The context and landscape of EU efforts on Multimedia Search Engines

Results, Trends and Prospects

Luis Rodríguez-Roselló
Head of Unit “Networked Media Systems”
DG INFSO
European Commission

CHORUS Conference
Brussels, 26th May 2009
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.itu.int/osg/spu/publications/internetofthings/
Second Life
Towards User Generated Content ... and User Generated Services

<table>
<thead>
<tr>
<th>Present</th>
<th>Emergent and Future</th>
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<tbody>
<tr>
<td>Limited providers of content/services</td>
<td>Users created content/services</td>
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<tr>
<td>Centralized creation</td>
<td>Collaborative creation</td>
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<tr>
<td>Tied to a network/device/form factors</td>
<td>Follow users on any device/screen</td>
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<td>Separate Media/Services</td>
<td>Elusive convergence of media and Services</td>
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<tr>
<td>Not aware of context</td>
<td>‘Awareness enabled’</td>
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<td>One-size-fits-all content aggregation</td>
<td>Personalized content filters</td>
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<td>Authenticated distribution channel</td>
<td>Authenticated users</td>
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<td>Basic user profile controlled by Provider</td>
<td>Rich user profile controlled by User</td>
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<tr>
<td>Mass Media and Services</td>
<td>Complex, dynamic, volatile, collaborative media and self-Services</td>
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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?
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
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

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

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