

Challenges Beyond Technology:The Findings of Chorus

PetaMedia Industry Workshop at the NEM Summit St. Malo 30th September 2009



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Overview



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- ☐ Who we are? Ways of operation?
- □ Recommendations from Chorus to decision makers in academia, industry and governments
- Selected choice of upcoming Challenges and **Opportunities**
- □ Conclusions



























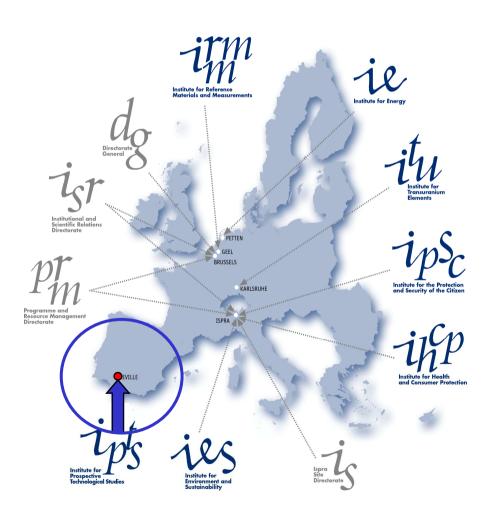
Who we are



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European Commission – Joint Research Centre Institute for Prospective Technological Studies (IPTS)



IPTS

Part of DG JRC of the EC

Mission:

"to provide customer-driven support to the EU policy-making process by researching science-based responses to policy challenges that have both a socio-economic as well as a scientific/technological dimension"



CHORUS Objectives and organisation



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D2 "A-V Search" cluster,

information exchange platform and workshops

Objective
Bridge the gap between researchers view (academia and industry) and the new services and applications prospective for every day life needs
Cross-disciplinary aspects:
ldentify challenges and recommendations for technological approaches Derive critical with regard to socio-economic and legal issues,
CHORUS community:
→ EU projects,
national initiatives
key players in the domain of multimedia search engines
Structures and events:
working groups,
Think-Tank.



Trends and challenges (I)



Saint Malo, 30th September 2009 Current search engines similar to 10 years ago Privacy enhancement technologies Metadata for content enrichment Semantic web eCommerce search Techno-economic Local + social + mobile = real + virtual Context / situation awareness Cloud computing as disruptive search context Organization/navigation of information P2P search Search bundled: integrate, morph, disappear Mobile search: user/site/content centric A/v search User-generated services Symbolic information manipulation Enterprise search a separate domain Enterprise search: extensible platform leveraging metadata and breaking silo models, scalability an issue Social computing – users' role Free lunch with hidden costs Web search mature? Natural monopoly (economies of scale – critical infrastr.) – Need to increase the Competition - Market behaviour level of competition – Market dynamics Combination of users' information into The power of "the Learning from users: innovation, branding, advertising, (future structure) – Not EU search due to default" several services external reasons - Mobile domain? Dynamic innovation possible Advertising as the only business model User empowerment could change business models Fighting for audience, not content (audience (ie, advertising) economics) Lock-in and network effects Ombudsperson – trusted third party User trust as main asset, but current trust is very naïve Openness - Interoperability - Neutrality Portability of data "Just in case" scenario Social computing could "de-monopolizise search The influence of advertising markets Minorities under-representation, but accesible Quality – Bias – Editorial responsibility – Diversity Public domain - other languages Freedom of expression - education Filtering Measurements of quality of search Transparency Existence of biases High consensus Consequences of biases Safeguards from harmful content Evidences of usage: self-referencing Relevance of local culture Some consensus Lack of editorial agenda Preserve information bio-diversity Access to geo-spatial data Further discussion needed



Trends and challenges (II)



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Economies of privacy

Balance personalized search

Examine the future of consent

Can the poor buy privacy?

Health records

Viability of alternatives

Balance between privacy and quality- minority culture

Is market providing a choice of levels of privacy?

Communication of the guarantees of use

Lack of awareness about public exposure

Specific Public involvement requested (European flavour)

Potential policy responses

Awareness of consumers

Education of users

Public sector more visible

Independence of Europe

Invest in r&d

Defence of public interest

Public information at marginal distribution cost

Open government projects for search engines access to information

Increase education – knowledge of search technologies – invest in education – increase pool of skills

Develop own technology

Search as an elementary service

Public oversight required due to unbalance

Aggregation of information needs regulation

Auditing of business/data procedures

Regulation place between innovation and privacy (and intellectual property)

Search engines are not neutral: require regulation

Good governance: social resposibility

Not market, nor technology will fix the flaws in search: economic or cultural issues

A two sided market similar to broadcasting / media

Use of generic regulation (competition, constitutional) difficult

A case for converged regulation?: SMP, access, minimum QoS, transparency, editorial responsibility, advertising, privacy, consumer empowerment



Recommendations



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- 10 Points CHORUS recommendations towards making search engines more efficient to make implicit knowledge reachable and in fair and attractive ways to the user
- □ 1. Achieve more efficient indexing techniques for multimedia content enrichment and automatic meta-data creation.

Socially-enriched automated indexing will empower the robustness of the indexing techniques.

- 2. Develop new multimedia search paradigms based on content/context/event, to go beyond current retrieval systems that are merely keyword-based or query-byexample-based.
 - Event structures are expected to be the main driver for media contextualization.





3. Model efficiently both the **implicit** and **explicit feedback** to improve personalization and recommendation abilities of a search engine including collaborative tags filtering, user preference detection ...

4. Develop more informative **user interfaces** for future applications

too little overlap between networked media technology providers and

UI designers

toward **smart visualization** of media delivery and **enhanced user** quality of experience.

5. Break complexity and afford scalability: besides the amount of input data and generated features, complexity need to be managed for other growing quantities such as the number of users, the number of information sources and the number of data attributes / features dimension





 Develop interoperable meta-data standards open ended content, association with object and preservation through its life, preservation of metadata across transfer, migration issues, postproduction and restoration Beyond Internet of Media
7. Make available and develop open multimedia corpora Corpora is a key enabler for MSE scientific and commercial success,
 8. Address privacy concerns to afford guarantees to the users: important minimum regulation is necessary for consumer protection, privacy protection or unfair competition. important Current EU regulation does not seem to cover adequately or are not applicable to search engines,





- 9. Address security, integrity and trust issues related to search and networked storage
 - International cooperation will be needed
 - foster user participation on a bidirectional media scene while preserving the trust models afforded by editorial material
- □ 10. Support Pan-European privacy certification of IT products or IT-based services compliance with European data protection regulation



Web search
billions, millions
Personalised TV
video volumes
Enterprise Content search
→ variety, business
Library search
High value content, old formats
Personal Content Search
variety, local
Monitoring, Detection & Alert
✓ flux vs base

Differences in key attributes, in particular content management, content ownership, access rights and the revenue model



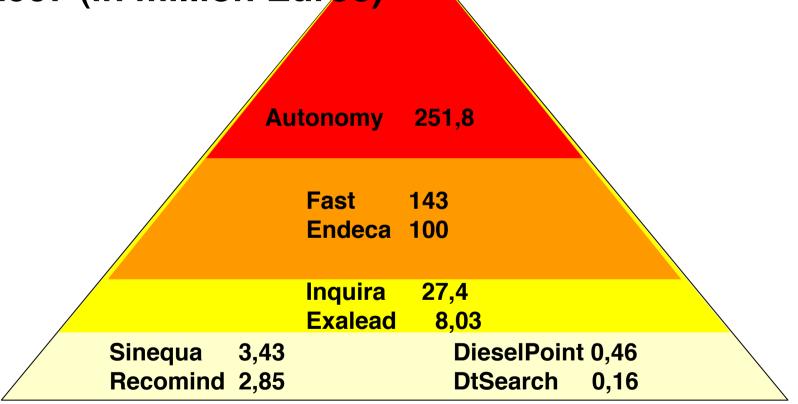
Enterprise Search Solutions



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☐ The turnovers of the nine top ESS providers in 2007 (in million Euros)





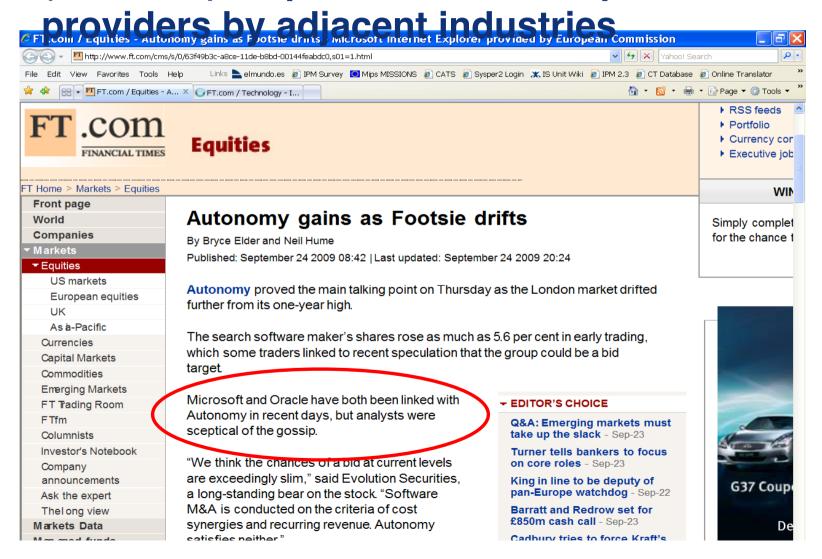
Enterprise Search Solutions



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☐ (Possible) acquisitions of Enterprise Search





Enterprise Search Solutions

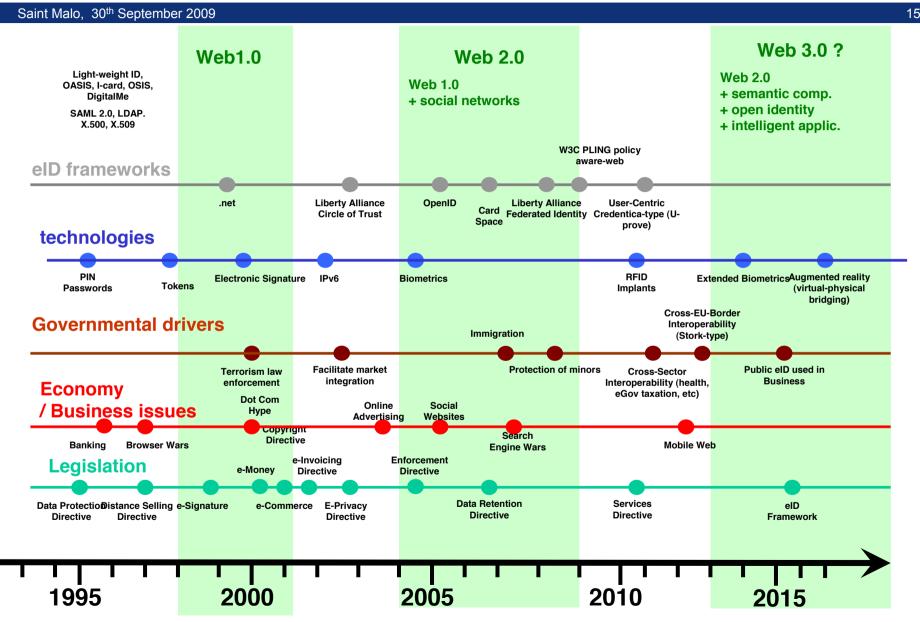


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- ☐ How can providers of pure Enterprise Search solutions survive in the long run within a very competitive market?
- What actions could and should be taken to strengthen the position of European companies, while maintaining the regulatory 'rules of the game'?



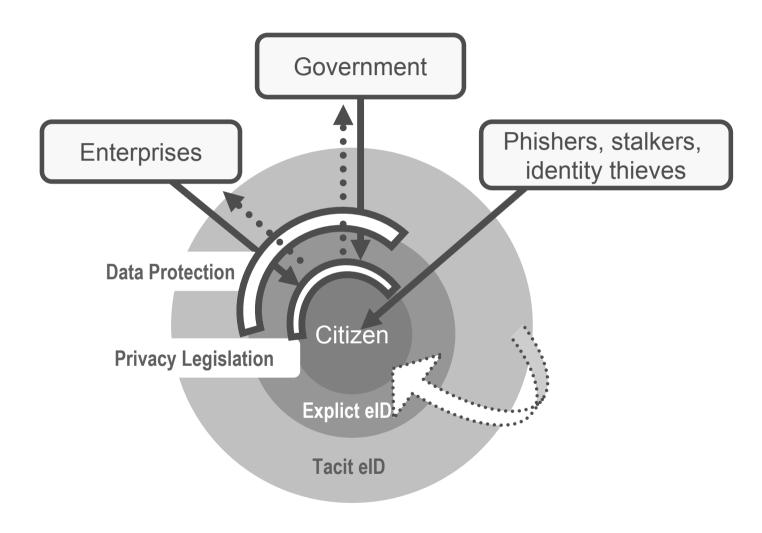








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□ Behavioural economics and other research highlight significant gaps between stated preferences and behaviours

- Privacy paradox
- → The Control paradox
- The Responsibility paradox
- The Awareness paradox





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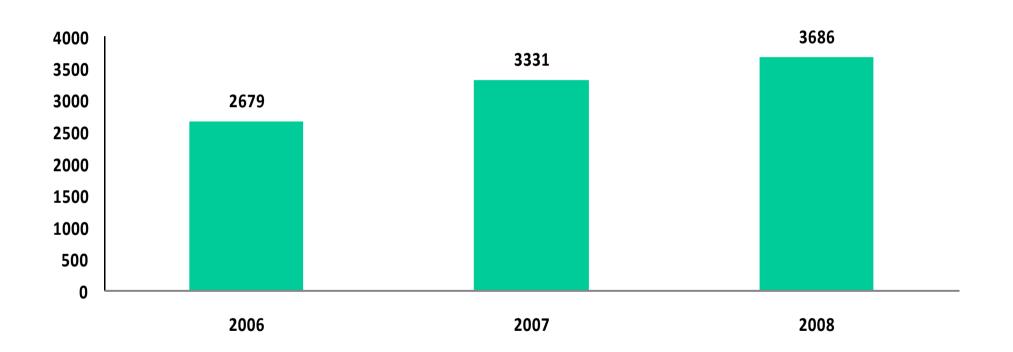
- ☐ How is it possible to specify solutions that is understandable and acceptable by users and is effective in responding to the user's and policy maker's concerns?
- □ Better to use technical tools (design) or legislative tools (law)?
- What opportunities for safe, private and proper management and search of EU citizens' personal content? (choice)





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☐ Mobile users worldwide. Source: ITU (2009)









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☐ Mobile internet penetration (2008)

	Mobile penetration 2008 (%)	Mobile internet penetration (%)
North America	70%	11%
South America	77%	4%
West Europe	119%	16%
East Europe	110%	15%
Far East & China	69%	19%
Indian Sub Continent	21%	5%
Rest of Asia Pacific	62%	8%
Africa & Middle East	57%	8%



Mobile Search: SWOT



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Strengths

Technological puzzle pieces in place

Good research standards

Content of higher quality for mobile use (geo, cadastre, ...)

Strong Industrial landscape

Public funded broadcasting

Weaknesses

Fragmentation (roaming, regulation, cultural)

Need for better / understandable / more secure pricing models

Roaming charges

Strategic decisions on innovation and investments are outside EU

Venture capital / Entrepreneurship

Lack of interoperability and (open) standards

Opportunities

Improving integration between web/mobile/pc platform for a richer user experience

Niche markets/services

Local content (multicultural)

New regulatory framework needed for API's, privacy, ...

Data portability

Liberation of public data

Disruptions (cloud computing)

Threats

Lack of technology development

Fragmented market (silos, platforms)

Privacy issues, data protection

Companies outside EU will control the developments in mobile search

Asymmetry of regulation

Regulatory lag (spectrum management)







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□ Traditional Mobile Value Chain

	Contents Services Applications	Aggregator Provider	Mobile Network Operator	Device	End user
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- □ Where is Search in the mobile internet ecosystem?
- Which are viable business models and revenue schemes?
- Which are the new actors in this new game?
- ☐ Is the supply side matching the demand side?



Summary



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- □ Chorus Activities are cross-disciplinary
 - Identify challenges and recommendations for technological approaches
 - Derive critical socio-economic assessments
- □ Chorus 10 Points Recommendations
- New Themes for discussion

 - Personal Data Search
 - Mobile Search