

Which new technologies may we expect in the near future?

Observations on the emerging technological landscape and the new media

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Oy Meaning Processing Ltd.

The World Wide Network, 1935

- From afar anyone would be able to read any passage, expanded or limited to the desired subject, that would be projected onto his individual screen. Thus in his armchair, anyone would be able to contemplate the whole of creation or particular parts of it.
 - Paul Otlet (1935). *Monde: Essai d'Universalisme*.
- Cinema, phonograph, radio, television - these instruments considered to be substitutes for the book have become in fact the new book, the most powerful of means for the diffusion of human thought. ...From his armchair, everyone will hear, see, participate, will even be able to applaud, give ovations, sing in the chorus, add his cries of participation to those of all the others.
 - Paul Otlet (1934), *Traité de Documentation. Le Livre sur le Livre: Théorie et Pratique*.

We Live in the Age of Change

ARTICLE IN PRESS

J. Huebner / Technological Forecasting & Social Change xx (2005) xxx-xxx

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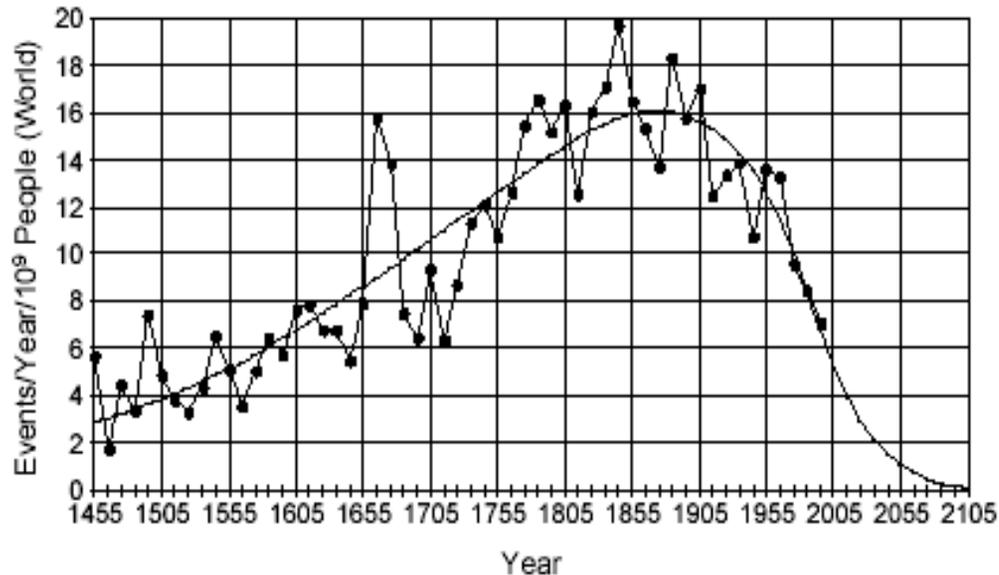


Fig. 1. Rate of innovation since the end of the Dark Ages. Points are an average over 10 years with the last point covering the period from 1990 to 1999. The smooth curve is a least squares fit of a modified Gaussian distribution to the data.

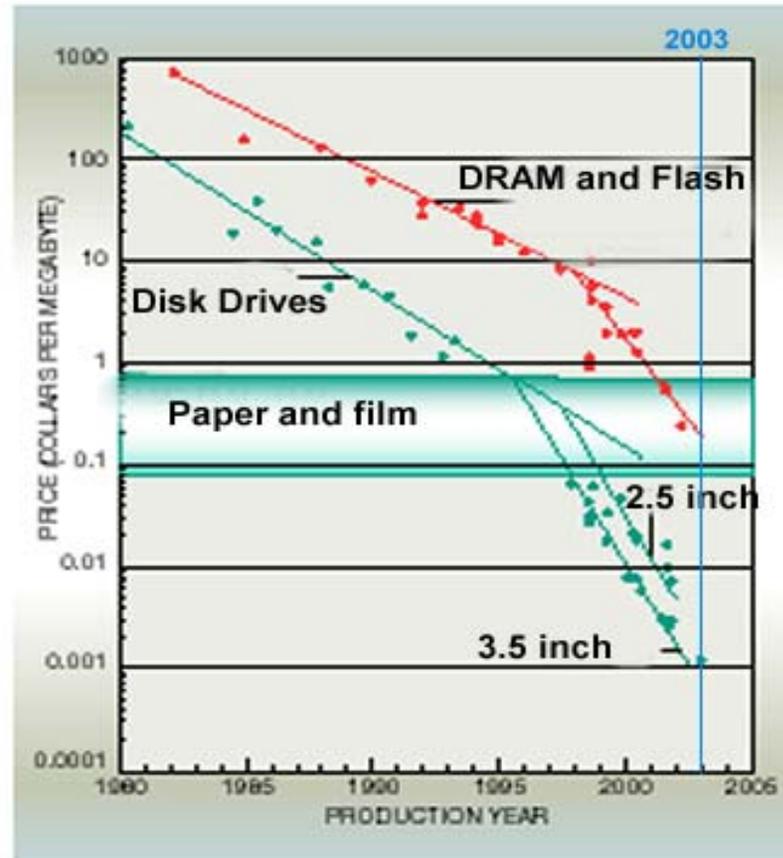
1848

- “Constant revolutionising of production, uninterrupted disturbance of all social conditions, everlasting uncertainty and agitation distinguish the bourgeois epoch from all earlier ones. All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions, are swept away, all new-formed ones become antiquated before they can ossify. All that is solid melts into air.

...the rapid improvement of all instruments of production, by the immensely facilitated means of communication, draws all nations, even the most barbarian, into civilization.”

Marx & Engels, 1848: *The Communist Manifesto*

Price per Megabyte



Source: Grochowski & Halem (2003) Technological impact of magnetic hard disk drives on storage systems. IBM Systems Journal 42(2).

Technical and social trends

- Technical
 - Convergence in ICTs
 - Networked software
 - Embedded information environments
 - Wireless and mobile connectivity (4G)
- Social
 - Globalisation
 - Demographics
 - Meaning processing
 - Information society as a risk society
 - Transformation of learning

Tech trend: Convergence

An old idea, becoming real real soon:

- Triple-play networks (structure convergence)
 - Wired and wireless networks will be used to distribute voice, data, and broadcast
 - Voice-over-IP creates a competitive environment and leads to the reorganisation of business in several sectors
- End-user terminal equipment convergence
 - Multimedia terminals that support images and speech emerge in different forms and shapes
- Content convergence, or the emergence of new media
 - First, content services become multi-channel services
 - ...then extended services emerge
 - ...and then content creation processes become increasingly independent of the distribution channel and the end-user terminals
 - ...and users are connected back to the communication/production loop

This all happened already

Tech trend: Networked software

- Distributed and modularized business processes will be supported by distributed, modularized and interoperable software systems
 - Distributed
 - Modular
 - Interoperable
 - Internetworking
 - Process-based (back-office) and activity-based and context sensitive (user-centric)
- This is also an old idea. It used to be theory. Now broadband diffusion is making it practice. This is how eCommerce becomes economically important.
- The bottlenecks include new organisational/management models, sophisticated understanding of modularity and interoperability, and new concepts for intellectual property rights

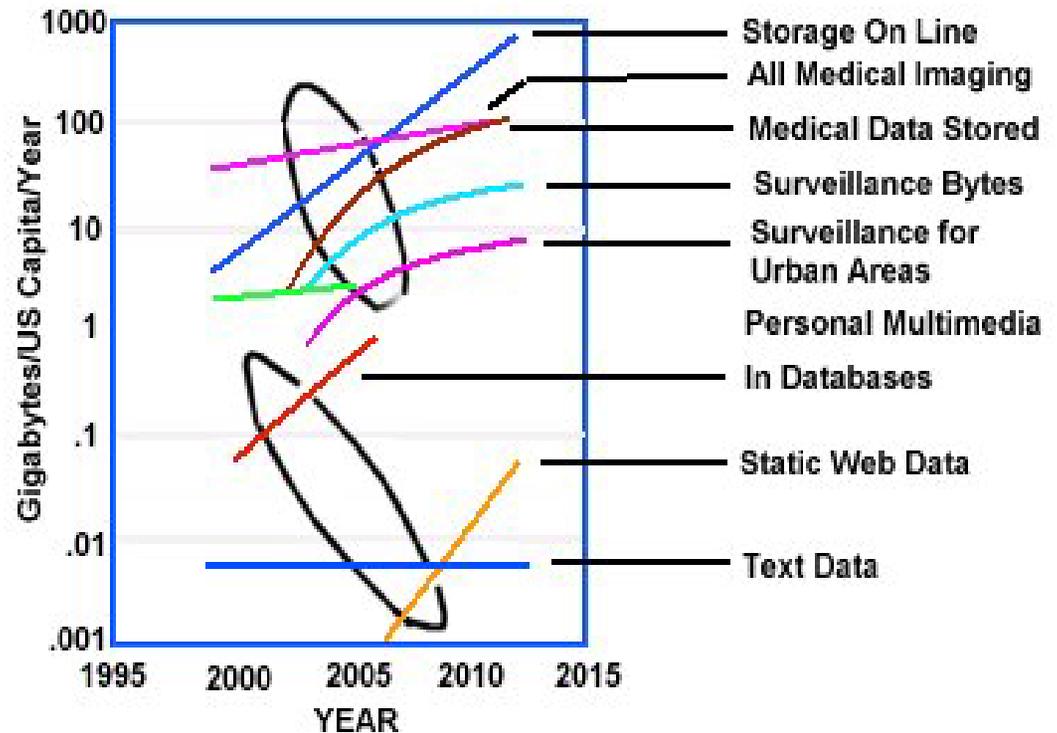
Tech trend: Embedded information environments “ambient intelligence”

- Two fundamentally independent communication networks will be integrated
 - Human-to-human interactive computer-mediated communication systems (“new cognitive media”)
 - Machine-to-machine sensor networks

Machines and Sensors Will Dominate Data Generation

MACHINE GENERATED DATA

AUTHORED DATA

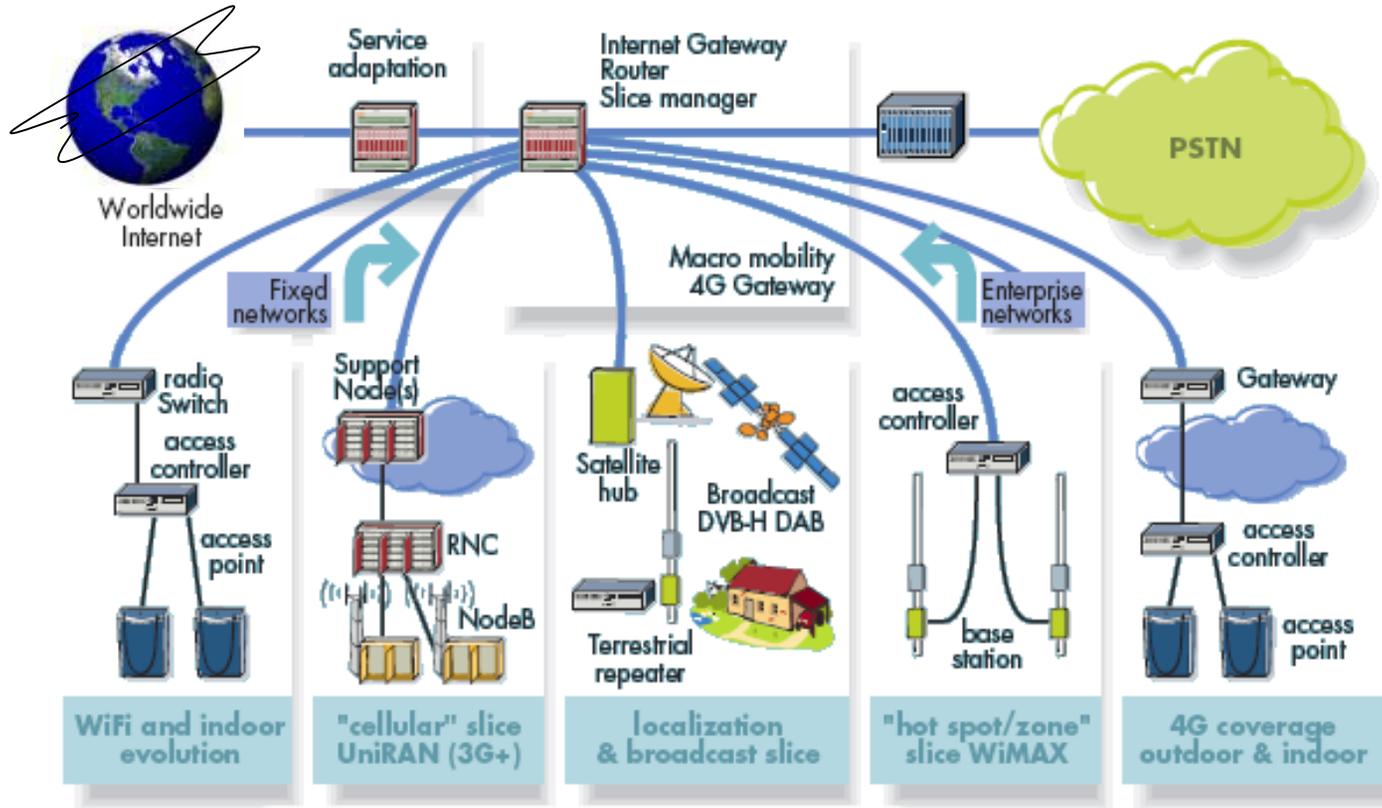


Source: Morris & Truskowski (2003) The evolution of storage systems. IBM Systems Journal 42 (2).

The broadband experience moves to wireless environments

- User expectations:
 - always-on connectivity with high data rates
 - interactive capability to search for more information and resources
 - fixed and predictable subscription costs
- A possible technical scenario for wireless interactive applications:
 - Large umbrella cells (3G, WiMAX) provide geographical coverage
 - “Pico cells” provide short-range radio-access with fast bit rates (several millions of bits per second)
 - Software Defined Radio (evolving into “cognitive radio”)
- ..and variations of this...
 - WiBRO (mobile WiMAX, commercial launch in South Korea in June)
 - CDMA450
 - “ad-hoc peer-to-peer” networks
 - “personal area networks”

Wireless "4G Standard Vision"



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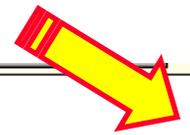
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Violence



sofle



"Maybe this world is another planet's hell"

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26 years old
gent,
Belgium

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sofle's Blurbs

About me:
electrodes and snares and keys
do pretty much as i please
got me a brain and soul that feels
can't go down
ain't got no knees.





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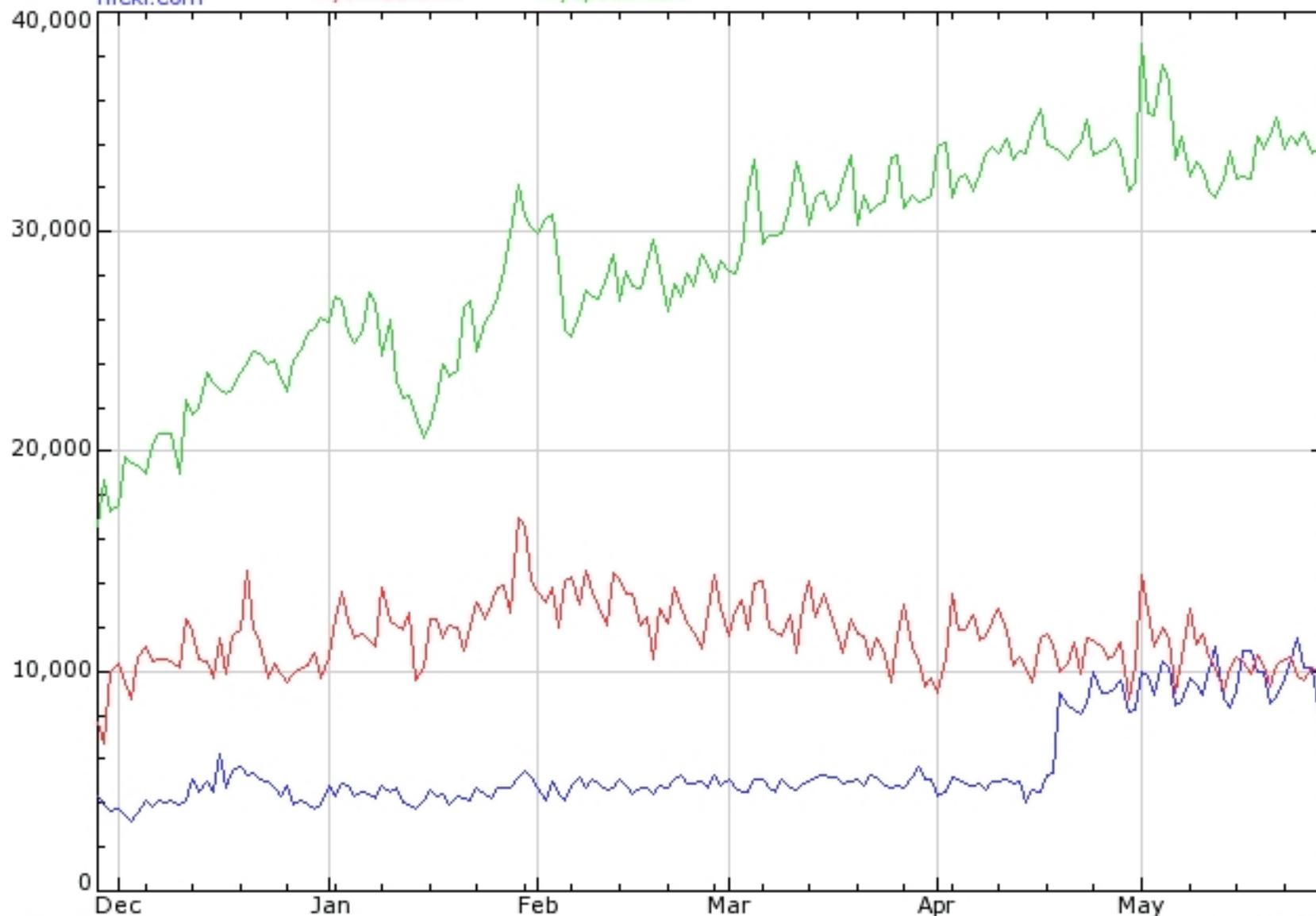
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[Scarey 53m Gorge Swing in Zambia](#)

01:44

Me and my mate Craig going on the 53m gorge swing in Livingstone, Zambia. We did this after the famous bungee jump of the bridge by Victoria Falls. We both agreed this was twice as scary. Enjoy!

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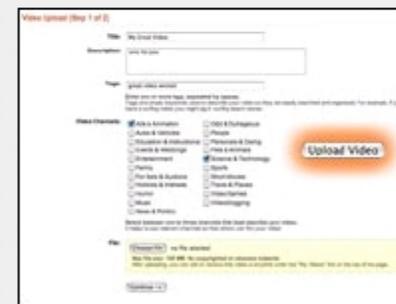


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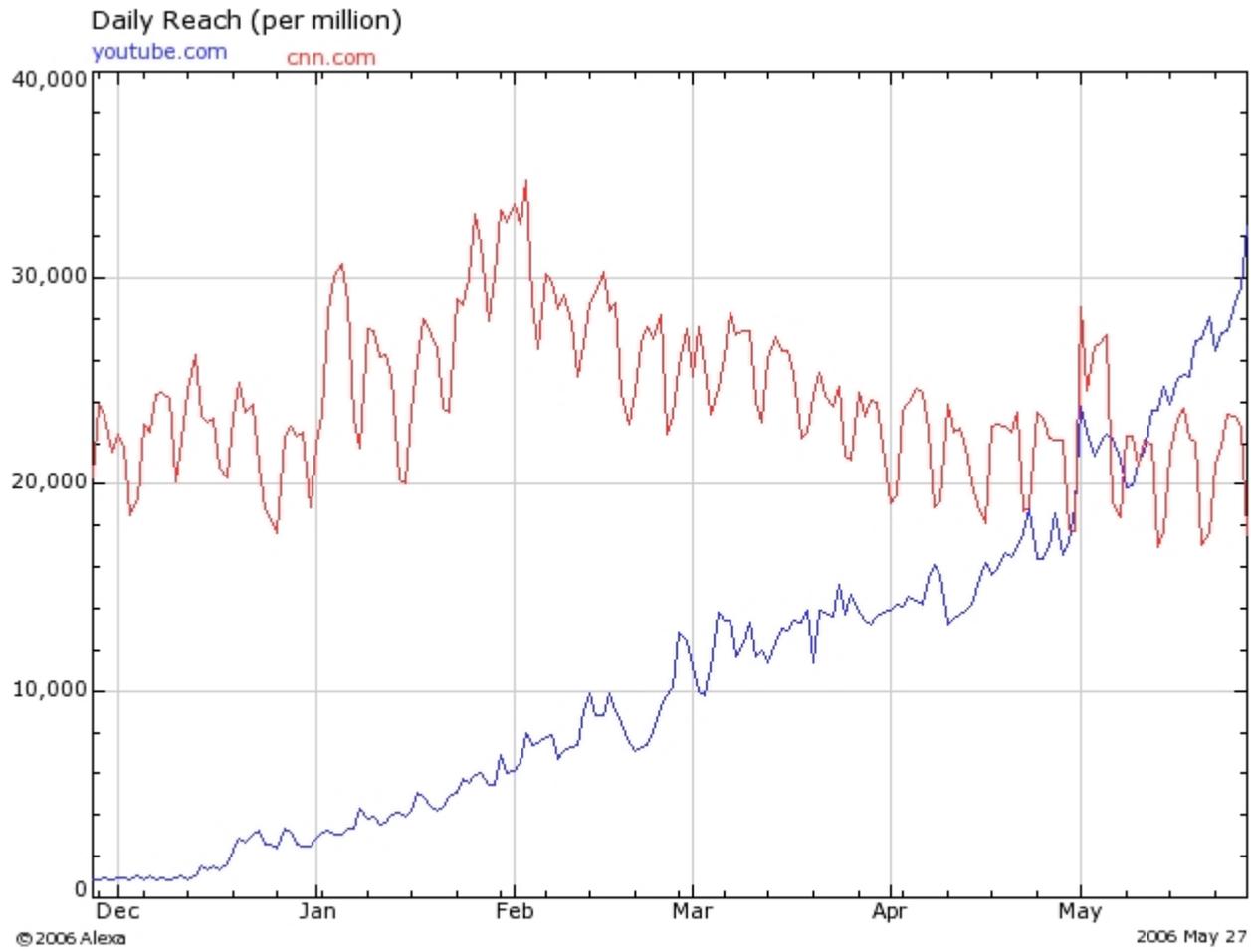
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 zip: **00100**
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So, where does this leave us?

- Communication technologies are inherently social technologies.
- ICT is changing the world, as we knew it. (No hype, pure empirical observation here.)
- In the knowledge society, information, communication, knowledge and innovation are key factors in social and economic development and human well-being. Communication and information policy is really very important...
- The traditional justification for public broadcasting needs to be rethought. The constraints and boundary conditions are now completely different.
- For example, a new role for public service media is to organize a core node in social and cultural meaning creation. (e.g., PSM as promoter of content creation, PSM as a local innovation hub...)
- The future in PSM is in participation. (e.g., extended “products” with community-created content)
- Technical change is a reflection of broader socio-economic change. Many technologies will be developed, many will be reinvented. The ones that survive are the ones people can integrate into their everyday life in a meaningful way.