

Challenges Beyond Technology: The Findings of Chorus

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R Compañó

N Boujema, Ch Dosch, J Geurts, J Karlgren, P King, M Kauber J Köhler,
R Ortgies, JC Point, N Sebe

Institute for Prospective Technological Studies - IPTS
Joint Research Centre - European Commission
<http://ipts.jrc.ec.europa.eu>

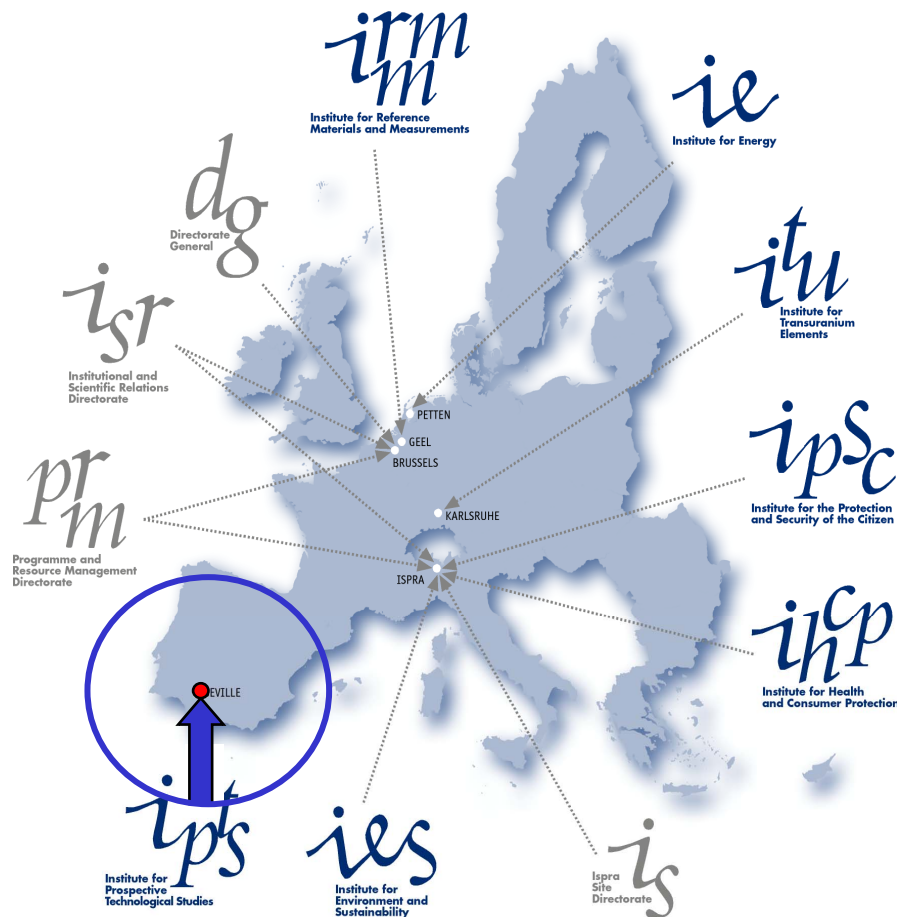
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- ❑ Who we are? Ways of operation?
- ❑ Recommendations from Chorus to decision makers in academia, industry and governments
- ❑ Selected choice of upcoming Challenges and Opportunities
- ❑ Conclusions



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”

❑ **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:**

- ↘ Identify challenges and recommendations for technological approaches
- ↘ Derive critical with regard to socio-economic and legal issues,

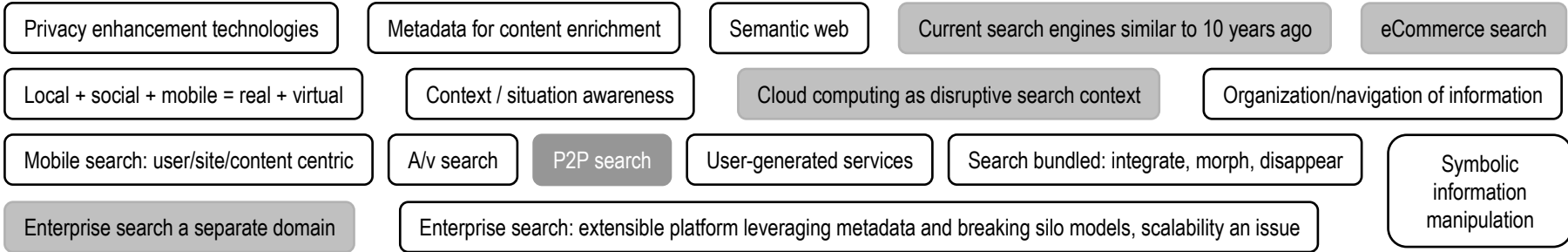
❑ **CHORUS community:**

- ↘ EU projects,
- ↘ national initiatives
- ↘ key players in the domain of multimedia search engines

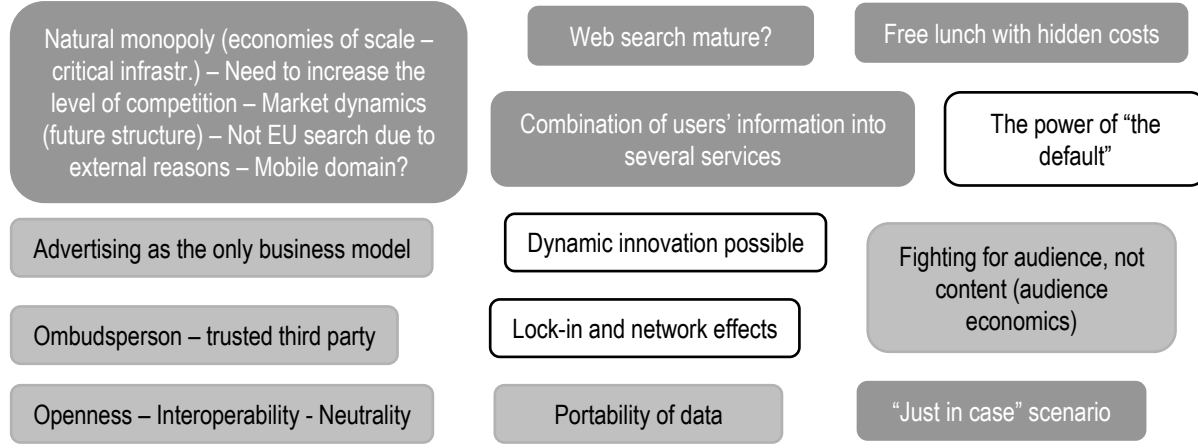
❑ **Structures and events:**

- ↘ working groups,
- ↘ Think-Tank,
- ↘ D2 "A-V Search" cluster,
- ↘ information exchange platform and workshops

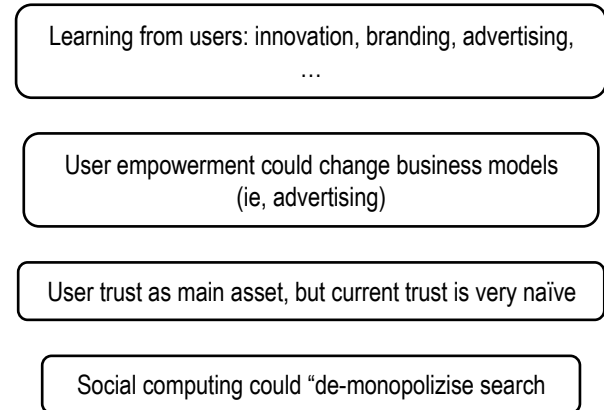
Techno-economic evolution



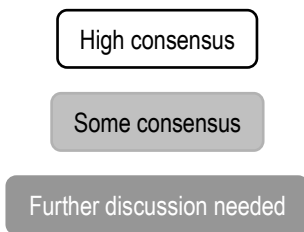
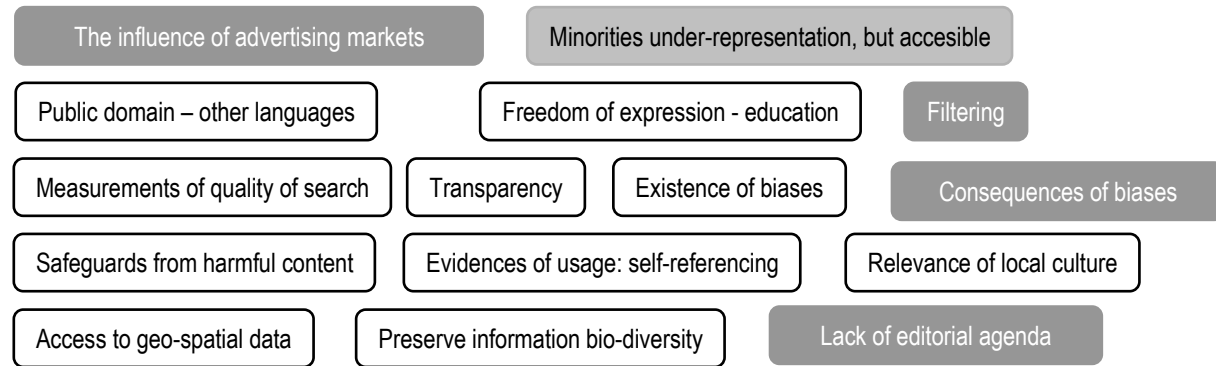
Competition - Market behaviour

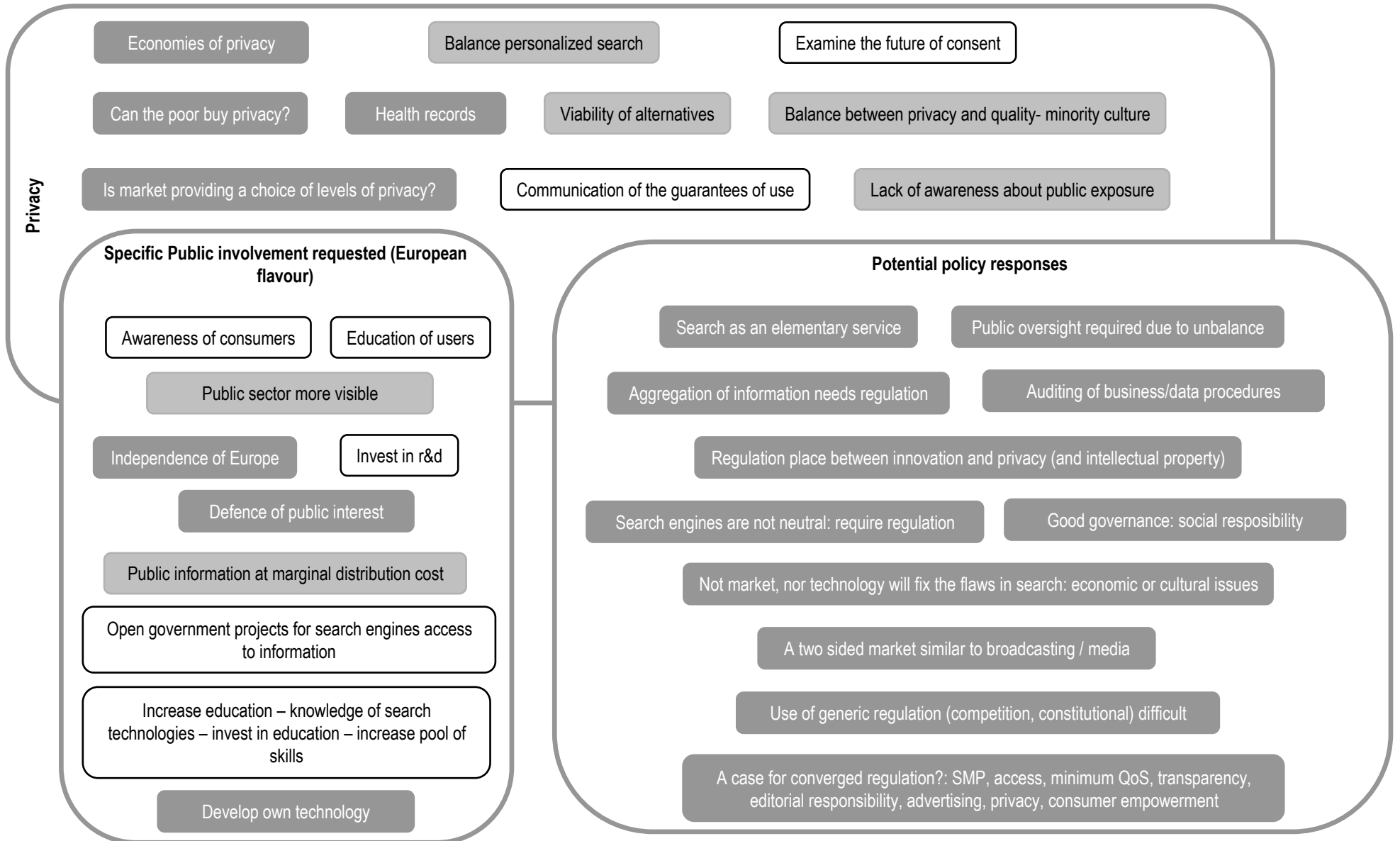


Social computing – users' role



Quality – Bias – Editorial responsibility – Diversity





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-by-example-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

- ❑ **6. 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:**
 - ↳ minimum regulation is necessary for consumer protection, privacy protection or unfair competition.
 - ↳ Current EU regulation does not seem to cover adequately or are not applicable to search engines,

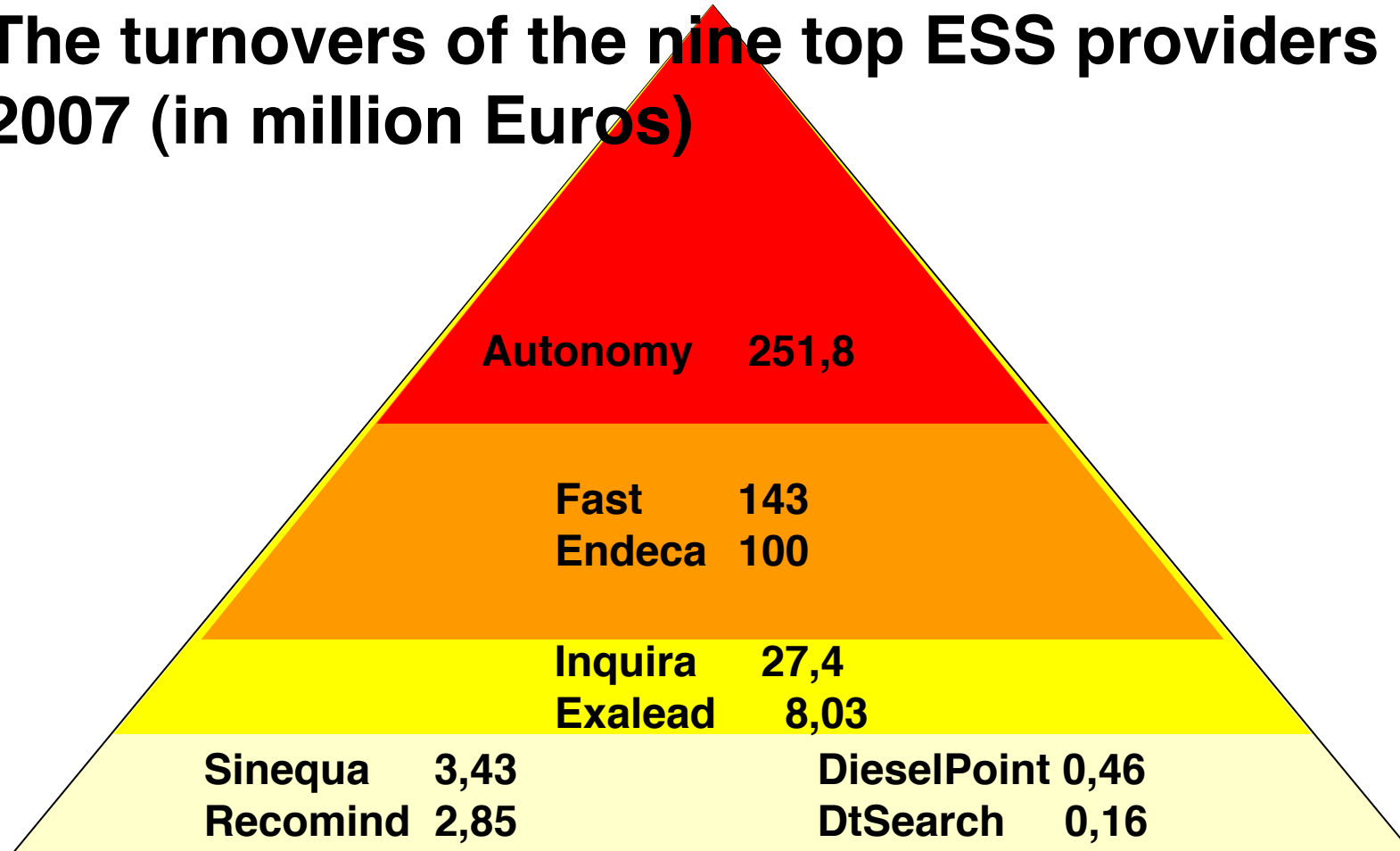
- ❑ **9. Address security, integrity and trust issues**
related to search and networked storage
 - ↘ International cooperation will be needed
 - ↘ foster user participation on a bidirectional media scene while preserving the trust models afforded by editorial material

- ❑ **10. Support Pan-European privacy certification**
of IT products or IT-based services compliance
with European data protection regulation

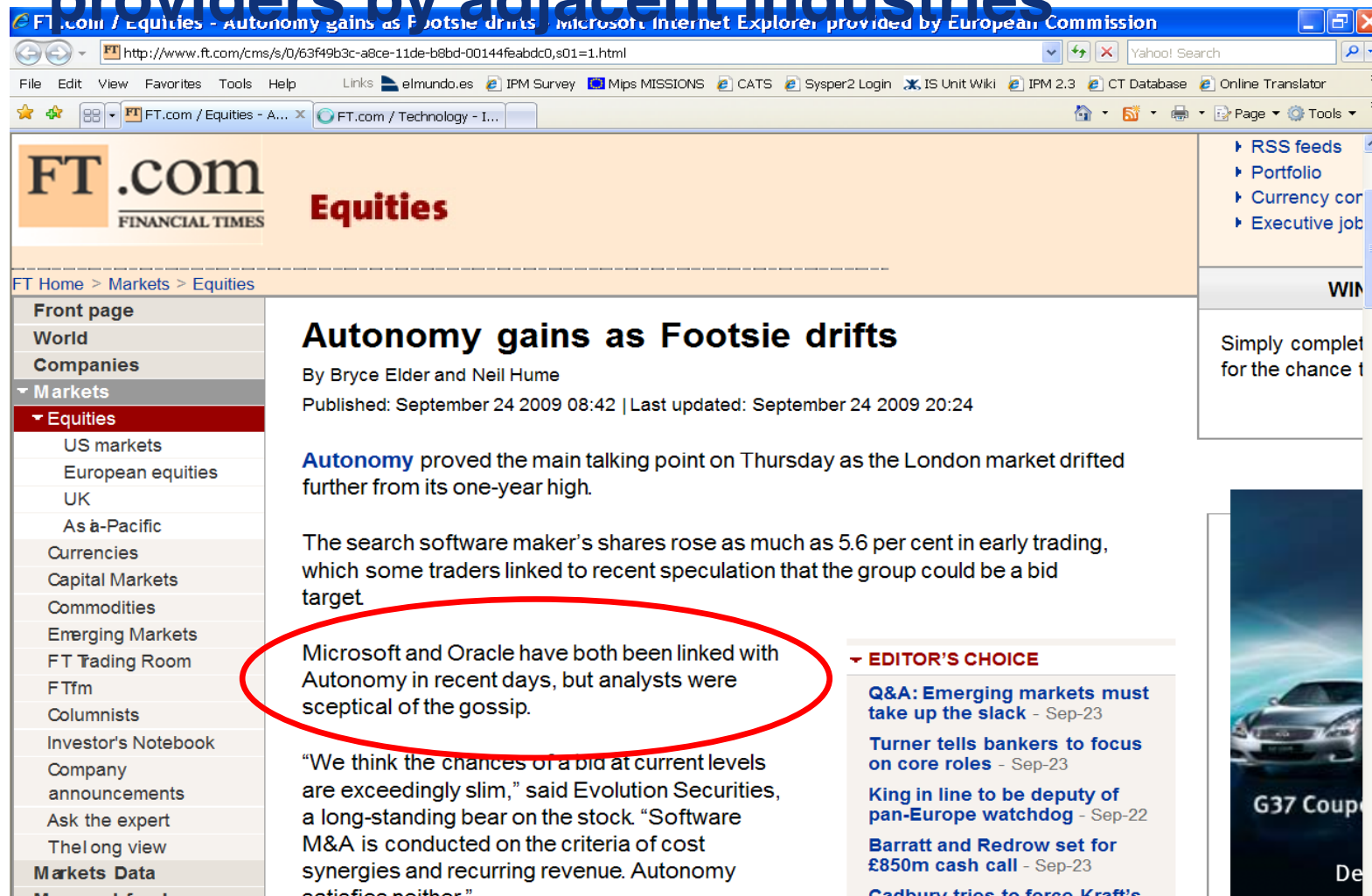
- Web search**
 - ↘ billions, millions
- Personalised TV**
 - ↘ video volumes
- Enterprise Content search**
 - ↘ variety, business
- Library search**
 - ↘ High value content, old formats
- Personal Content Search**
 - ↘ variety, local
- Monitoring, Detection & Alert**
 - ↘ flux vs base

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

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



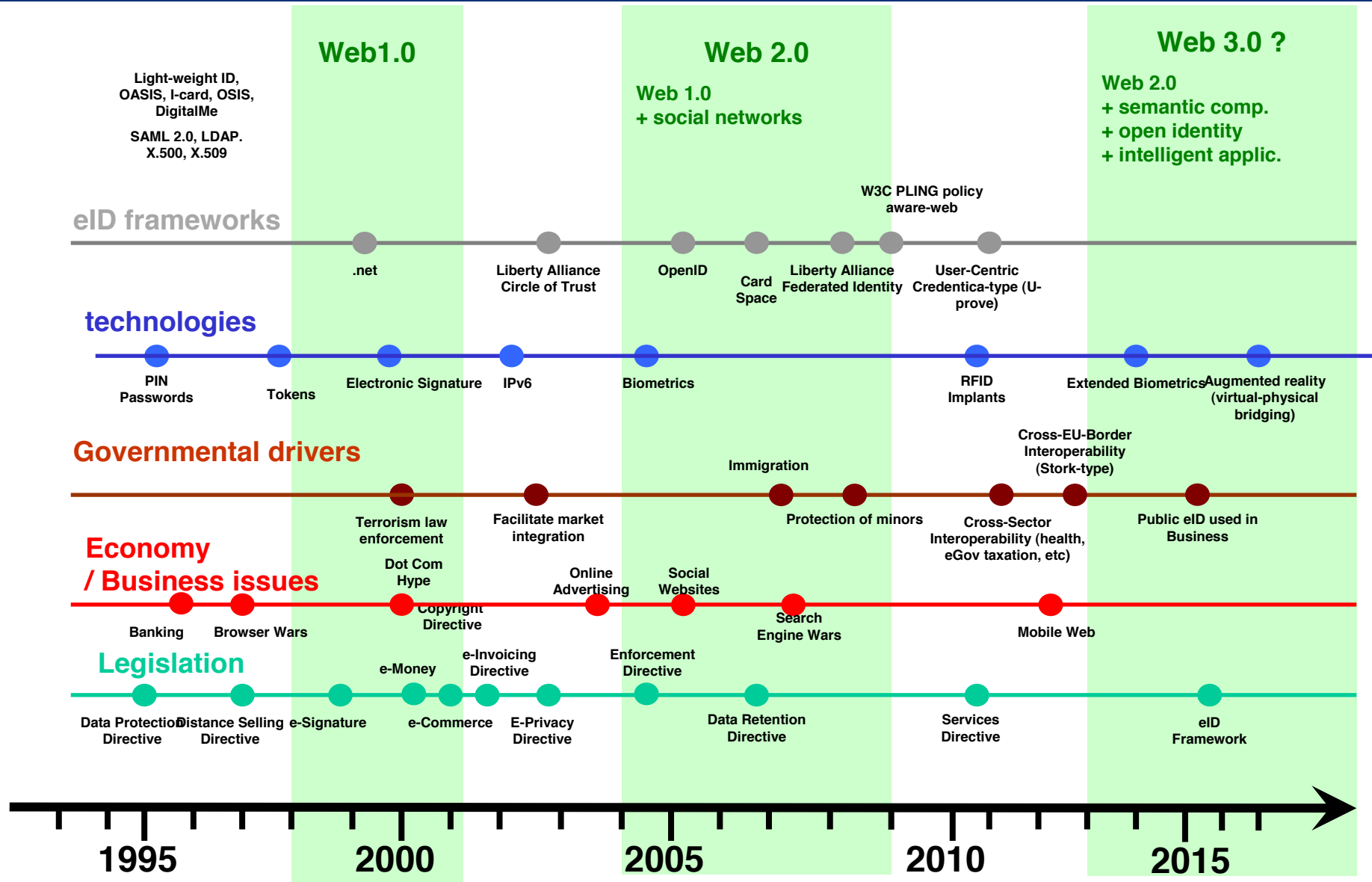
□ (Possible) acquisitions of Enterprise Search providers by adjacent industries

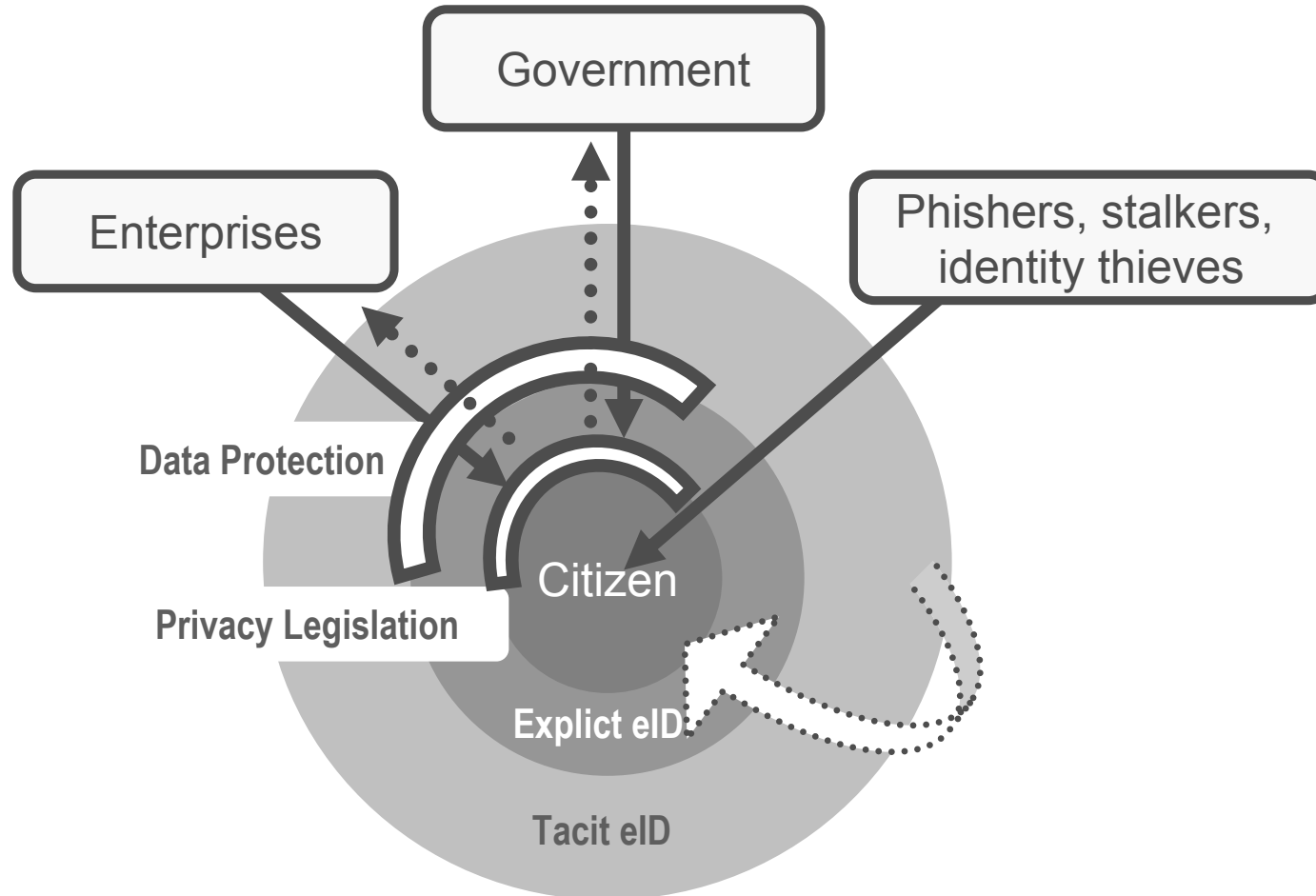


The screenshot shows a Microsoft Internet Explorer browser window displaying the FT.com website. The page title is "Autonomy gains as Footsie drifts". The main content area features a headline "Autonomy gains as Footsie drifts" by Bryce Elder and Neil Hume, published on September 24, 2009. The article text states: "Autonomy proved the main talking point on Thursday as the London market drifted further from its one-year high. The search software maker's shares rose as much as 5.6 per cent in early trading, which some traders linked to recent speculation that the group could be a bid target. Microsoft and Oracle have both been linked with Autonomy in recent days, but analysts were sceptical of the gossip." This sentence is circled in red. Below the main text, there is a quote from Evolution Securities: "We think the chances of a bid at current levels are exceedingly slim," said Evolution Securities, a long-standing bear on the stock. "Software M&A is conducted on the criteria of cost synergies and recurring revenue. Autonomy satisfies neither." To the right of the main text, there is an "EDITOR'S CHOICE" section with several headlines, including "Q&A: Emerging markets must take up the slack", "Turner tells bankers to focus on core roles", "King in line to be deputy of pan-Europe watchdog", "Barratt and Redrow set for £850m cash call", and "Cadbury tries to force Kraft's". The left sidebar contains a navigation menu with categories like "Front page", "World", "Companies", "Markets", and "Equities". The right sidebar has a "WIN" section and a "Simply complete for the chance t" section.

- 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’ ?**





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

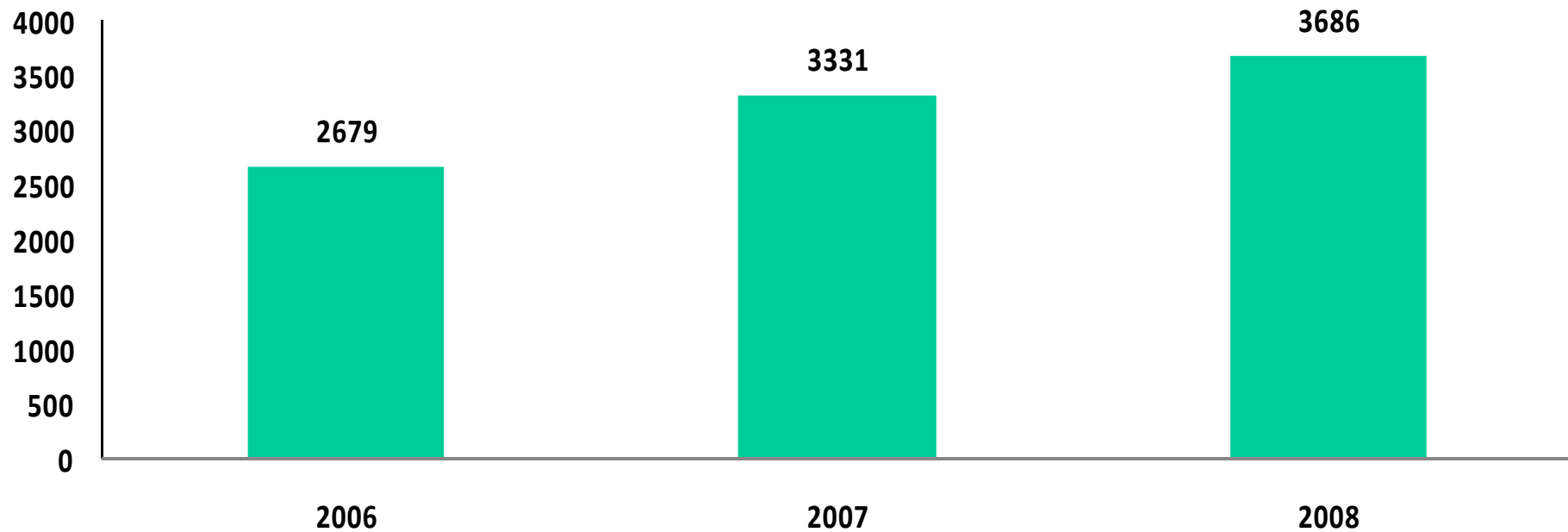
- ↘ Privacy paradox
- ↘ The Control paradox
- ↘ The Responsibility paradox
- ↘ The Awareness paradox

- 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)**

☐ Mobile users worldwide. Source: ITU (2009)



□ 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%

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)

Traditional Mobile Value Chain



- 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?

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

- ↘ Enterprise Search Solution
- ↘ Personal Data Search
- ↘ Mobile Search