Deepening the deployment of the Information Society in Europe: trends for R&D and innovation

Keynote
4de Nederlands ICT-Kenniscongres

``Innovatiekracht met ICT``

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with S. Barrios, J. Berce, AF. Bianchi, M. Bogdanowicz, R. Cachia, C. Centeno, R. Compano, R. Ozcivelek, C. Pascu, Y. Punie, B. Rotenberg, M. Ulbrich & D. Zinnbauer.
IPTS, DG JRC - EC

IPTS

Part of the **DG JRC**
7 Institutes across Europe

IPTS 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"
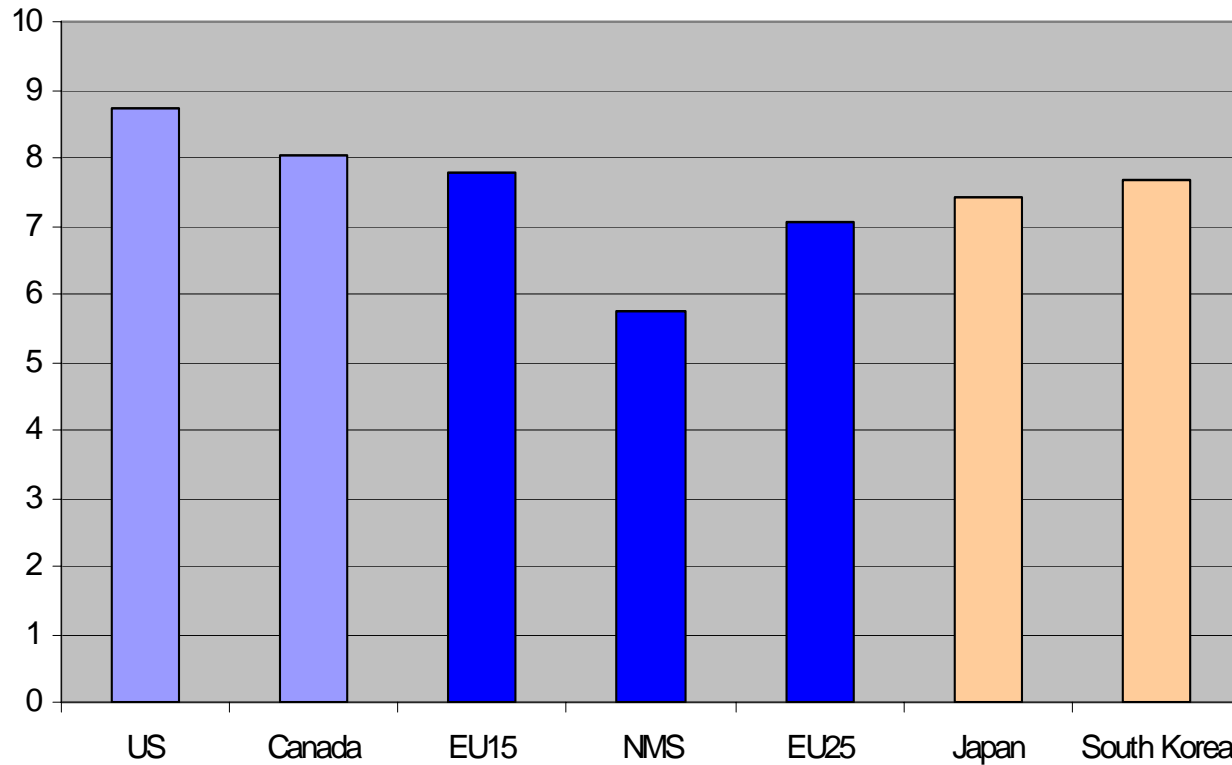

- • Where are we

- • E-ruptive trends

- • Implications

Overall position

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EIU e-readiness index 2005

Source: IPTS calculation on Economist e-readiness index 2005
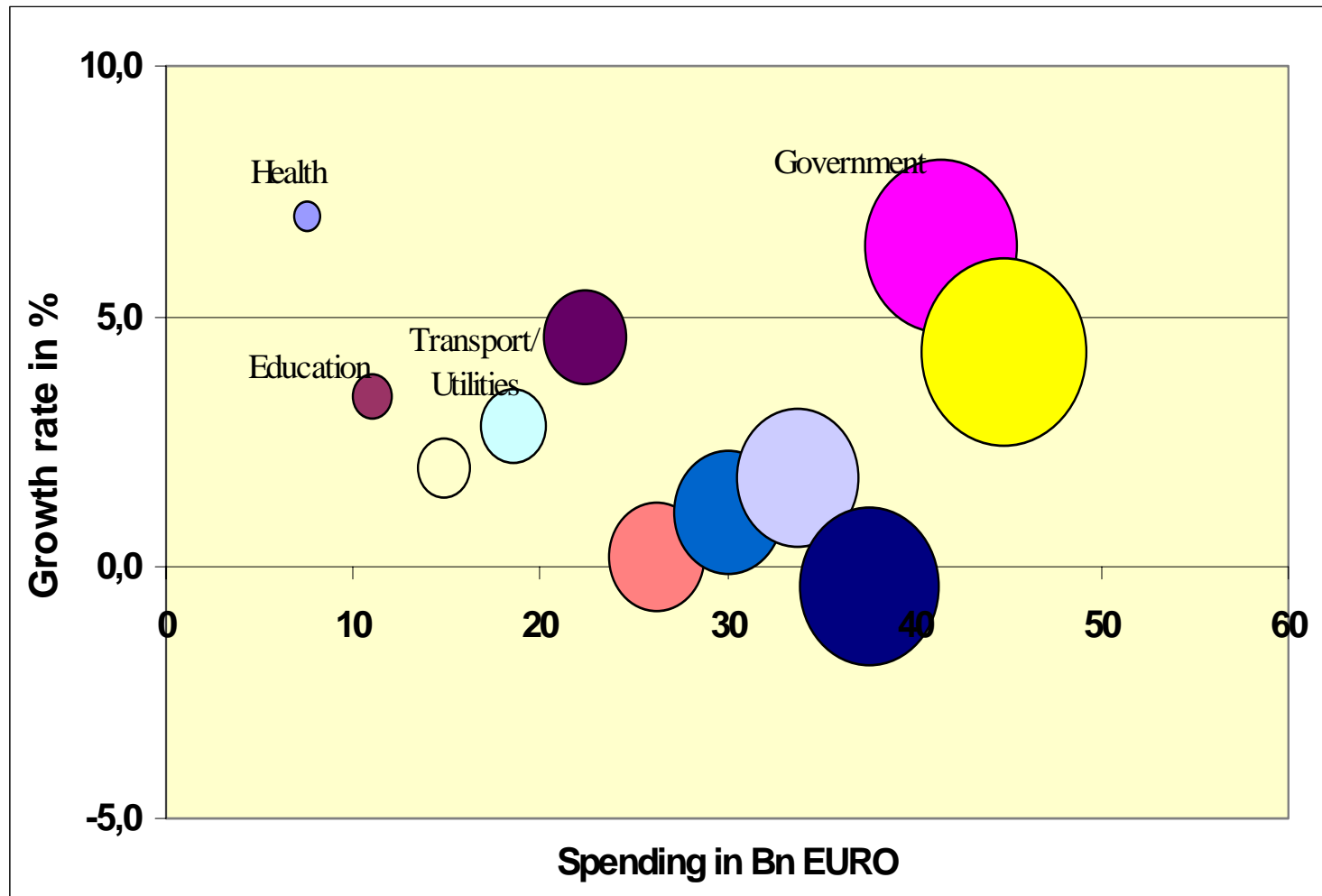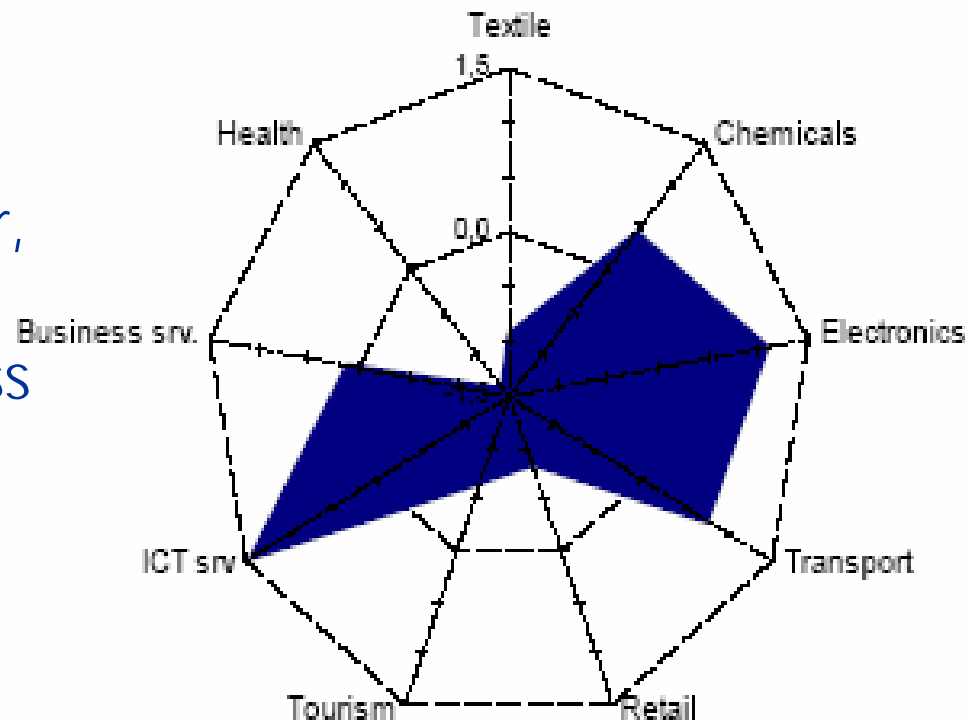
E-Health: the problem

ICT use **in** health sector

- **lags** behind

- **least connected** sector,

- **great disparities** across countries etc.

ICT Infrastructure Index 2003/04

Source: e-Business W@tch (2004)

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E-Learning: the problem

Access and usage of computer in schools: % of 15 years old students...

Legend:
- ...having access to computer at school
- ...using computer at schools at least a few times a week
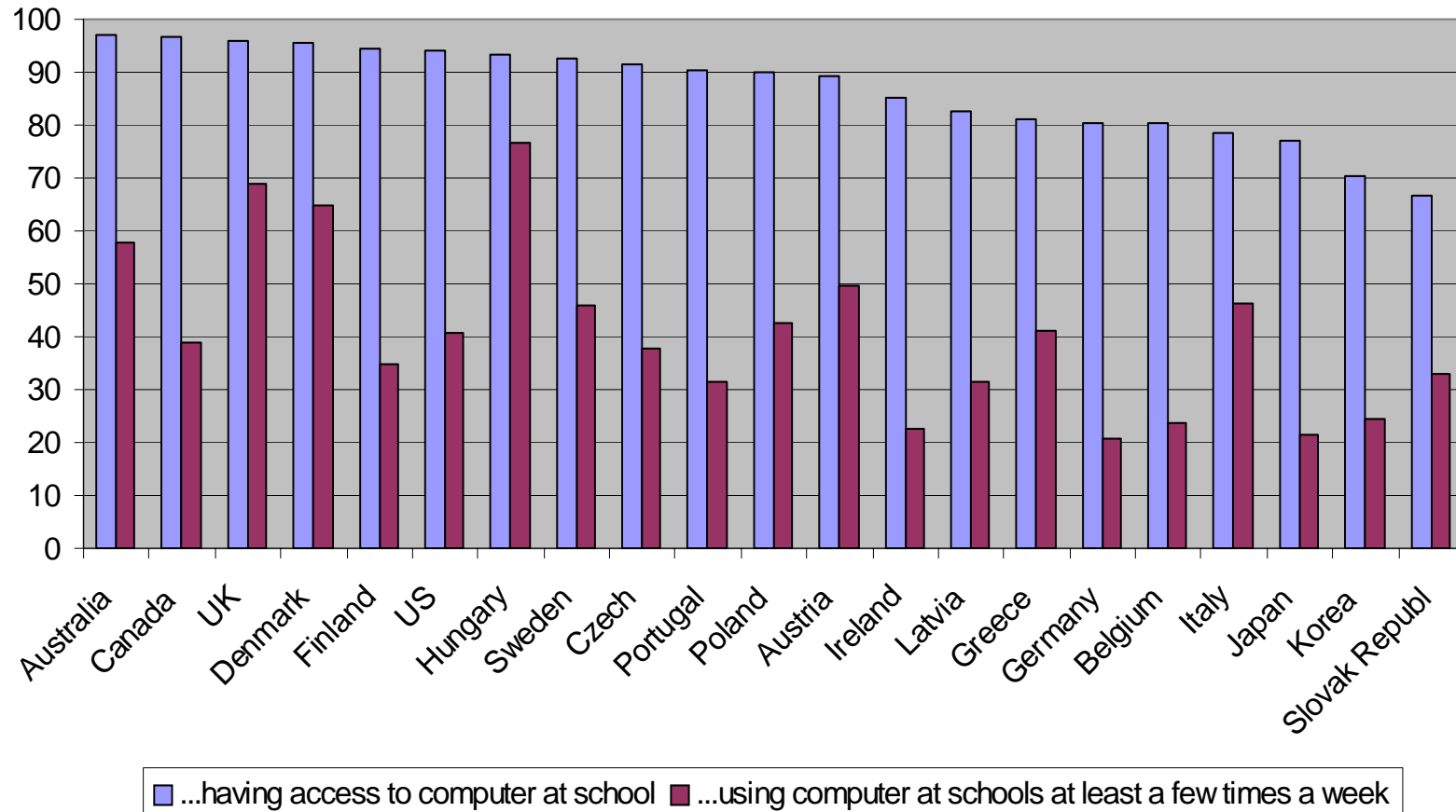
Source: IPTS calculation based on OECD PISA 2003

eGovernment: the problem

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eGovernment supply and demand

on line services interactivity

- 72%
- 66%
- 59%
- 45%

6,0% (EU15)   5,6% (EU25)   5,4% (EU25)

2001   2002   2003   2004   2005

% citizens submitting forms —◆— on line services availability
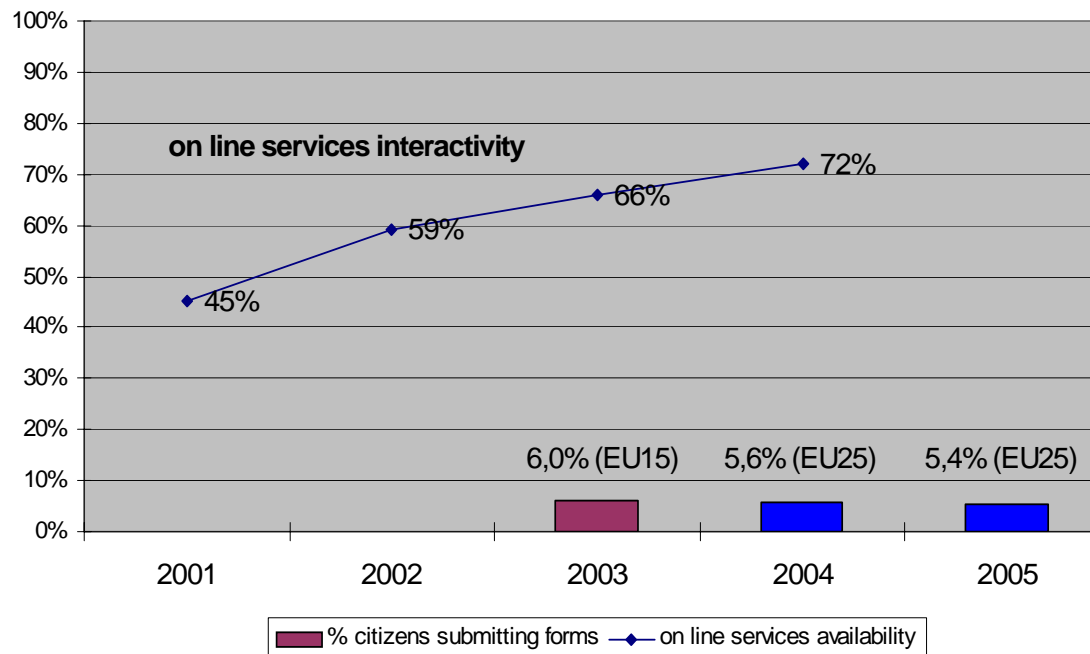
➔ Discrepancy between availability and use: less than 6% of European citizens submitted forms on line.
➔ For 2005, data are not showing any major difference, except that they are treated as "confidential" in some countries
➔ Back office re-engineering, usability etc. till the problem: even in Denmark, "paper-based case processing remains the prevailing method applied by the majority of Danish public authorities"
➔ E-government still far from having a significant impact

Sources: IPTS based on Eurostat

Conflicting trends

Important application areas & <u>resources</u> >< modest <u>take up</u>
→ Are we deploying the **right approach**?
→ Are there **other and better**

Emerging trends with great disruptive potential: e-ruptive trends

Search engines

Blog

Podcasting

P2P

EBay

VoIP

Wifi sharing

Web based Social networking

Taste sharing

Games

Collaborative content

Google a search engine
...and an application platform?

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2005	July	Aug	Sept	Oct	Nov
Search	Partnership with Univision	Google Desktop 2		Google Reader	Personalized Search Google Analytics
Content		Google News with RSS Feed			Public Domain Books Accessible
Map				Google Local merged with Map products	Froogle Map
Blog		Blogger for Word	Google Blog Search		
Chat		Google Talk			
Retail					Google Base
Research	To Open R&D Center China		MoU Google & NASA		

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VoIP

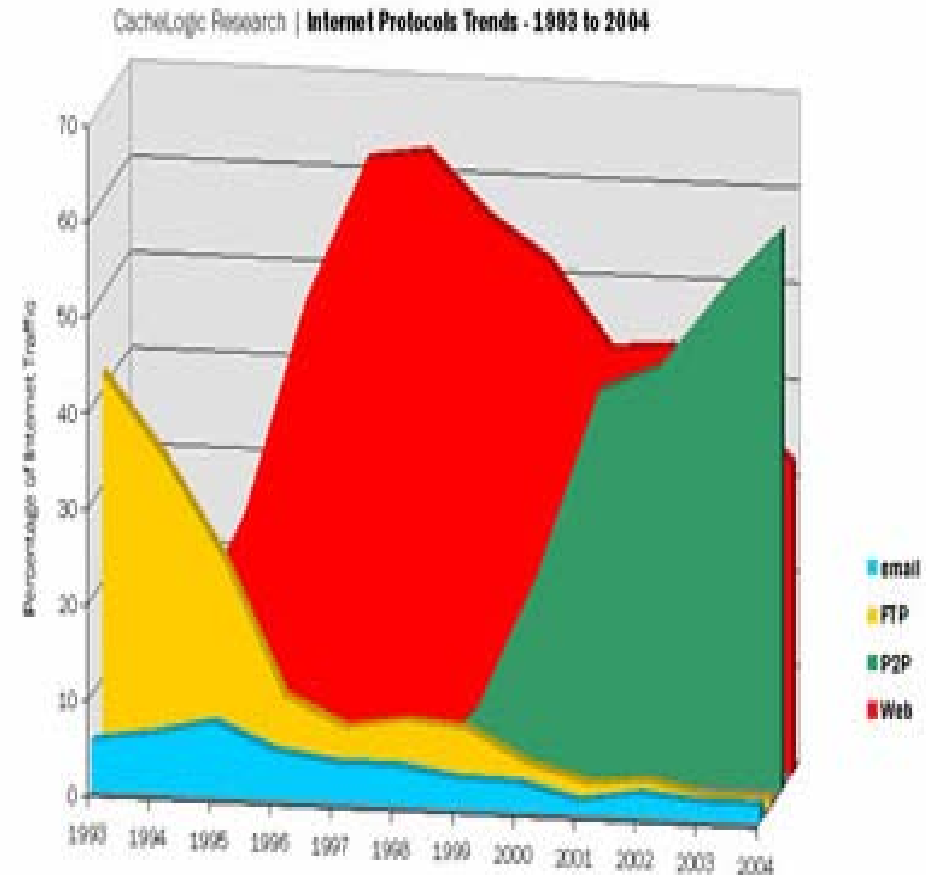Skype users, millions
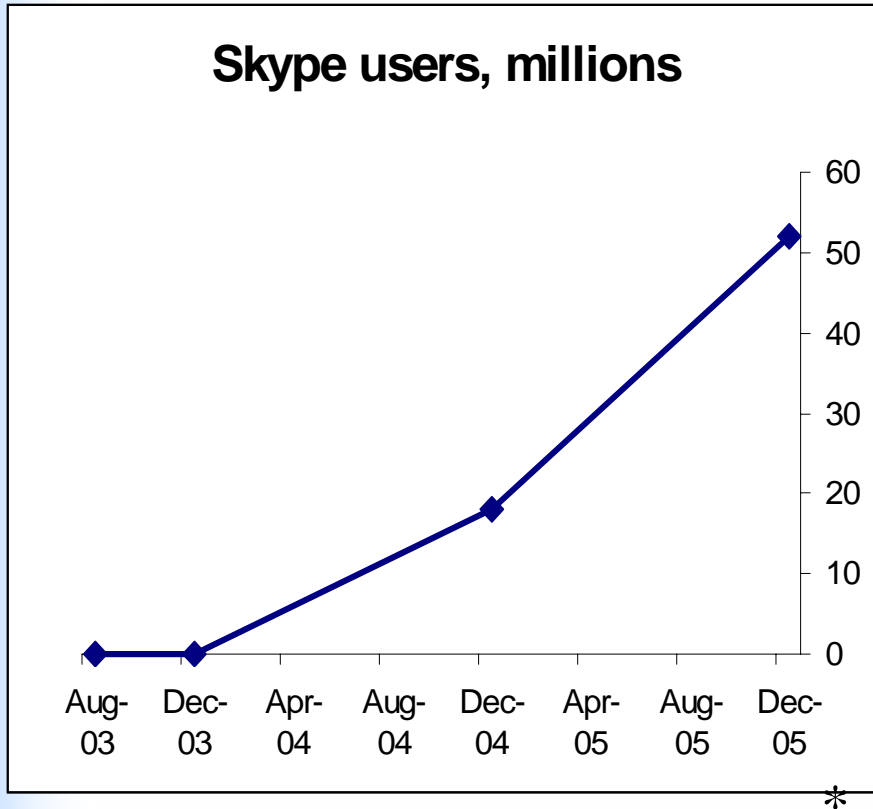
New entrant

Incumbent

P2P

Callback

Source: Evalueserve, Skype * projections

P2P

→ P2P: fastest growing distribution protocol ever

→ Representing >60% of Internet traffic now

→ From illegal file sharing to productivity tools: distributed computing, database systems, communication and collaboration.

→ Drives broadband, and broadband drives P2P. "35 million Europeans downloaded files from file-sharing services" (Forrester research)

CacheLogic Research | Internet Protocols Trends - 1993 to 2004

Source: Da Silva 2006

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P2P: growing application areas

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Content Distribution

•**Kontiki, KaZaa, Uprizer,..**

Communication & Collaboration

•**Chat/Irc, AOL, YAHOO, MSN, Skype**

Distributed Computing

•**Seti@home**

Internet Service Support

Database Systems

•**PIER, Piazza**

A P P L I C A T I O N S

Information sharing,
data distribution (banks, insurance etc.)

LionShare project: Penn State, MIT, Simon Fraser on developing a P2P network for sharing academic materials

US Fed agencies using P2P tech to get statistics and information from computers in over 100 different government agencies

JXTA project – open source initiative with strong support of Sun to develop standards (to let computing platforms of all types and sizes interact as peers)

WIFI glocalism

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FON = a Global Community of people sharing their WiFi BB access and home/work and enjoy FREE WiFi Access all over the world.

- Based in Spain.
- Google, Skype & other leading Internet investors invested $21.5 million
- 3000 hotspots at end 2005, 18.000 now
- Aims to become the largest hotspot network in the world by the end of the year (the largest commercial has slightly more than 20.000)

- Fon has not spent any money in advertising so far….

"To be a fonero …is about communication and access everywhere for nearly everything. Its about PSP's, digital cameras and magic lamps that are Wi-Fi enabled. Its about connecting neighbourhoods to community LANs. It is about community! Foneros want Wi-Fi to be as ubiquitous as radio"
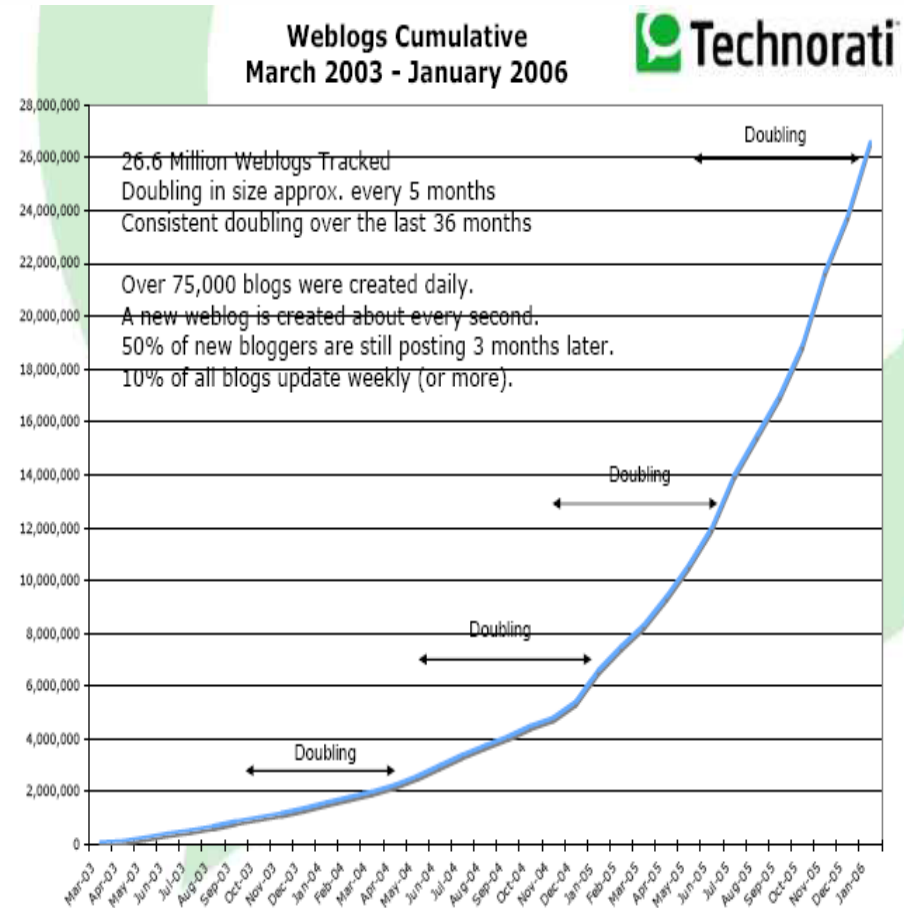
→ The WiFi net of things?

Source: CNNmoney.com ; FON

Blogs

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- Very recent (+/- 2 y)
- 80.000 blogs created daily (+/- 1/sec).
- Total number doubling/5 months
- World total estimated 50M.
- In EU, France leads with 3 million blogs
- 1 in 6 of U.S. population visited blog in first Q 2005

- 12% internet users contribute to blogs
- 10% of all blogs update weekly (or more)
- Top blogs are amongs most referred* news sites

➔ Blog syndication –> The new local mass media of the future?
➔ Probably complementary to traditional media
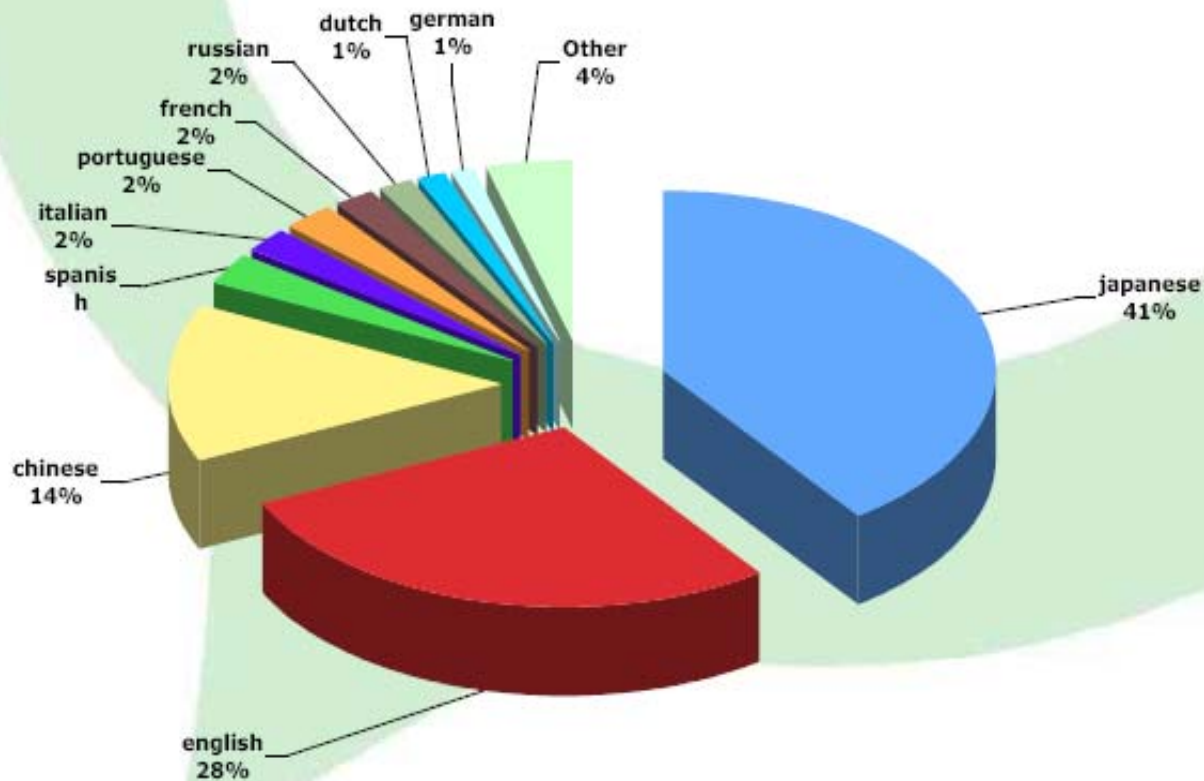➔ Blog industry (employment!)

**Weblogs Cumulative
March 2003 - January 2006**

Technorati

28,000,000
26,000,000 — 26.6 Million Weblogs Tracked
Doubling in size approx. every 5 months
Consistent doubling over the last 36 months

24,000,000
22,000,000 — Over 75,000 blogs were created daily.
20,000,000 — A new weblog is created about every second.
50% of new bloggers are still posting 3 months later.
18,000,000 — 10% of all blogs update weekly (or more).

16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0

Doubling

Mar-03 Apr-03 May-03 Jun-03 Jul-03 Aug-03 Sep-03 Oct-03 Nov-03 Dec-03 Jan-04 Feb-04 Mar-04 Apr-04 May-04 Jun-04 Jul-04 Aug-04 Sep-04 Oct-04 Nov-04 Dec-04 Jan-05 Feb-05 Mar-05 Apr-05 May-05 Jun-05 Jul-05 Aug-05 Sep-05 Oct-05 Nov-05 Dec-05 Jan-06

Cultural diversity

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Technorati

January 2006 - Posts by Language

- dutch 1%
- german 1%
- Other 4%
- russian 2%
- french 2%
- portuguese 2%
- italian 2%
- spanish
- japanese 41%
- chinese 14%
- english 28%

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Collaborative content

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Wikipedia

- Available in 88 languages with at least 1000 articles (214 overall)
- Amongst top 50 most visited sites ww

OhmyNews

- Korean collaborative media venture: 80% of content comes from over 41000 citizen reporters
- Over 2 million readers per day

→ **Taken serious**

- Wikipedia considered nearly as reliable as Britannica: <u>collaborative accreditation works</u>
- Ohmynews: very influential

→ **Wiki software** increasingly used in commercial context.

100K authors for Wikipedia

3M articles
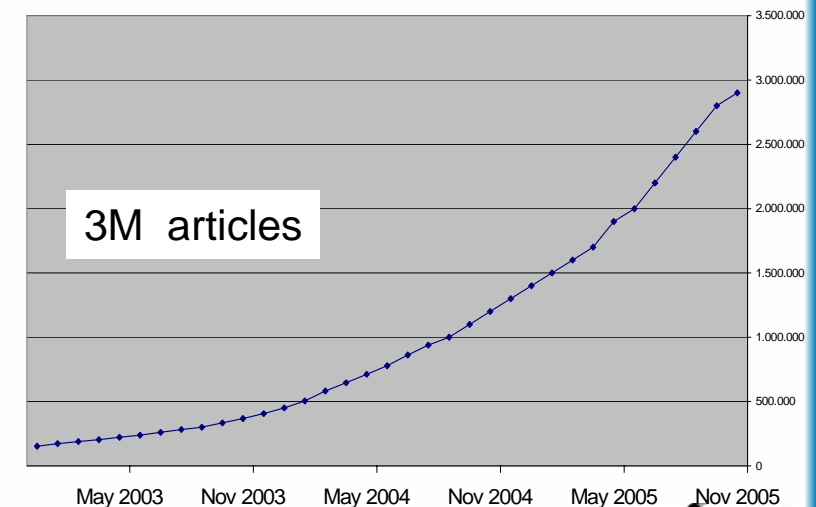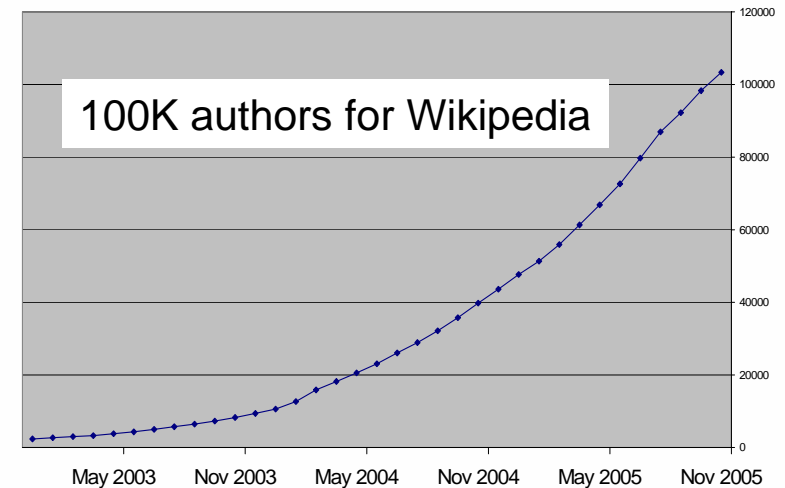
Source: Wikipedia, Nielsen,Wired, Nature

Gaming and podcasting
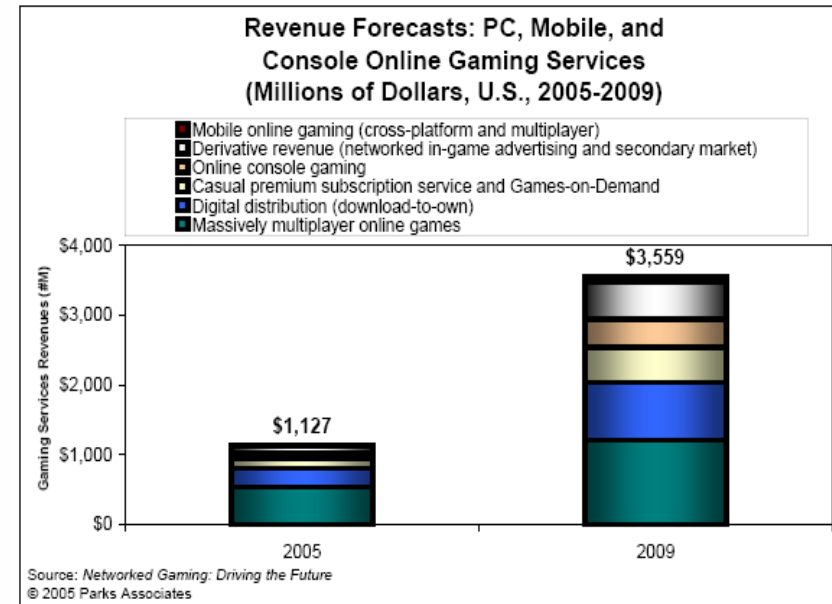
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On-line gaming

- 1 € billion in 2006, nearly 2.2 € billion by 2009

- Growth mainly due to massive-multiplayer online games. "Players are eager to meet", in on-line sagas with 1000s of users/communities.
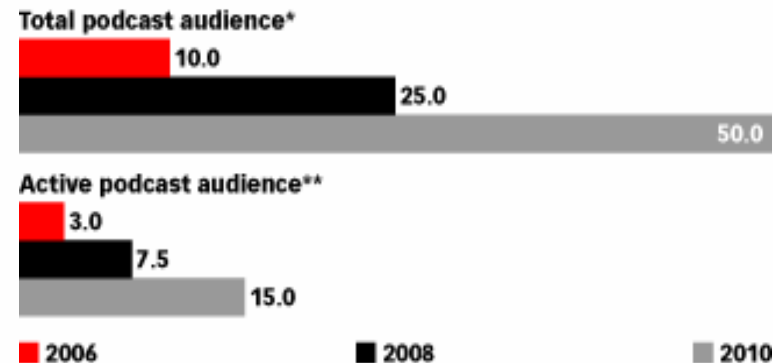
➔ Gaming + Skype = **new players**?

PODCASTING

- iTunes: 1 Billion songs sold in 2 years

- "1 year from now all major media will be available as podcast."(IDG, 6/2005);

- Growth estimates for podcast usage: reach between 20 million and 80 million users by 2010 (eMarketer, Feb2006)

➔ The **new broadcasters**?

Revenue Forecasts: PC, Mobile, and Console Online Gaming Services (Millions of Dollars, U.S., 2005-2009)

- Mobile online gaming (cross-platform and multiplayer)
- Derivative revenue (networked in-game advertising and secondary market)
- Online console gaming
- Casual premium subscription service and Games-on-Demand
- Digital distribution (download-to-own)
- Massively multiplayer online games

Source: Networked Gaming: Driving the Future
© 2005 Parks Associates

US Podcast Audience, 2006, 2008 & 2010 (millions)

Total podcast audience*
- 2006: 10.0
- 2008: 25.0
- 2010: 50.0

Active podcast audience**
- 2006: 3.0
- 2008: 7.5
- 2010: 15.0

2006   2008   2010

Note: *individuals who have ever downloaded a podcast; **individuals who download an average of one or more podcast(s) per week
Source: eMarketer, February 2006

070756 ©2006 eMarketer, Inc.   www.eMarketer.com

Source: Parks Associates, eMarketer

Social Networking/community enhancing websites

- Amongst the fastest-growing sites (*Nielsen//Netratings Nov 2005*)
- Spreads like wildfire Orkut, labelled a ``failure`` :
  created in 1/2004 (BY AStanford PhD)
  End Feb 2004:   100 000 users,
  July 2004:   1 M
  April 2005:   5 M
  January 2006:   12 M
- These sites attract over half of the UK Internet population every month
- Almost 1.8 billion web pages are viewed each month in member community sites = over 57 million every day!
  (*Nielsen//Netratings*)

→ Community uprising
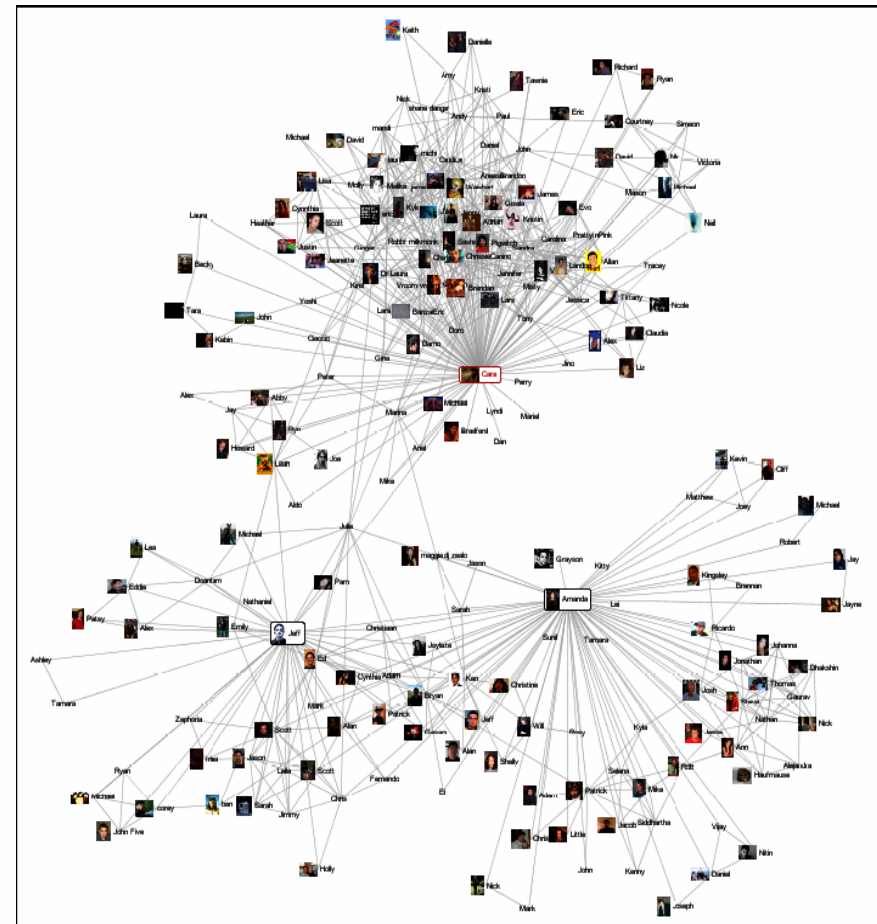
UCB's Vizster software depicting three intersecting social networks

Web based Social Networking: deep impact

- Many different purposes:

    community websites (e.g. MySpace),
    social bookmarking (e.g. del.icio.us),
    experience sharing, like photos (e.g. Flickr),
    business connections (e.g. LinkedIn)…
    or dating…

- Sites like MySpace, Bebo and MSN dominate the teenage market.

    - MySpace has gathered in 3 Ys > 57 million registered users & and a 752-percent growth in web traffic over 1 Y (Nielsen//NetRatings, Nov 2005).
    - MySpace has more page views per day than any site on the web except Yahoo! (yes, more than Google or MSN) (source: comScore Media Metrix)
    - In Europe, Bebo, the next generation high school and college social network site, ranked in Feb 2006 as the largest social networking site in the U.K. surpassed 1.5 million unique visitors (Nielsen//NetRatings Dec 2005)

→ Create web based communities by the present youngsters, will inevitably cause significant **disruption and drive opportunities** for business and the IT industry (Gartner's 10 Year Scenario for IT, Business and Society)
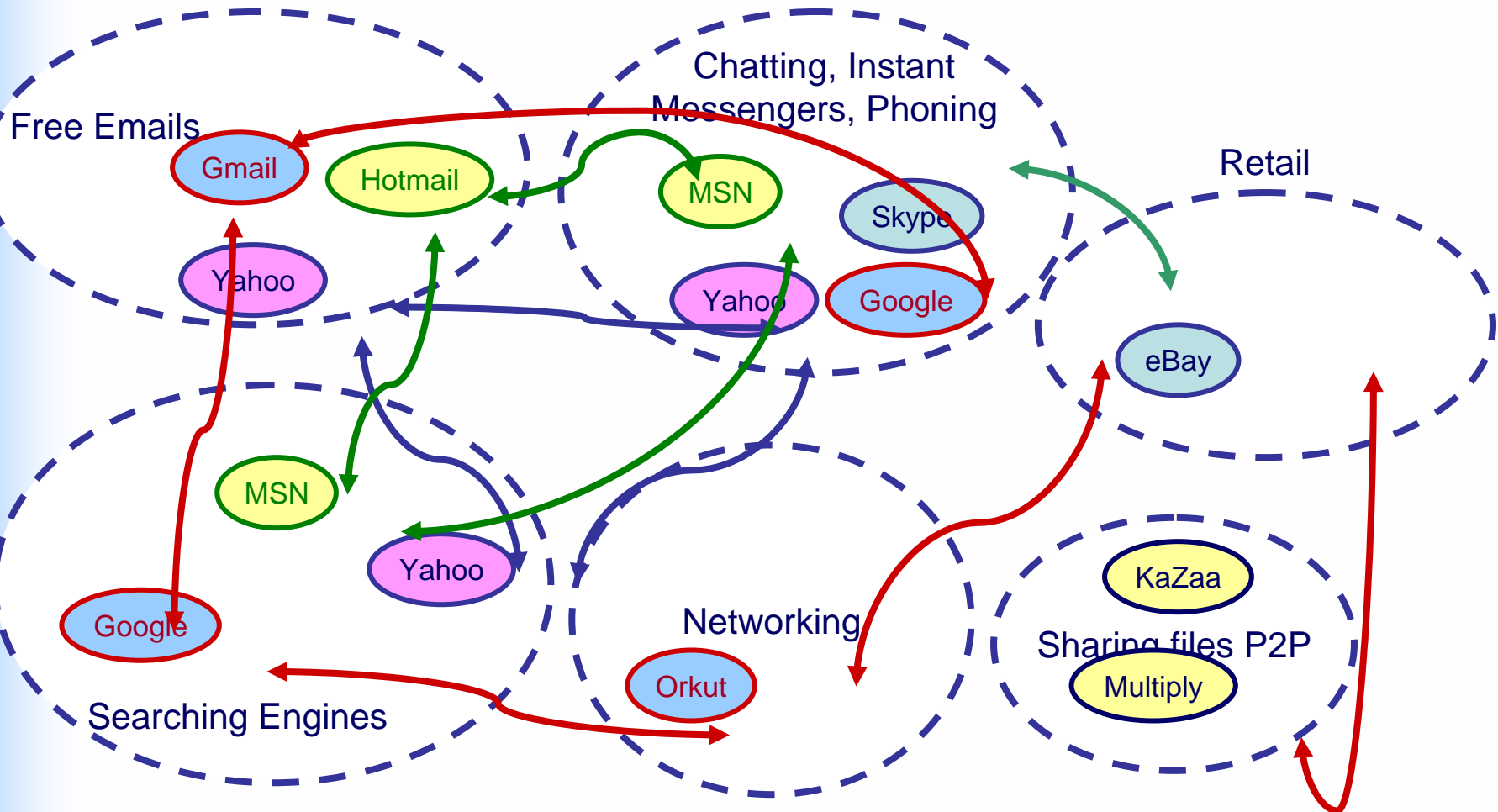
eBay

- 150Million users worldwide, 50Min EU, up 25% in one year

- On average 21 million items for sale/day.

- UK: eBay most visited website (44% increase between 2004 and 2005). 1 of 10 of entire UK population visits eBay home Fashion!

- eBays Motor = most visited spot of whole automotive sector!

  → Creating jobs: 724.000 people in the US (up from 430K in 2003) & 170.000 in the EU rely on eBay as <u>primary or secondary source of income</u>

  → 70% of e-bay sellers citing that eBay positively contributed to their success by facilitating <u>cross-border trade</u>, helping to increase sales, and improving profitability

  → <u>Booming effect</u> on parcel firms, SME`s etc.

  And all that based on the simple but very much tested idea of the **flea market** (and person to person trust)

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Taking these trends together:
Creative destruction …

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Free Emails

Chatting, Instant Messengers, Phoning

Retail

Gmail

Hotmail

MSN

Skype

Yahoo

Yahoo

Google

eBay

MSN

Yahoo

KaZaa

Google

Networking

Sharing files P2P

Orkut

Multiply

Searching Engines

→ Note: Quasi no EU Company offers an ensemble of services

What drives these e-ruptive trends?

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- The killer application of networks is … **networking** and the killer application of computing is **social computing**.

- The **user is the supplier**:
  - of content (blog, wiki, Flickr),
  - of taste/emotion (Amazon, Delicious),
  - of goods (eBay),
  - of contacts (myplace)
  - of relevance (Google pagerank),
  - of reputation and feedback (eBay, Tripadvisor),
  - of storage and server capacity (P2P),
  - of connectivity (wifi sharing, mesh networks)

- PLUS: **low entry barriers** (technical and business wise) as well as of new and **viable business models** (e.g because of Google ads)

→ <u>No way back</u>!

→ <u>New players</u>: Likely that the 2nd part of the Perez cycle is dominated by the Googles, e-bays, My-space etc
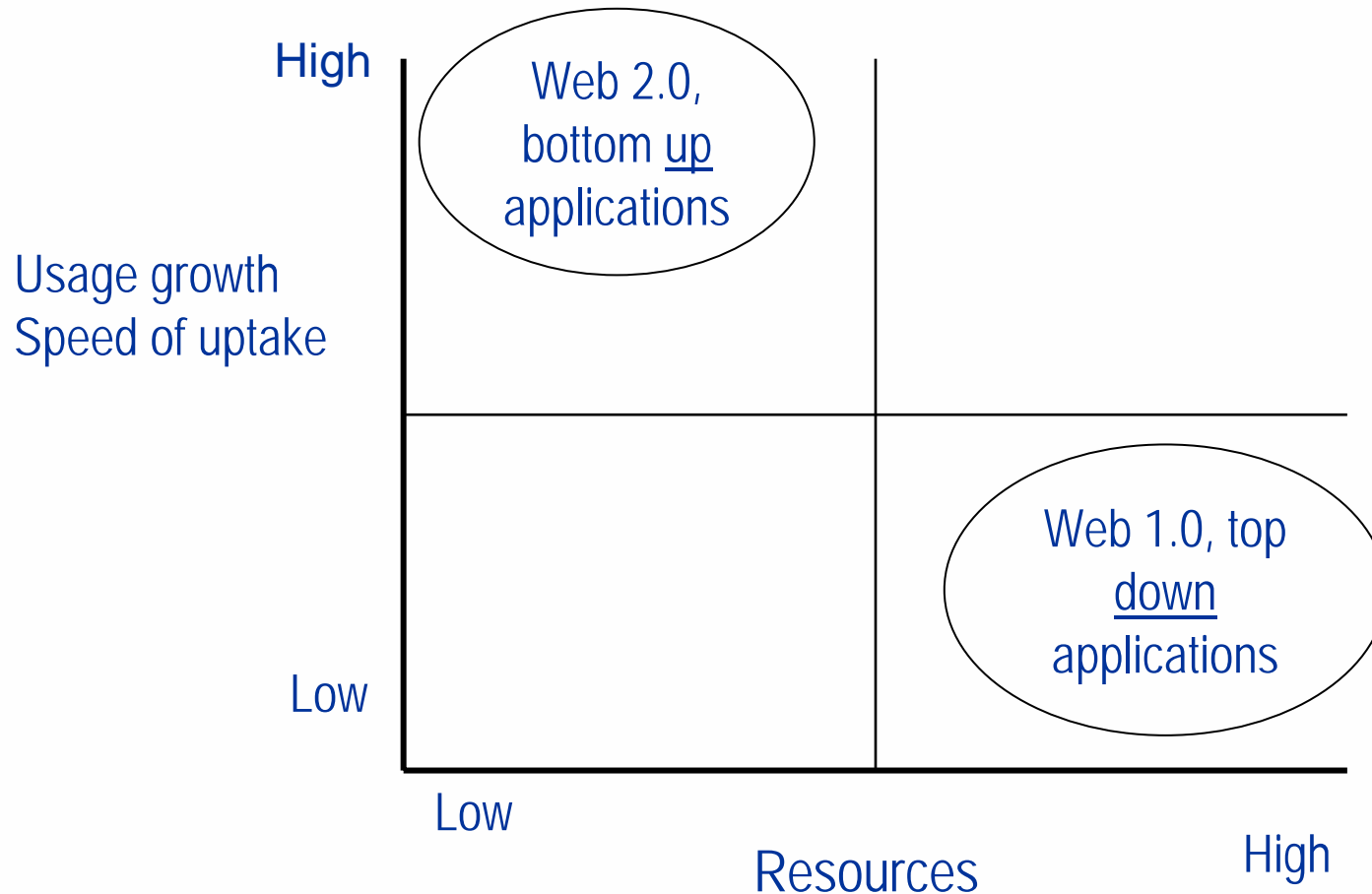
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Implications for R&D and innovation

More R&D....but learn from the ´´new´´ innovation paradox

High

Usage growth
Speed of uptake

Web 2.0,
bottom <u>up</u>
applications

Web 1.0, top
<u>down</u>
applications

Low

Low   High

Resources

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Implications for R&D and innovation

More R&D….but consider Valley dynamics in innovation
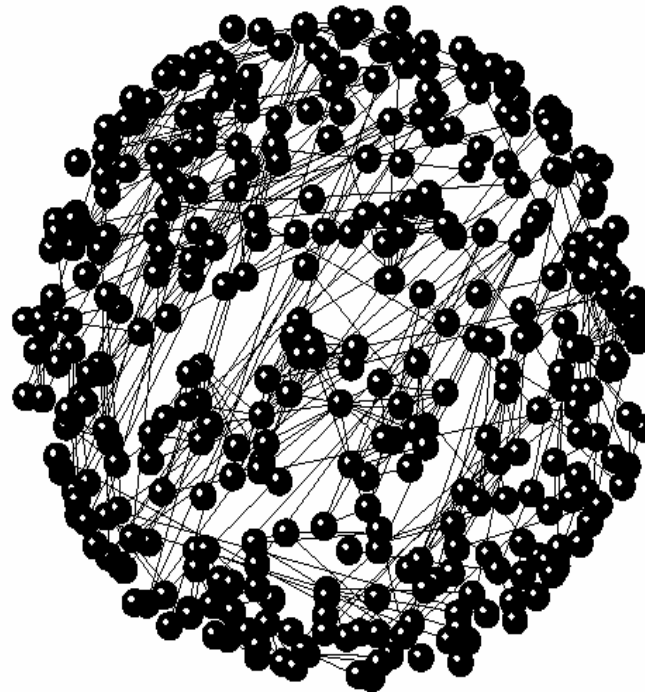
Source "Castilla, E.J., et al. (2000). Social networks in Silicon Valley."

More R&D…but think digital

NOT analogue++
The present users and thus future generations of the IS think and
live digital.....   .....even in Europe