new media for information and communication: prospects and challenges

lara srivastava

international telecommunication union

lara.srivastava@itu.int

ITU

back in the old days

1844:
"what hath God wrought"

In 1864, radio is predicted and in 1887, it is detected…

And in 1865, the ITU was born as:

the International "Telegraph" Union

The ITU: an enduring institution

- ITU is the oldest international organization in the world…
  - … with its work spanning three centuries
- The organization pre-dates the United Nations, and is now one of its specialized agencies
- A recent report by Booz Allen Hamilton and leading scholars ranks the ITU among the "*World's Top 10 Most Enduring Institutions*", one that has:

    "changed and grown in unswerving pursuit of success and relevance - yet remained true
    through time to its founding principles"

the good old days?

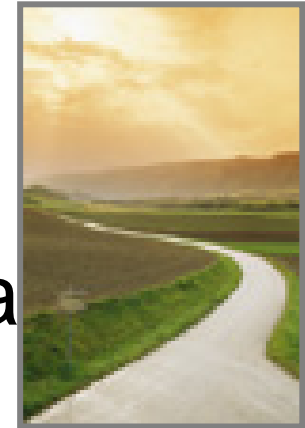*1910: Lars Magnus Ericsson and his wife Hilda*
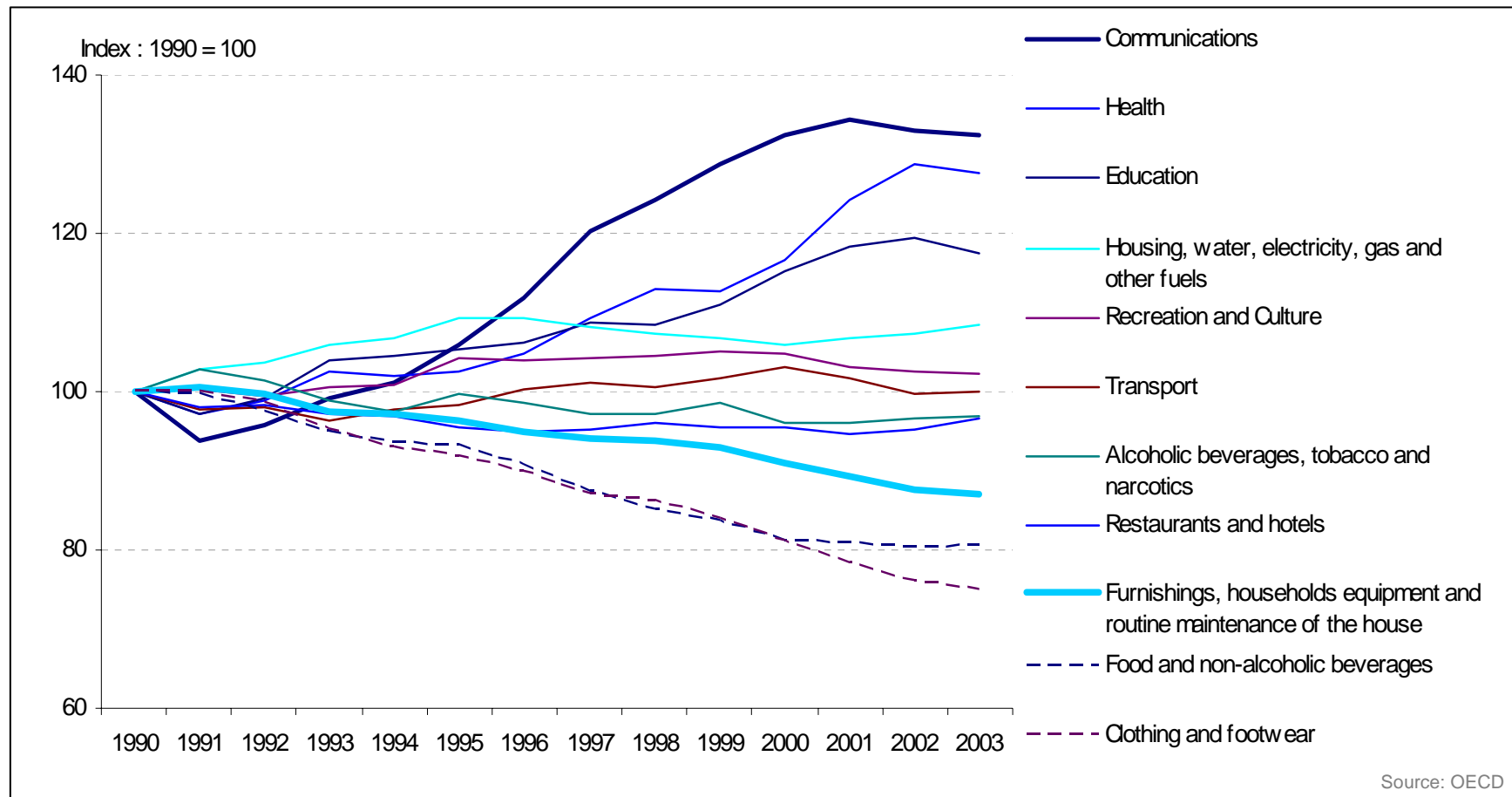

Copyright 1994 Anders Suneson

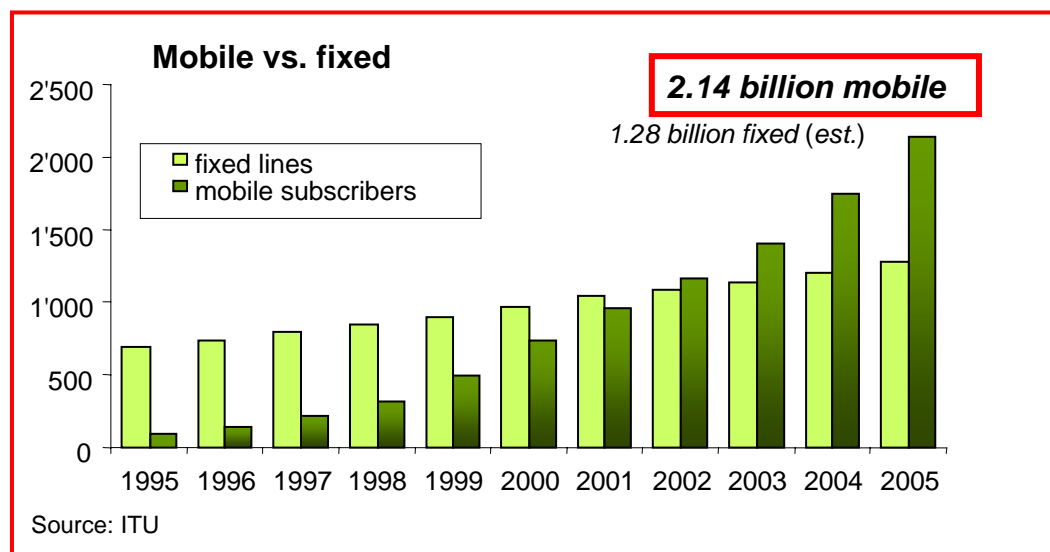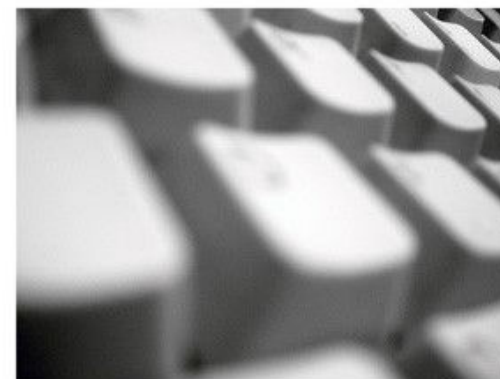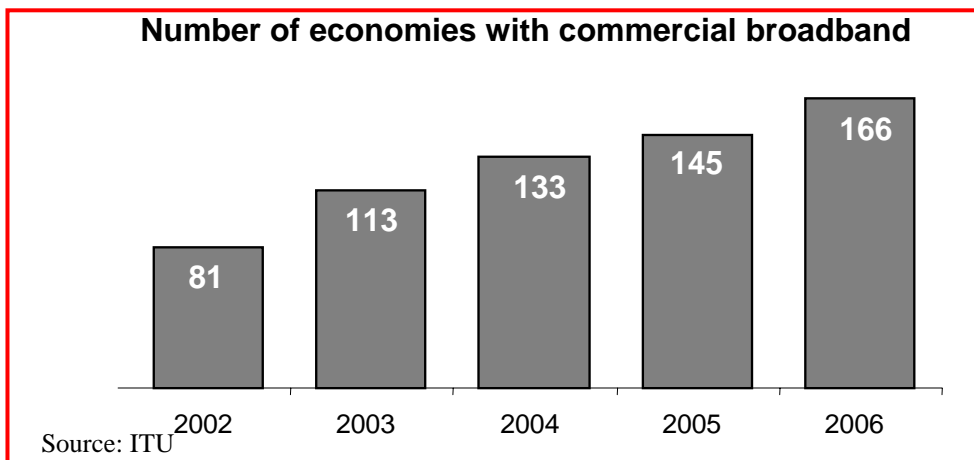# trends today

trends and tendencies

- Innovation and transition to **digital** technologies

- Growing value of **information,** especia[lly] timely and on-the-go information: "**always on**"

- **Speed,** speed and more speed

- **IP (internet protocol)** as a critical network enabler

- **Mobility** as key network requirement

still like talking more than eating!

Index : 1990 = 100

Legend:
- Communications
- Health
- Education
- Housing, water, electricity, gas and other fuels
- Recreation and Culture
- Transport
- Alcoholic beverages, tobacco and narcotics
- Restaurants and hotels
- Furnishings, households equipment and routine maintenance of the house
- Food and non-alcoholic beverages
- Clothing and footwear

Source: OECD

int'l user base continues to grow

Number of economies with commercial broadband

Year	Value
2002	81
2003	113
2004	133
2005	145
2006	166

Source: ITU

Mobile vs. fixed

2.14 billion mobile

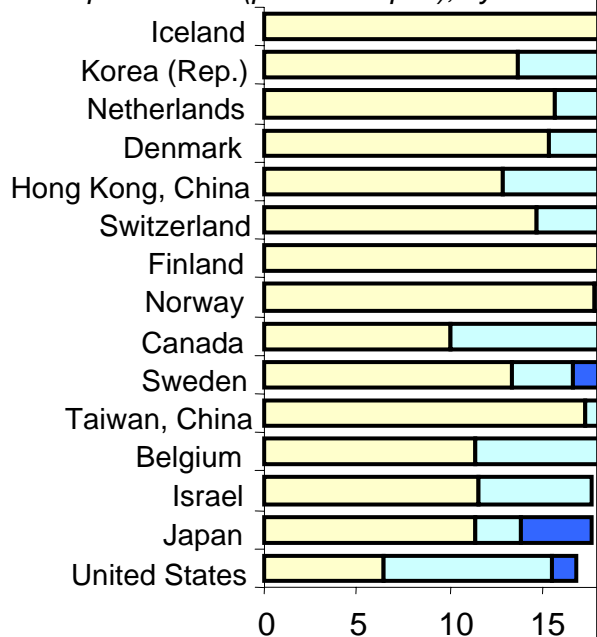*1.28 billion fixed (est.)*

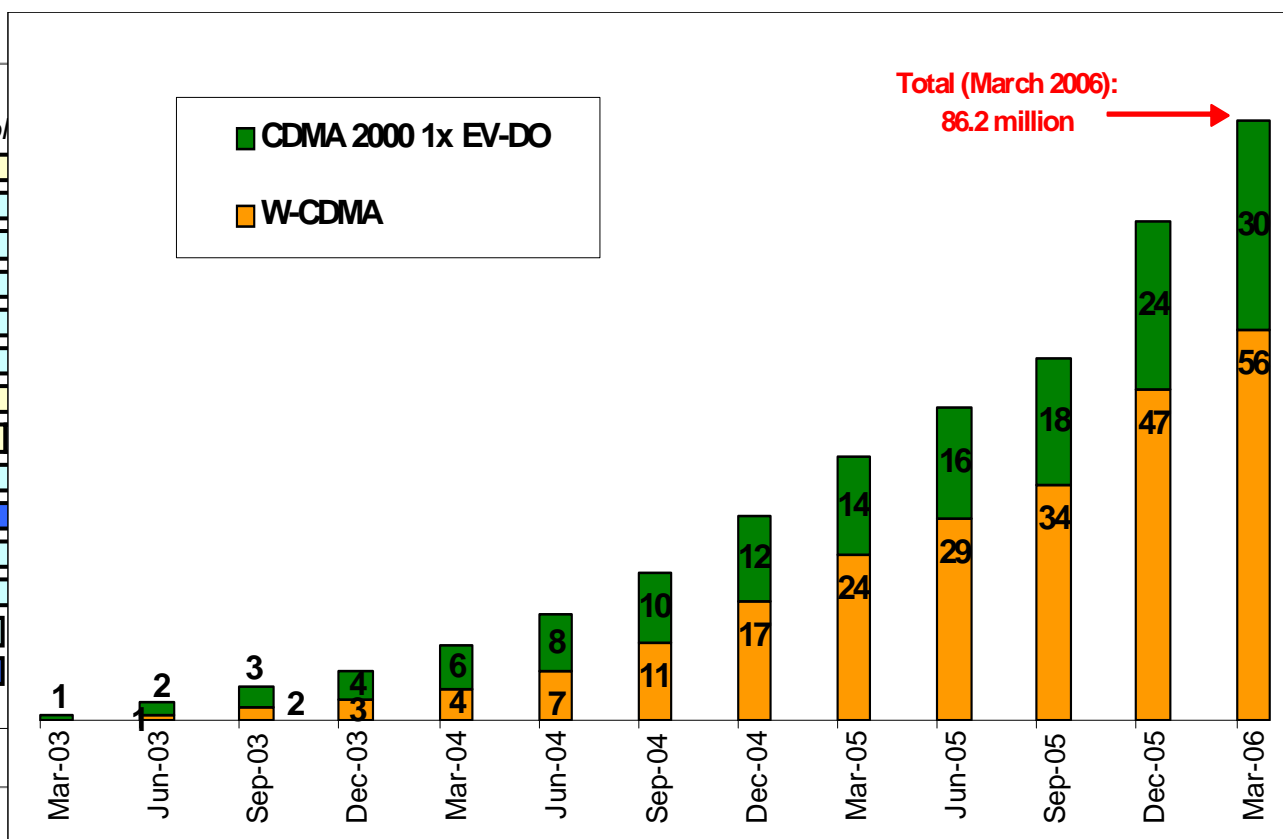- fixed lines
- mobile subscribers

(Years 1995–2005)

Source: ITU

more speed: both fixed and mobile broadband on the rise

Top 15 Broadband economies, Jan
*Total penetration (per 100 capita), by techno*

Iceland
Korea (Rep.)
Netherlands
Denmark
Hong Kong, China
Switzerland
Finland
Norway
Canada
Sweden
Taiwan, China
Belgium
Israel
Japan
United States

0   5   10   15

Source: ITU

- ■ CDMA 2000 1x EV-DO
- ■ W-CDMA

Total (March 2006): 86.2 million

Mar-03	Jun-03	Sep-03	Dec-03	Mar-04	Jun-04	Sep-04	Dec-04	Mar-05	Jun-05	Sep-05	Dec-05	Mar-06
1	2 / 1	3 / 2	4 / 3	6 / 4	8 / 7	10 / 11	12 / 17	14 / 24	16 / 29	18 / 34	24 / 47	30 / 56

Source: ITU, adapted from 3G today and CDG

shrinking divide: faster for mobile

FIXED
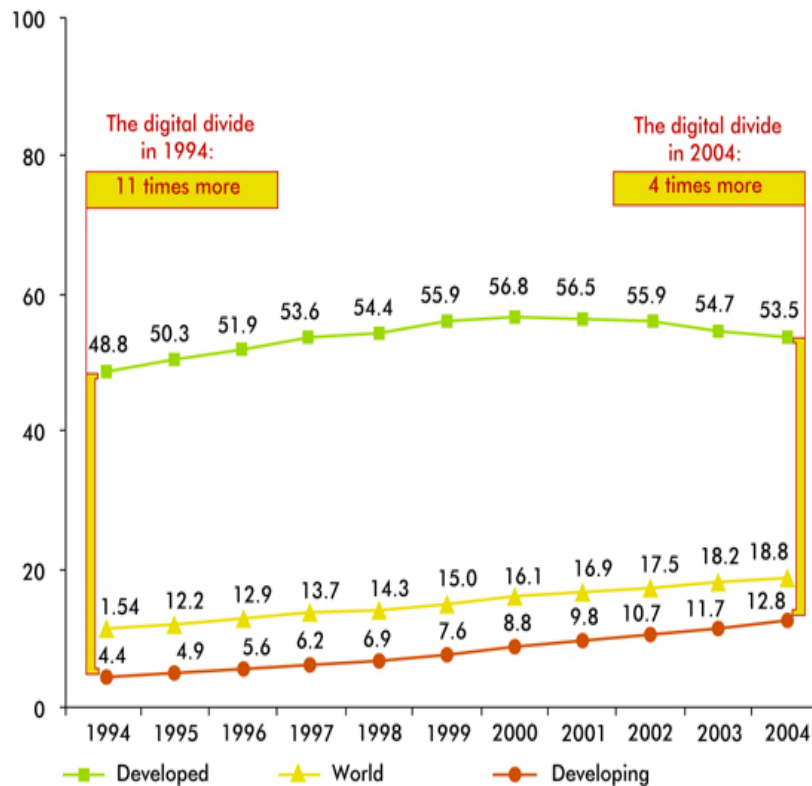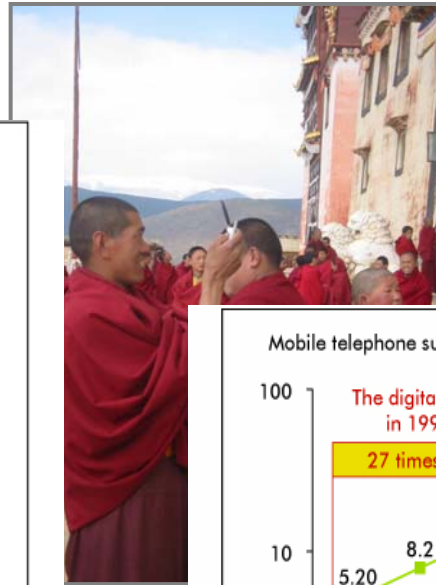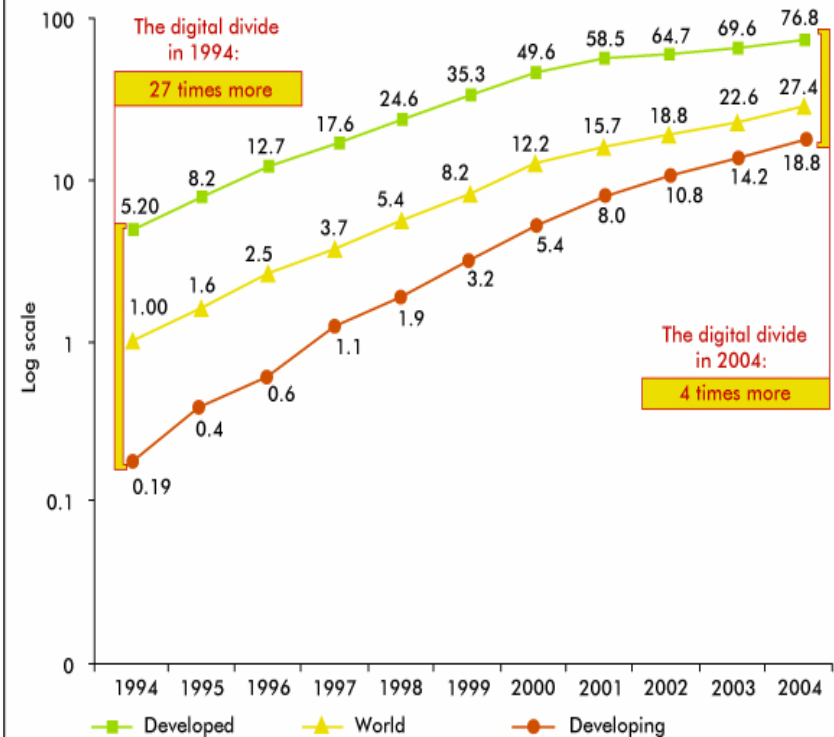
MOBILE

why the mobile is king

- *Connectivity first*
  - connectivity is the *raison d'être* of the mobile
- *Cross-cutting*
  - age, gender, income
- *Portability*
  - smaller and more portable than laptop
- *Physical proximity*
  - at day, at night, standing still, on the move
- *Intimacy and emotional attachment*
  - many can't leave home without it
- *Individuality and identity*
 - accessory, personal diary, status symbol

convergence towards mobile broadband

impact of convergence

- **creates new services**
  - mobile TV, VoIP
  - new billing models (multiple play)
- **introduces rapid changes**
  - how quickly some mobile users gave up fixed phones altogether
- **fosters more competition**
  - for broadband: between cable TV, satellite, xDSL, FTTh
- **opens markets for new entrants**
  - new ISPs providing broadband TV, eg. Free's freebox
- **encourages old players to enter new areas**
  - plain old copper can provide broadband access, so incumbent fixed line players can offer new television-like services (e.g. BT Hub)
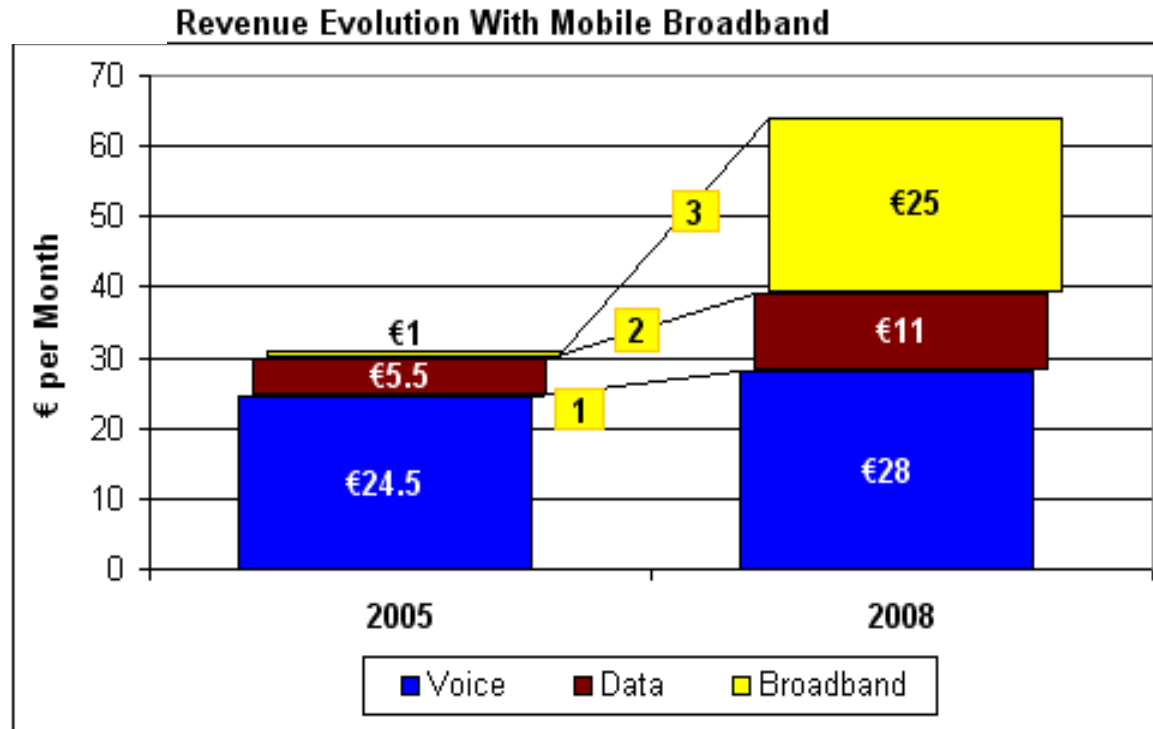
towards mobile broadband

Source: MIC
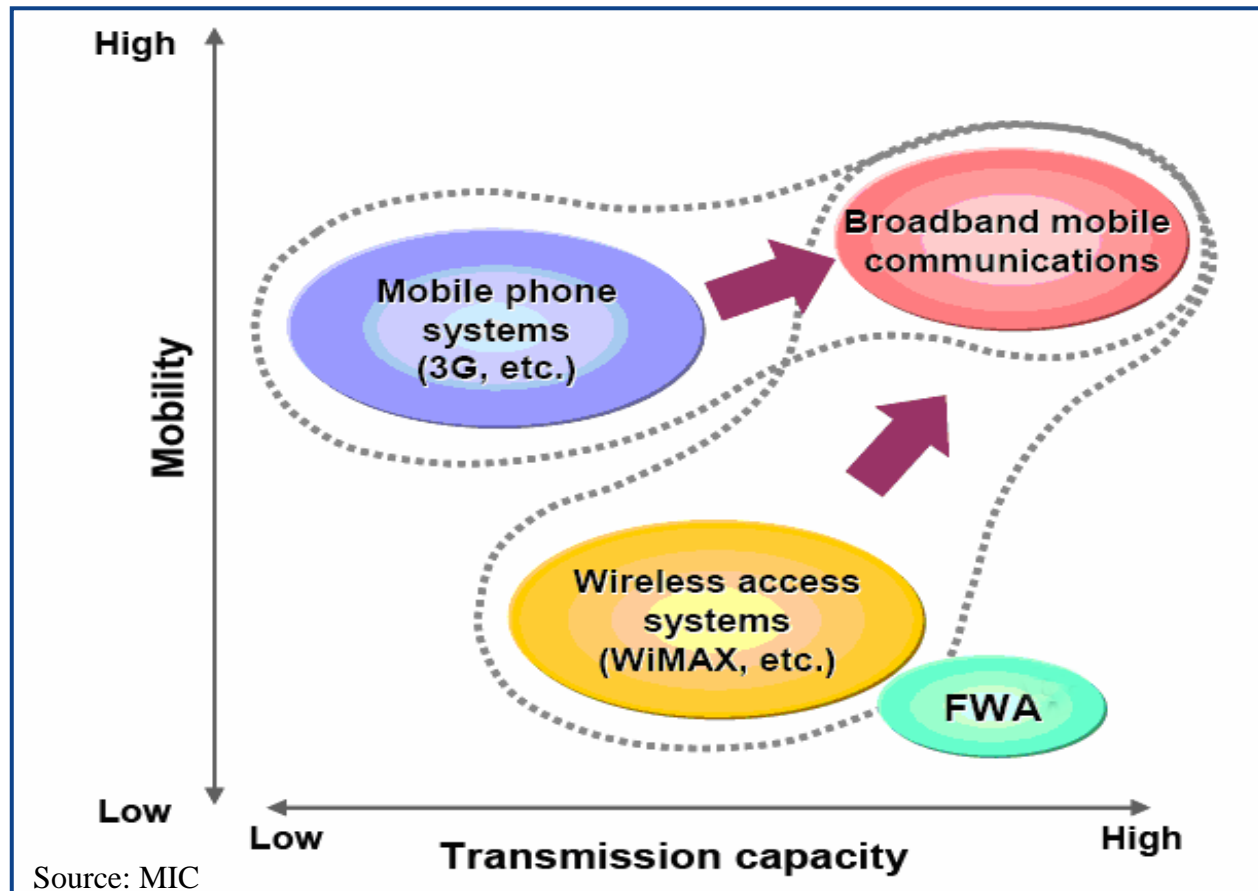
applications & growth drivers for mobile broadband
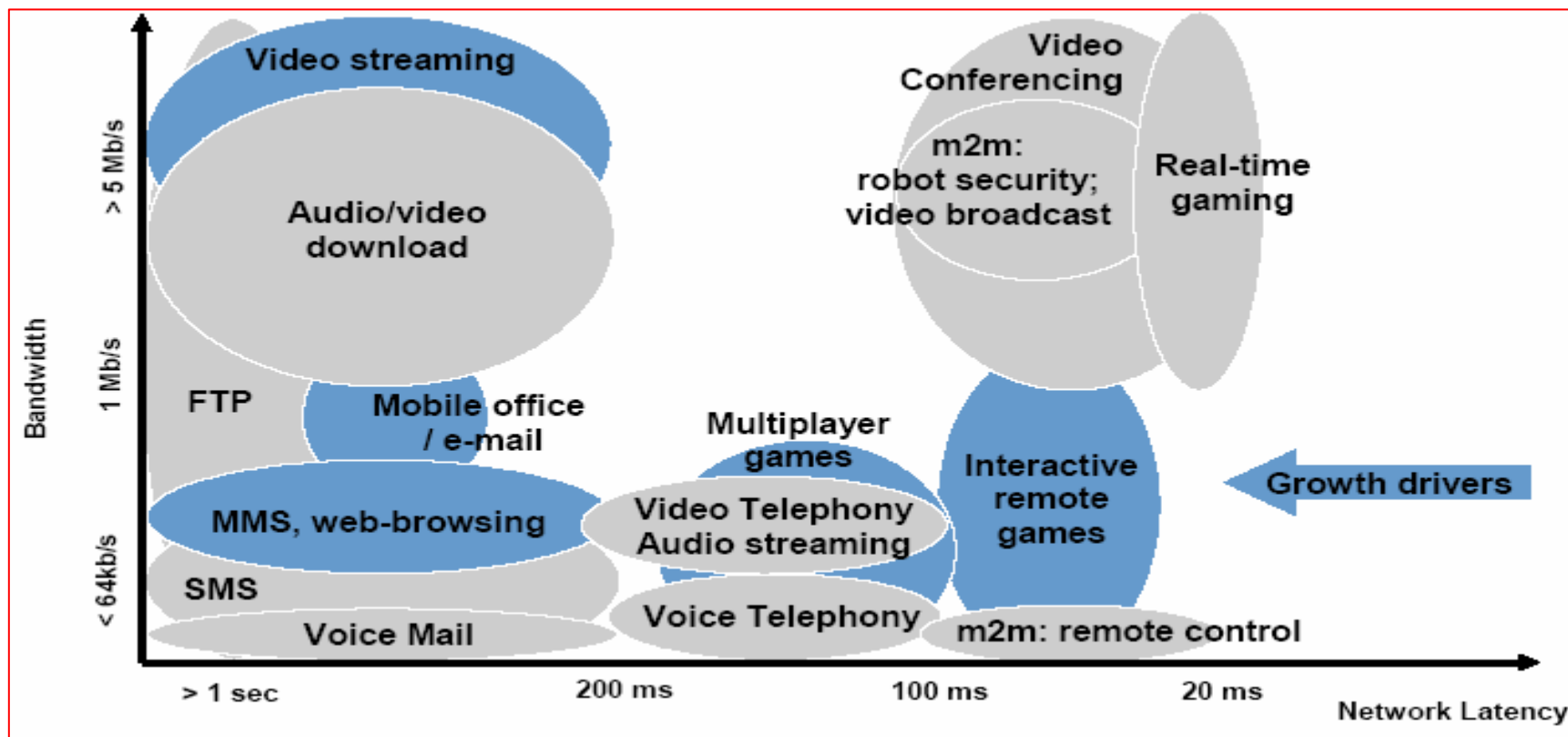
Source: WINNER,, Final usage scenarios. 30/06/2005; "Parameters for Tele-traffic Characterization in enhanced UMTS2" and University of Beira, Portugal, 2003, as cited by Siemens, NGMN Technical White Paper, 2006
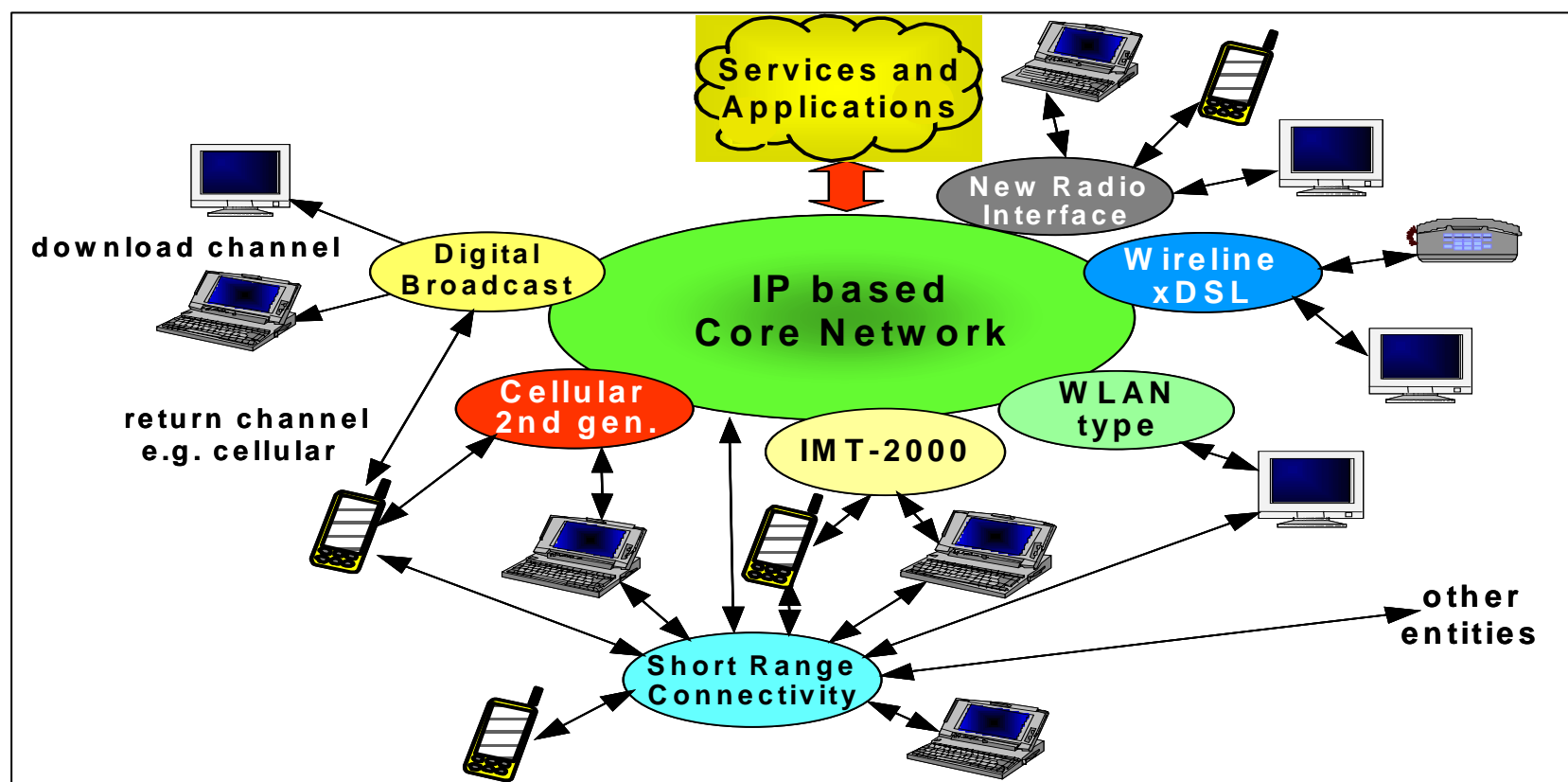
untapped markets,
untapped revenue opportunities

but it would seem that no one player can go it alone…

the original vision of IMT-2000 based on "complementarity"
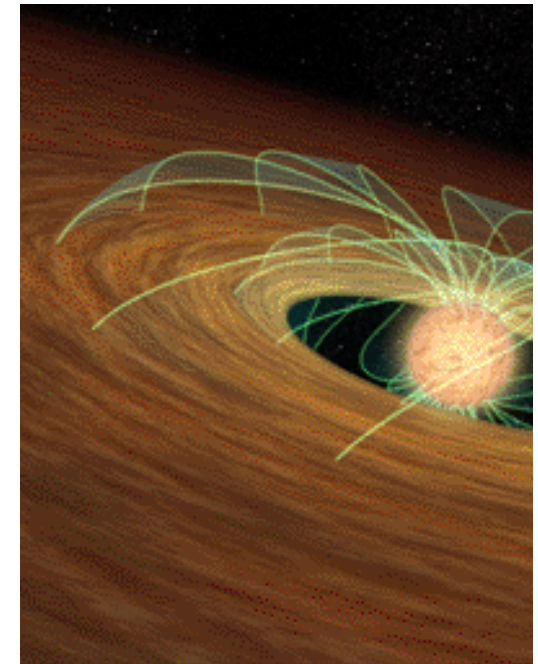

Source: ITU WP 8F

regulatory and policy challenges

keeping up with rapid innovation

- impact of convergence and fast-paced innovation means that traditional definitions may no longer be relevant

- today TV can be seen on mobiles and voice calls can be made on a computer

- as such, there is an increasing need to aim for technological neutrality when issuing licenses
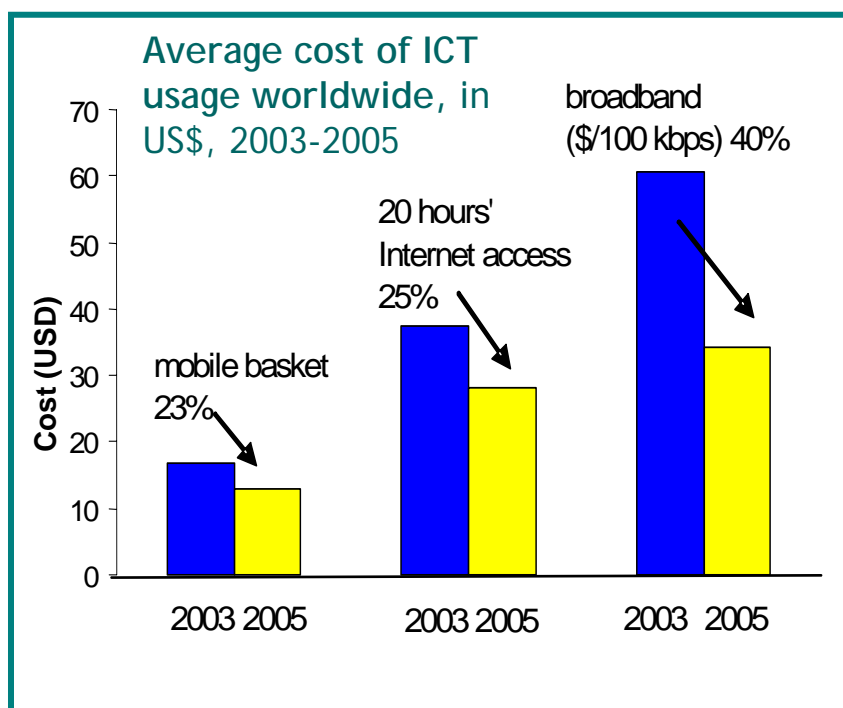
spectrum and licensing

- **spectrum allocation**
  - increasing demands on spectrum
  - e.g. 3.5GHz band is the most widely available band allocated for broadband wireless access worldwide, except for US - but 3.5 GHz is mainly allocated to fixed services
  - line between 3G/4G environments and broadband wireless access is blurring and is set to converge
  - availability of new bands?

- **licensing regimes**
  - how to license future services? Who should provide services like WiMax: mobile operators or fixed line providers? and why?
  - who will provide services beyond 3G?

affordability

**price of mobile services hasn't decreased
at same rate as broadband, internet**

Average cost of ICT
usage worldwide, in
US$, 2003-2005

broadband
($/100 kbps) 40%

20 hours'
Internet access
25%

mobile basket
23%

Cost (USD)

70
60
50
40
30
20
10
0

2003 2005   2003 2005   2003 2005

**cheap-to-produce services, e.g. SMS,
priced well-above cost in some regions**

**Average price of
an SMS,**
in US$, 2005

0.16

0.14

0.10

0.07

0.06

Americas   Asia   Africa   Europe   Oceania
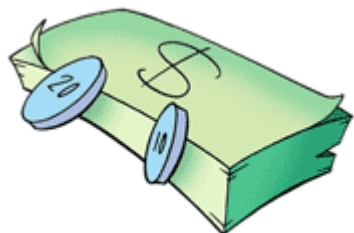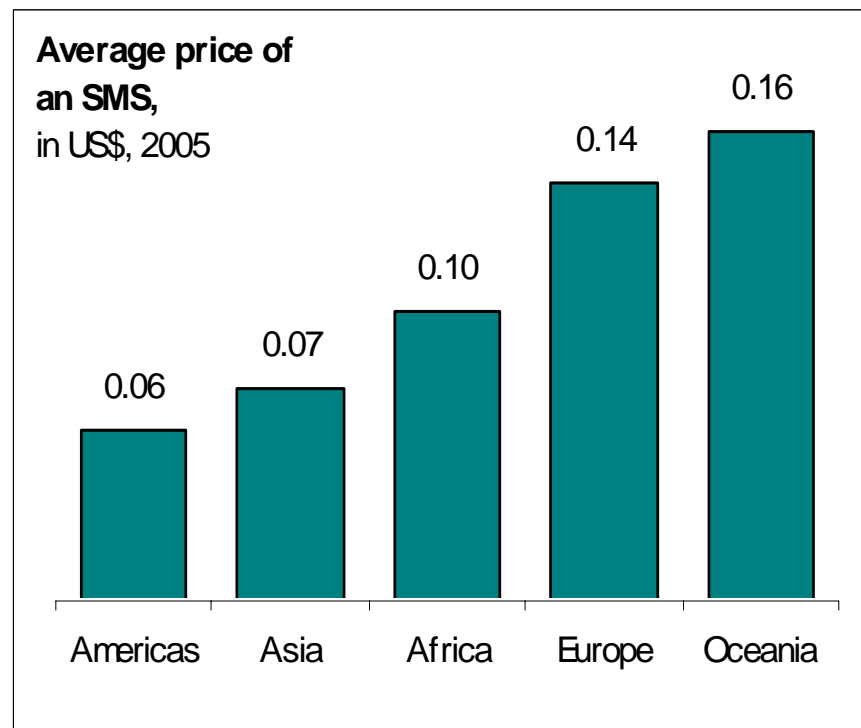
example: mobile roaming

- roaming =15% of global mobile revenues in 2004 (US$78.6 billion)

- EC first looked into issue in 2000, but to not much avail

- In 2005, a tariff comparison website was set-up

Austria
Belgium
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Slovakia
Slovenia
Spain
Sweden
United Kingdom
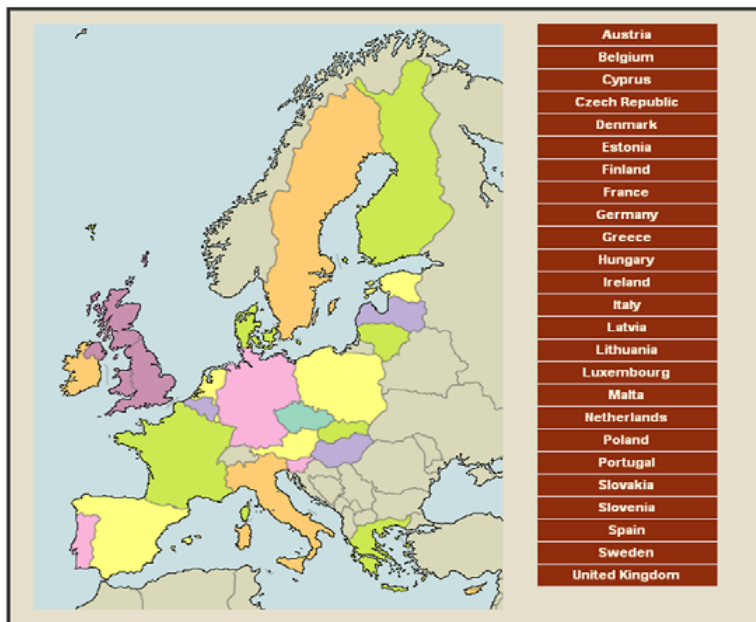
- Roaming charges vary widely, with the highest rate found by EC to be 13 euros a minute (Maltese calling home from Latvia)

- EC now proposing a regulation (consultation period ended in May 2006) which will be put into effect no earlier than summer 2007

ensuring a level playing-field is still a challenge

- ICT regulatory trends in Europe:
  - from *ex ante* to *ex post*
  - roll back of sector-specific regulation as markets become more competitive in favour of competition law

- mobile has traditionally been less regulated than fixed
  - many of the larger mobile markets remain relatively concentrated in Europe

- in the broadband world, concerns over access to incumbent's networks persist in many areas

SMS interconnection

- by some estimates, the total SMS revenues in 2005 were about 75 billion USD. Compare this to:
  - Global box office: 25-30 billion
  - Global music industry revenues: 35 billion
  - Videogaming, consoles & all software: 40 billion
- though SMS interconnection costs are very low, retail costs remain high
- this does not bode well for future mobile data and multimedia pricing
- though little has been done thus far, some regulators are imposing price caps on SMS termination (e.g. ARCEP).
- but some argue that intervention at retail level (rather than wholesale) may be required

managing content

- **regulating specific forms of content**
  - the 3Gs
  - increasing use of camera phones and user-generated content
  - protection of minors

- **advertising**
  - advertising rights & responsibilities
  - the problem of spam

- **copyright and DRM**
  - prevention of piracy & payment of appropriate royalties
  - rewarding content creation without limiting distribution
  - use of universal principles for DRM

- **regulation of mobile transactions & mobile payments**

EU and content

- traditional separation of broadcasting and telecommunications giving way to increasing convergence: both in terms of media & regulation

- Europe's TWF Directive now being amended as *Audiovisual Media Services Directive* (AMS)
  - to cover (scheduled and on-demand) media services over internet, mobile, telecom, broadcasting and over "*any other electronic network whose principal purpose is the provision of moving images to the general public*"
  - regardless of technology used, multimedia services will be subject to a minimum standard of protection relating to e.g. advertising, discrimination, incitement to hatred

- Thus the directive will extend regulation to control audio-visual media services that have, until now, been untouched by specific regulatory intervention, and left to MS's general laws (and self-regulation has been the norm)

impact of new media on human society

Blurring boundaries

- ## Private sphere becomes public
  - – Greater freedom of action
  - – questions of etiquette
    e.g. "forced eavesdropping"
  - – phenomenon of social networking

- ## Public sphere becomes private
  - – Continuity of connectivity
  - – Perception of social distance
  - – Group dynamics

individuality, privacy & surveillance

- **growth of citizen journalism**
  - through use of camera phones, moblogging, all human activities susceptible of being recorded
  - climate of security threats and terrorism may mean that vigilantes become increasingly common

- **data perpetuity**
  - privacy as a commodity

- **such an environment of surveillance (real of perceived) may lead to lack of individuality, self-expression and greater anxiety in decision-making (no matter how small)**
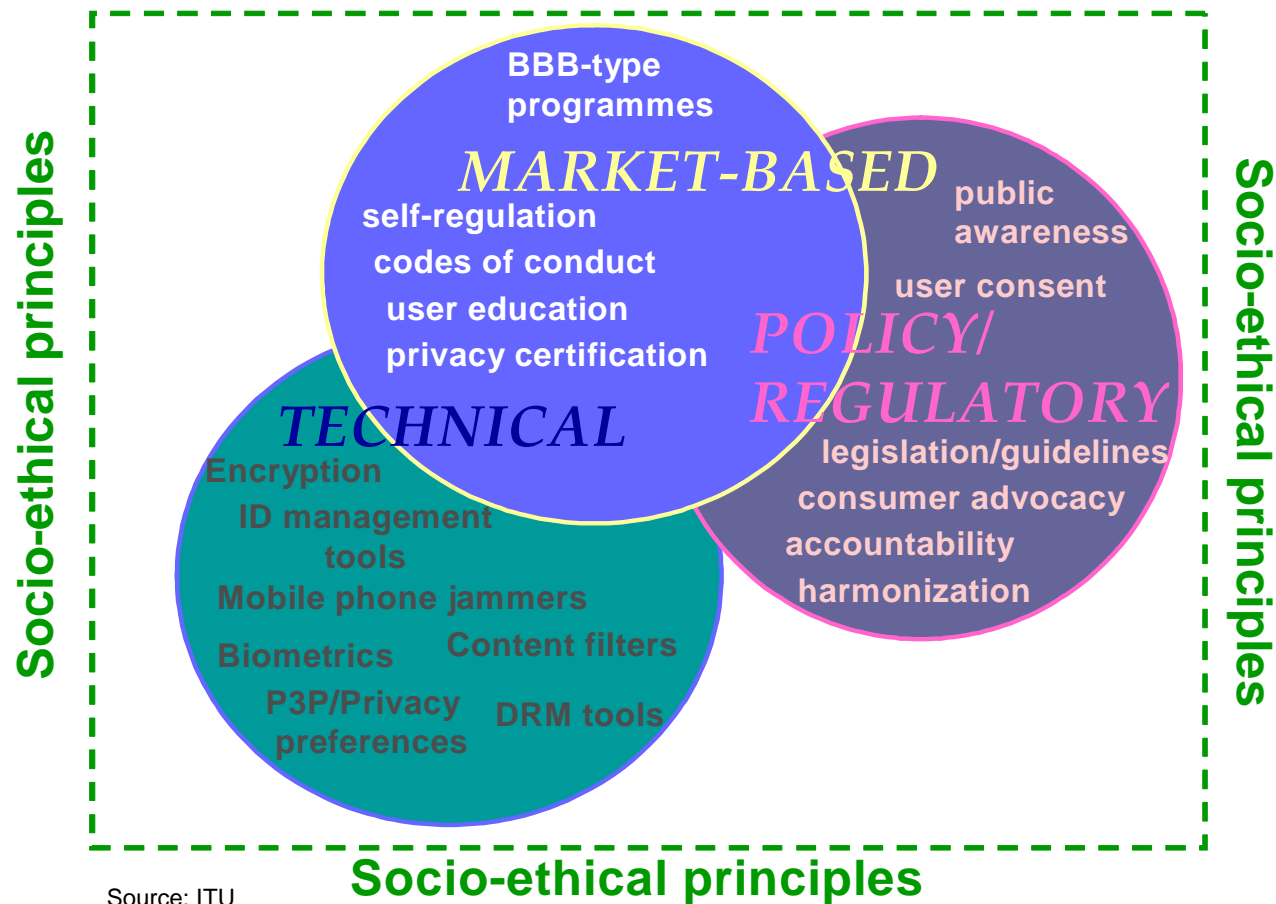 - these elements are crucial to individual and societal development

the responsibility of communication

- nuisance

- punctuality

- keeping options open

- spontaneity of communication

- illusion of communication
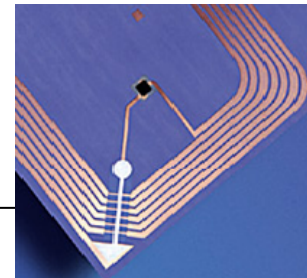
  – second lives

  – alternate identities

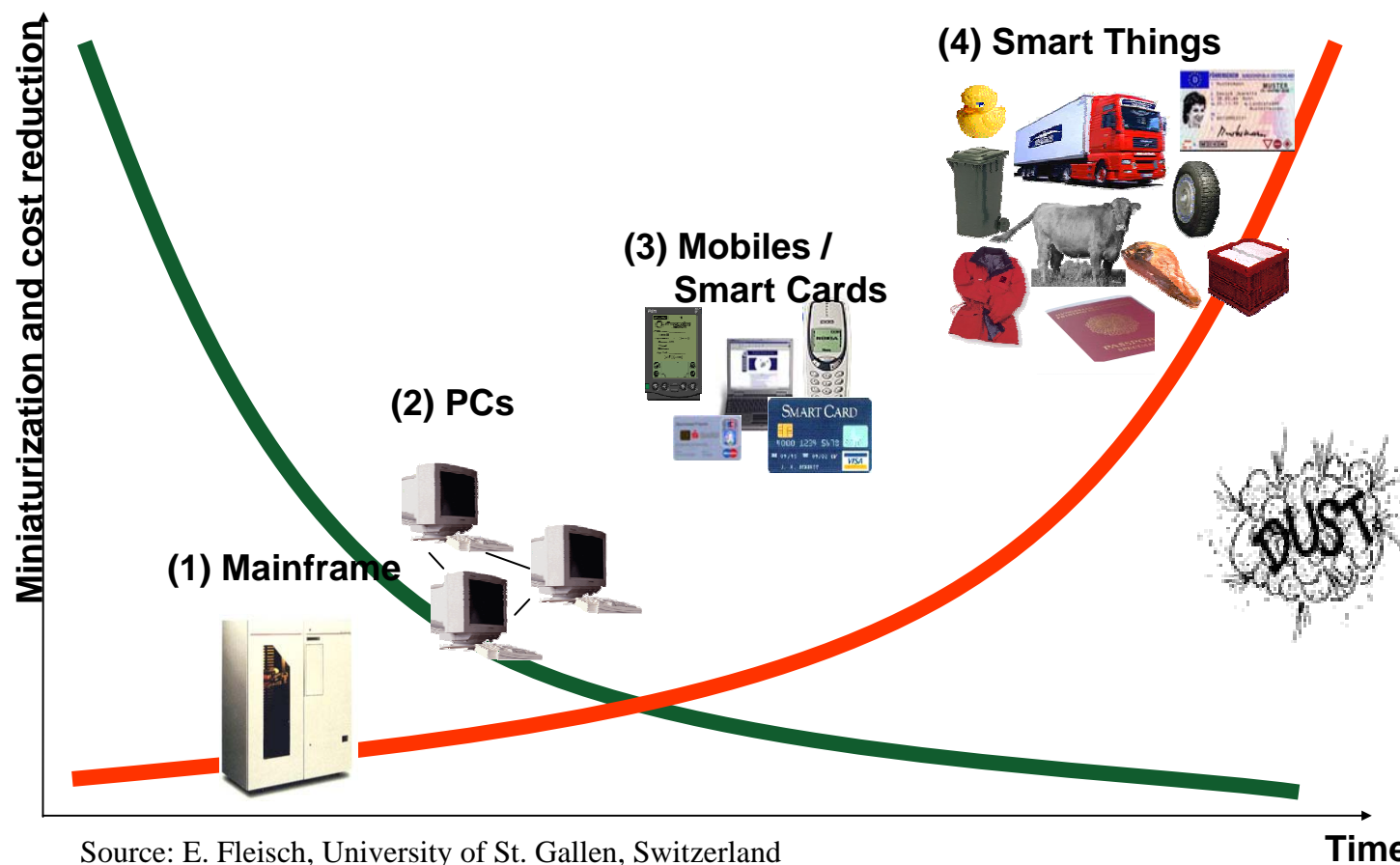# a wider approach is required

Source: ITU

a future network of things

the next internet: internet of things?

- RFID and related technologies have the potential to tag every item on the planet
- As such, everyday items could be identified, tracked, and monitored
- The tag can also contain valuable information about an item, e.g. price, ingredients
- Combined with sensors, RFID systems can create context aware application, creating an even stronger link between real and virtual

dropping cost and size

Miniaturization and cost reduction

(4) Smart Things

(3) Mobiles /
Smart Cards

(2) PCs

(1) Mainframe

SMART CARD

DUST

Time

Source: E. Fleisch, University of St. Gallen, Switzerland

key implications

- privacy and data protection mechanisms will need to be further elaborated
  - when and how can information on the tag be accessed?
  - when should the tag remain active after an item is purchased?

- who will govern the system of identifiers?

- in order for a truly global "internet of things" to be created, greater efforts at standardization are required
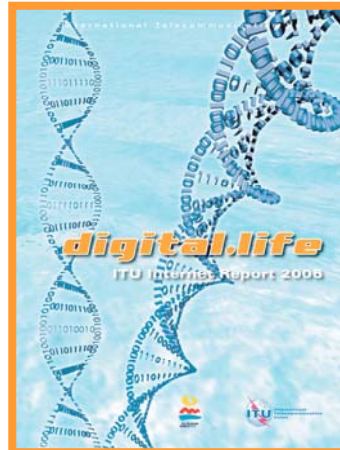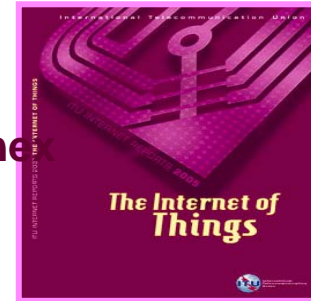
ITU Internet Reports 2005
THE INTERNET OF THINGS

Over 200 pages of analysis, including statistical annex

www.itu.int/internetofthings/

ITU — International Telecommunication Union

ITU Internet Reports 2006
digital.life

Coming in December 2006!
www.itu.int/osg/spu/publications/digitalife

THE ITU NEW INITIATIVES PROGRAMME

Research & policy analysis (reports, workshops)
on a wide range of topics since 1999

www.itu.int/ni

t h a n k s

NASA

international telecommunication union

lara.srivastava@itu.int