progress so far

- ❑ **Advanced solutions for organising, searching and accessing large-scale distributed audio-visual content & 3D objects:**
 - **3D search engine**
 - **Multimodal fusion strategy** (processing visual and textual information)
- ❑ **Ideas for innovation beyond existing research efforts and identification of future scenarios:**
 - **Think tank, use-cases, roadmap**
- ❑ **Technologies to represent & interpret, navigate & retrieve audio-visual objects**
 - **P2P search engines** (no centralized approach to semantics)
- ❑ **Strengthen adaptive search by content and/or context, tested in realistic settings, based on relevance feedback**
 - **Plug-ins, mobile platform**
 - **Geo-referenced search**
- ❑ **Methods for information retrieval (knowledge discovery, metadata extraction, annotation and summarisation, indexing) of diverse content types (text, image, video, audio, 3D graphical objects, etc)**
 - **Direct search with no prior metadata**
 - **Semantics of video, raw video indexing systems**
 - **Socially-derived profiling, recommenders**

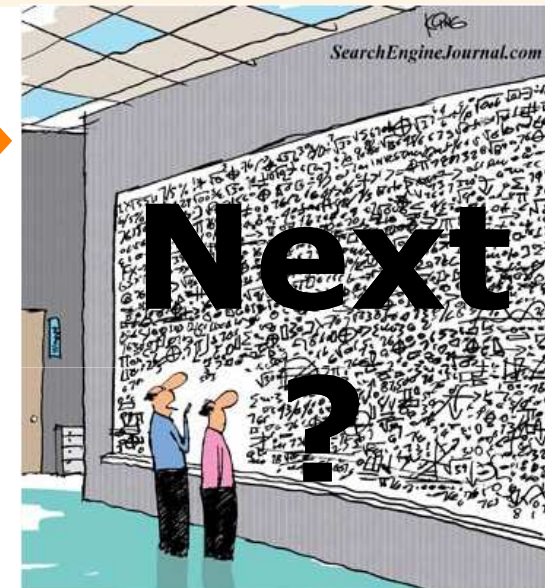


Future R&D for the evolution of search...

1908



'90s - Today



...And that, in simple terms, is how you increase your ranking on search engines."

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Concluding remarks

- **Media Search will be a key enabler of the Future Internet**
- **The Search Engines constituency should contribute to the EU Future Internet actions**
- **Academia/Industry collaboration should lead to real impact (services, applications) taking on board users' needs**

*Media Search is an R&D challenge for researchers ...
... an opportunity for European industry ...
... and a key cultural challenge for Europeans too!!!*