How about Telecom

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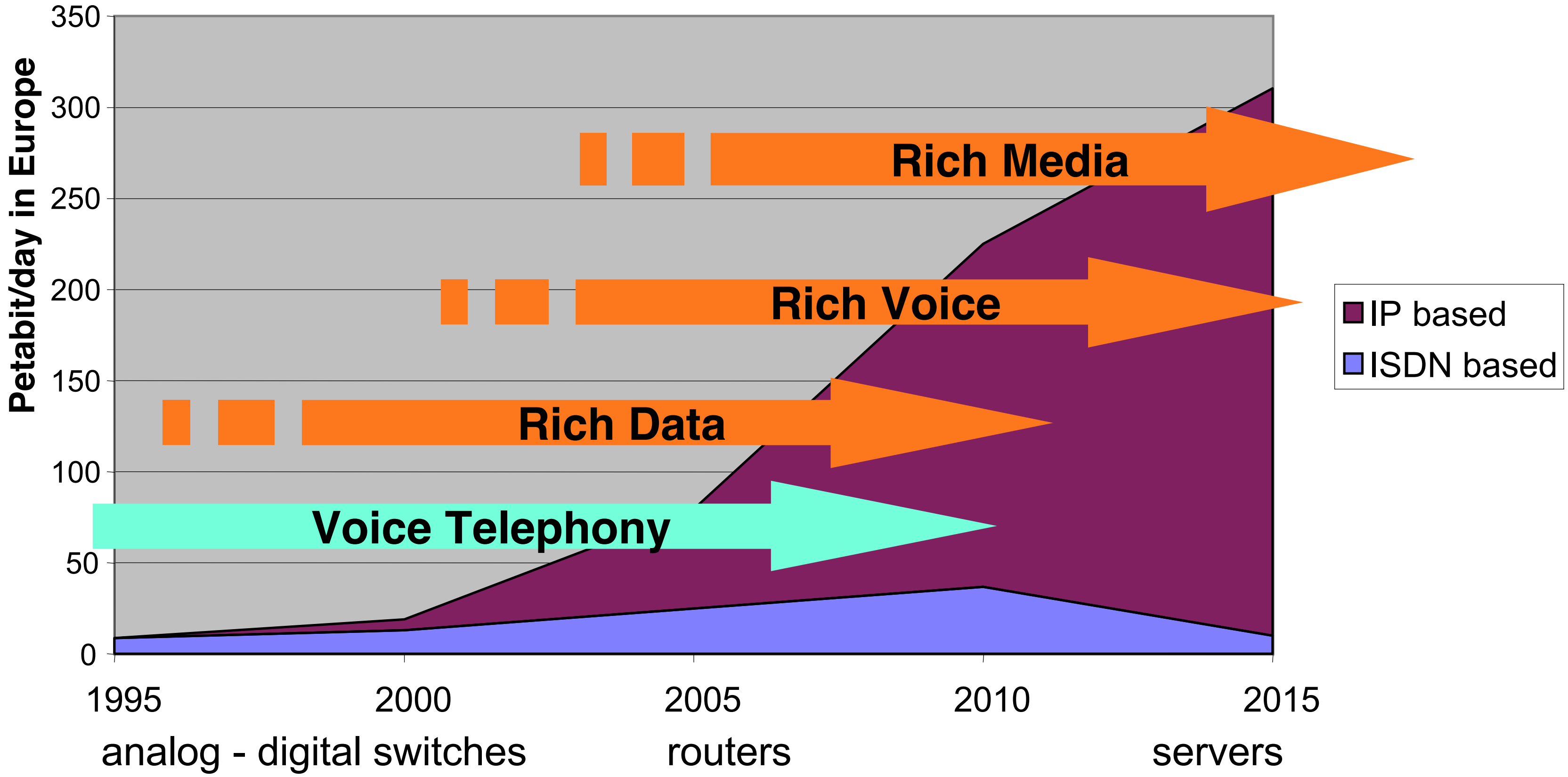
Information and Communication Technologies (ICT)

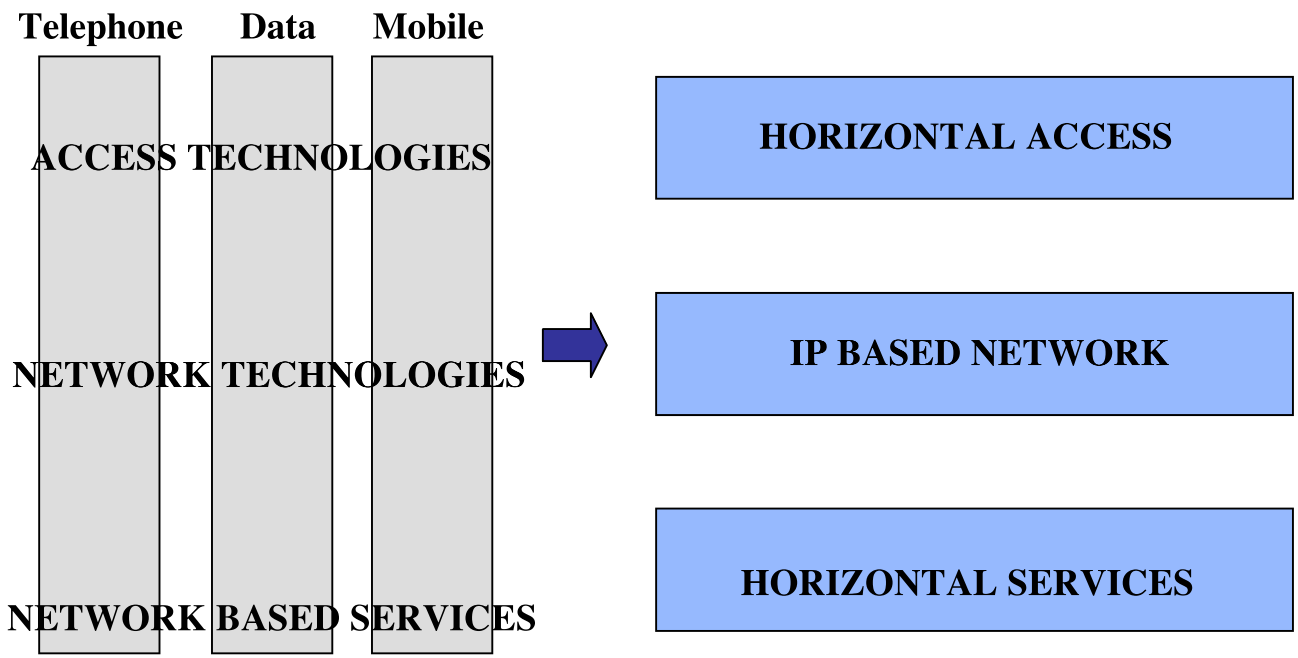
- Motto: ICT used in all industries to increase productivity
- In Finland 2/3 of the ICT generated Gross National Product is based on ICT-industry production
- In USA 2/3 of the ICT generated GNP is based on ICT use in different industries
- IT increases productivity an average of 8 - 20% when it is *combined with organizational and process changes and data communications* (ETLA 2003, OECD 2003).
- *Mobile communications can increase productivity an average of 40%* (ETLA 2004)

Telecom Industry Development

Technology transforms to All-IP (“Rich” means support for many simultaneous data/media types)

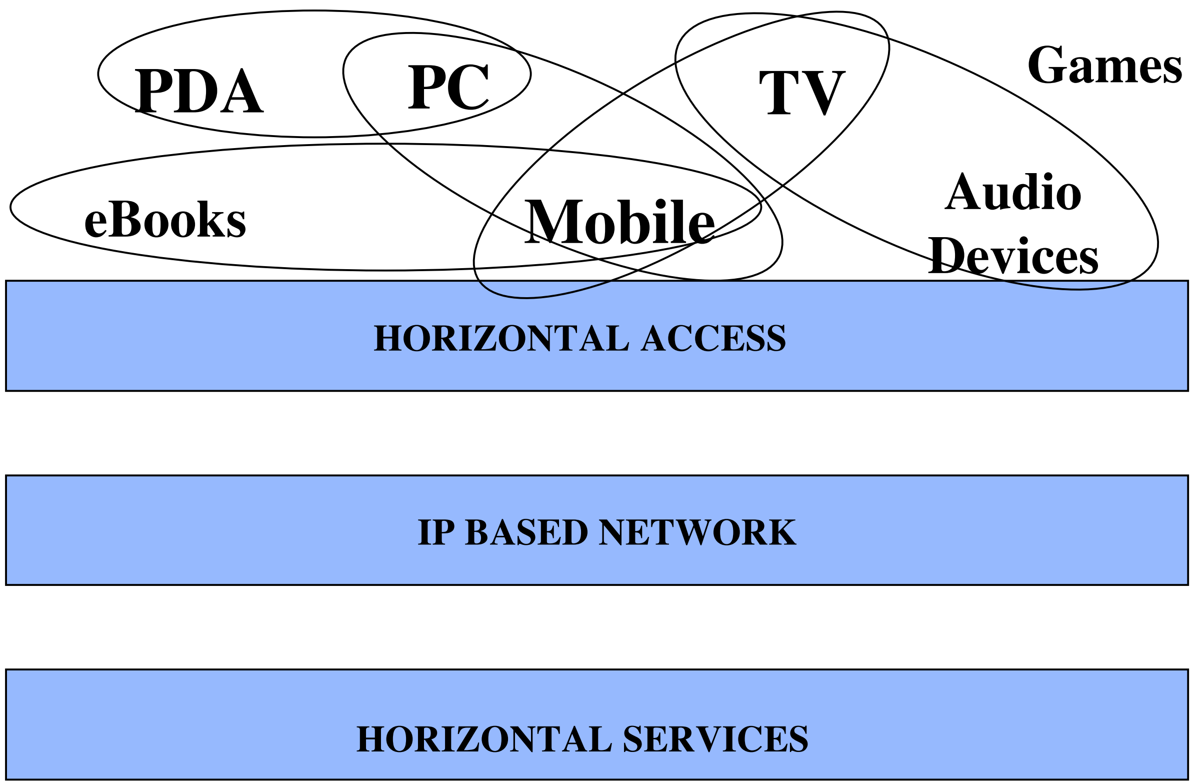


Telecom Industry Development

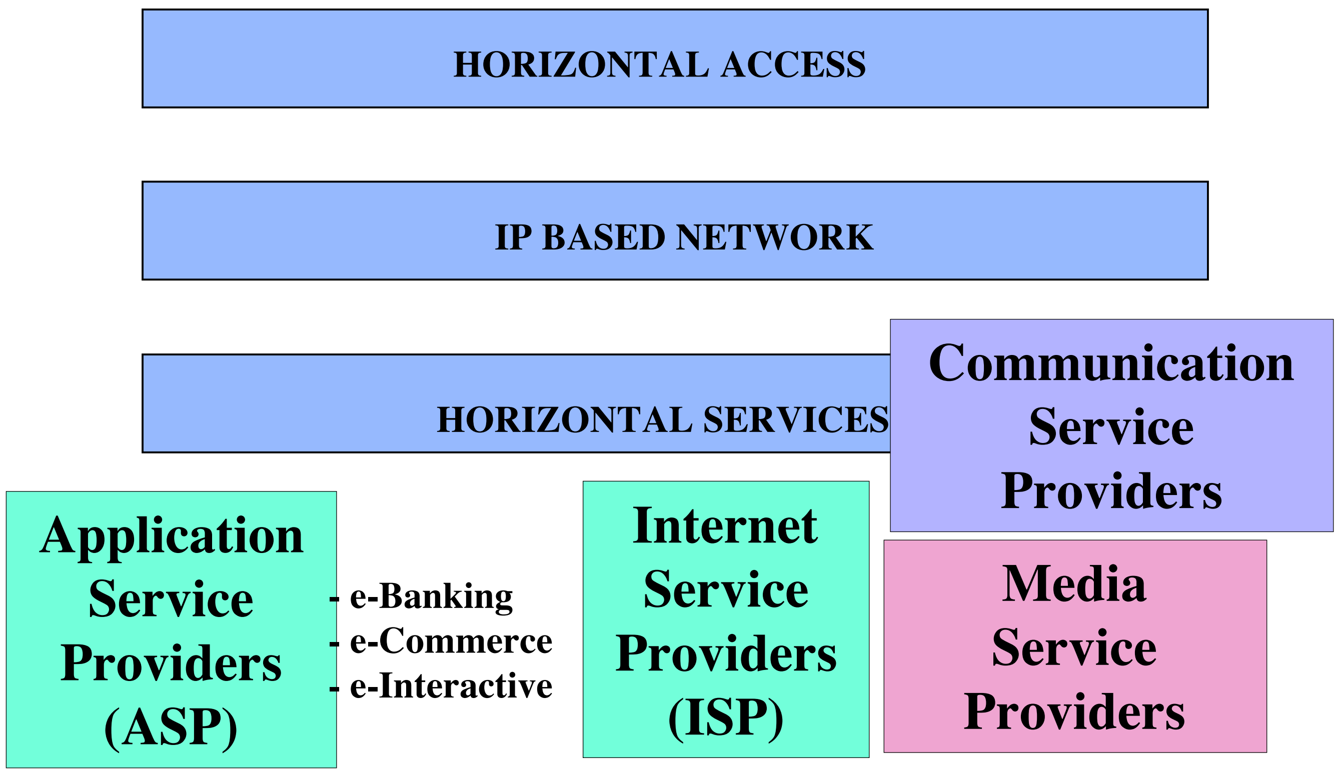


VERTICAL SERVICE ”PIPES” HORIZONTAL INTERNET BASED SERVICES

Telecom Industry Development



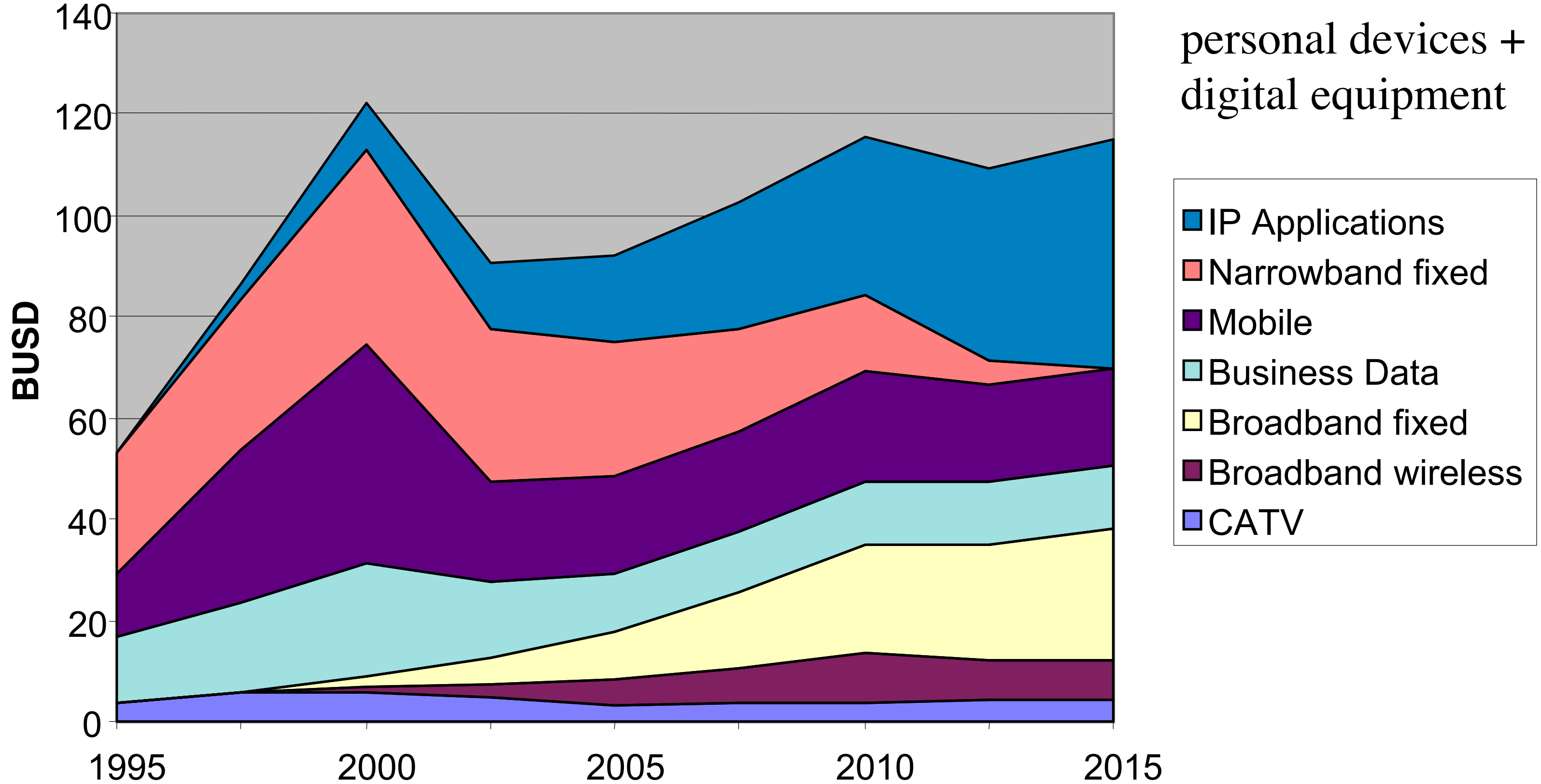
Telecom Industry Development



Telecom Industry Development

European Telecom Investments shift to IP-Applications

embedded in
personal devices +
digital equipment



Source: Extrapolated from service turnover
forecasts of EITO, OVUM, IDATE, IDC

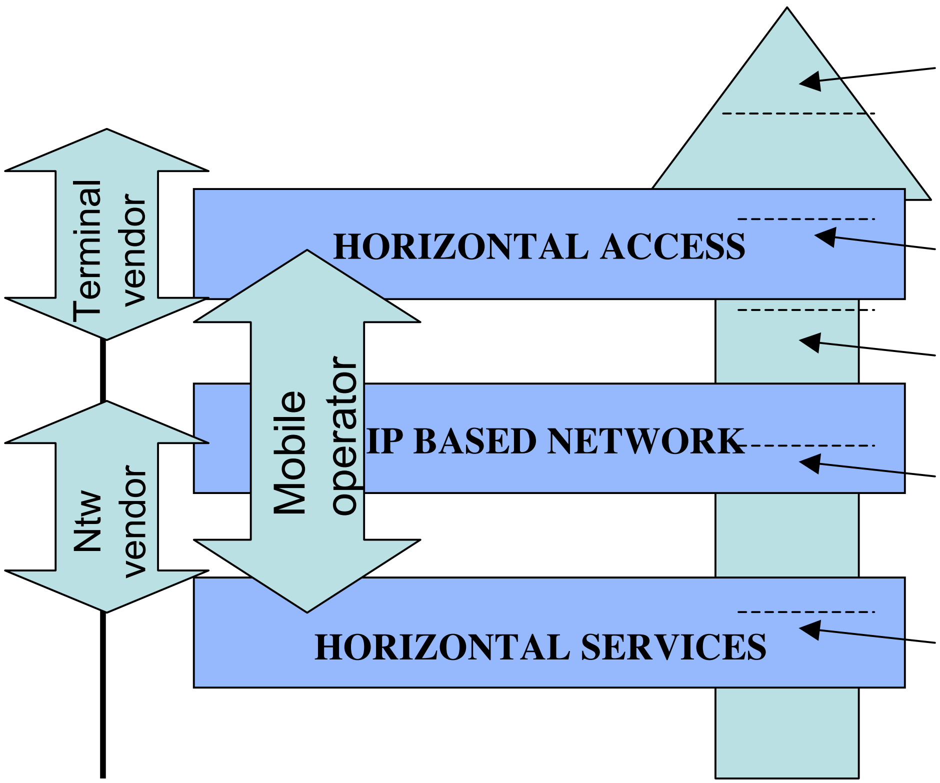
Telco positioning

- Incumbent telcos have been large customers for ITU/ETSI standard systems
- GSM is the last large ITU-T and ETSI standard compliant system, where only terminal business is consumer segmented
- Internet drives consumer segmentation and creates strong network effects
- Services may become tied to artefacts such as personal devices or digital equipment
- IP-Applications consist of software for these
- Compare transport change from railways to cars

Telco positioning

- Telcos have market power in local access network ownership and in vertical terminal-network-service integration based on SIM-card model
- Telcos are weak in vendor independent service development (data and IP technology, content, business services)
- Transition to IP tackled with NGOSS
- Telcos may have to outsource their R&D to vendors or system integrators
- Service production may also be outsourced

Telco positioning



Disruptive points	*Incumbent strategy*
-Applications	-Segment and bundle
-Consumer	
-VoIP	-USIM and OMA
-Office	
-Terminal OS	-Block interfaces
-WLAN, WiMAX	-Better radio 3G->4G
	-Universal Mobile Access (UMA)
-IP network	-Roaming
-Google, Ebay,	-Open Mobile Architecture (OMA)
-Skype	-Partner
-”Web-telco”	-Bundle

Vertical GSM-technology based on *GSM patents*

Vertical GSM-service provisioning based on *SIM-card*

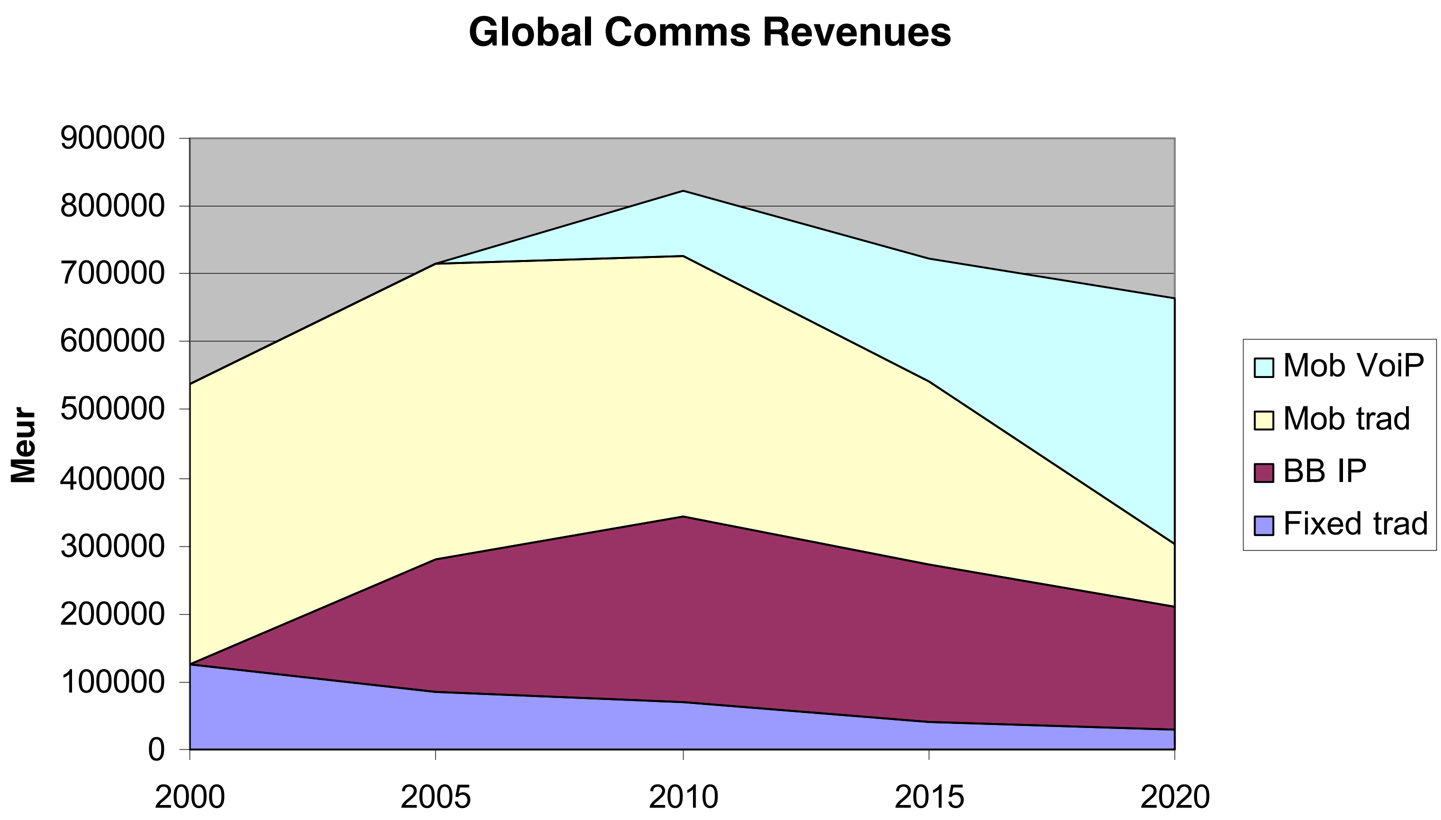
Telco positioning

- Telcos from 3000 to 300 of which
  - 2-5 Global
  - 10 Regional
  - 1-5 Local per Country
- Global incumbent vendors from 40 to 10
- New entrants from IP and Application fields
- Networks become All-IP based
  - Telecom and mobility crucial in development of business and public processes
  - Data traffic will be application based
  - All-IP will develop dominant designs
  - Software development will go offshore but services and system integration will stay local

Telco positioning

- Corporate networks drive the change
  - early All-IP adopters (AoIP)
  - corporate networks are applications-driven
  - early mobile service adapters
  - infrastructure consolidation and cost reduction targets
  - VoIP promising cost benefits
  - WLAN mobilizing the business user
- Implications
  - corporate networks adopt Telco network features
  - data user authentication and identity at IP level
  - security also inside corporate networks
  - operative costs charged from business units
  - destroying mobile operators’ traditional business
  - results in telco consolidation and change without growth

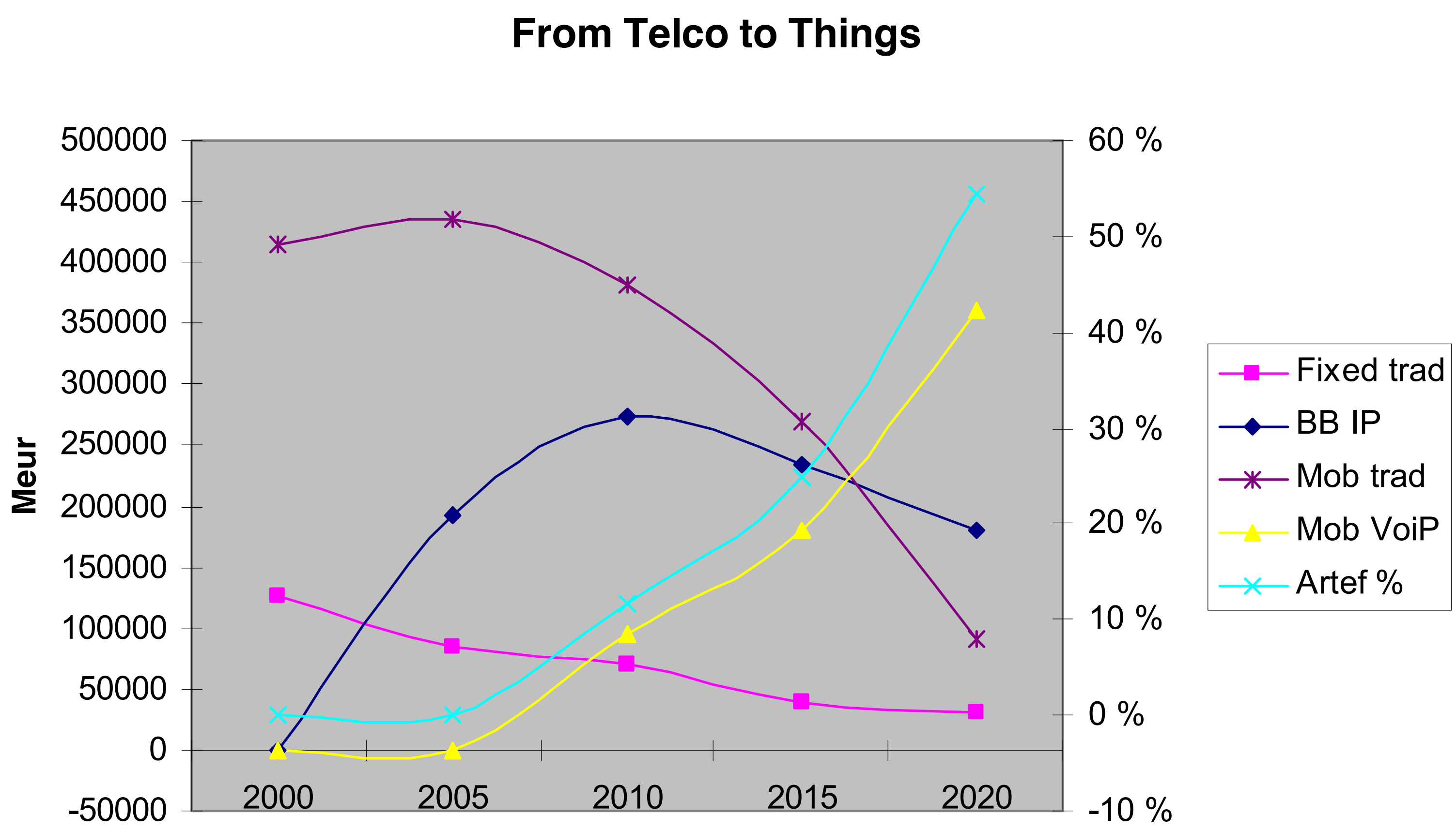
Telco positioning



Telco positioning

- Assume that mobile VoIP will be driven by personal user equipment and the services will be based on global Internet based service providers
- The consolidated telco turnover will be decreased by personal devices and applications corresponding the mobile VoIP amount. Let us call this development as ”From Telco to Things”
- The mobile VoIP service provisioning may become tied to SOHO technologies or corporate environments

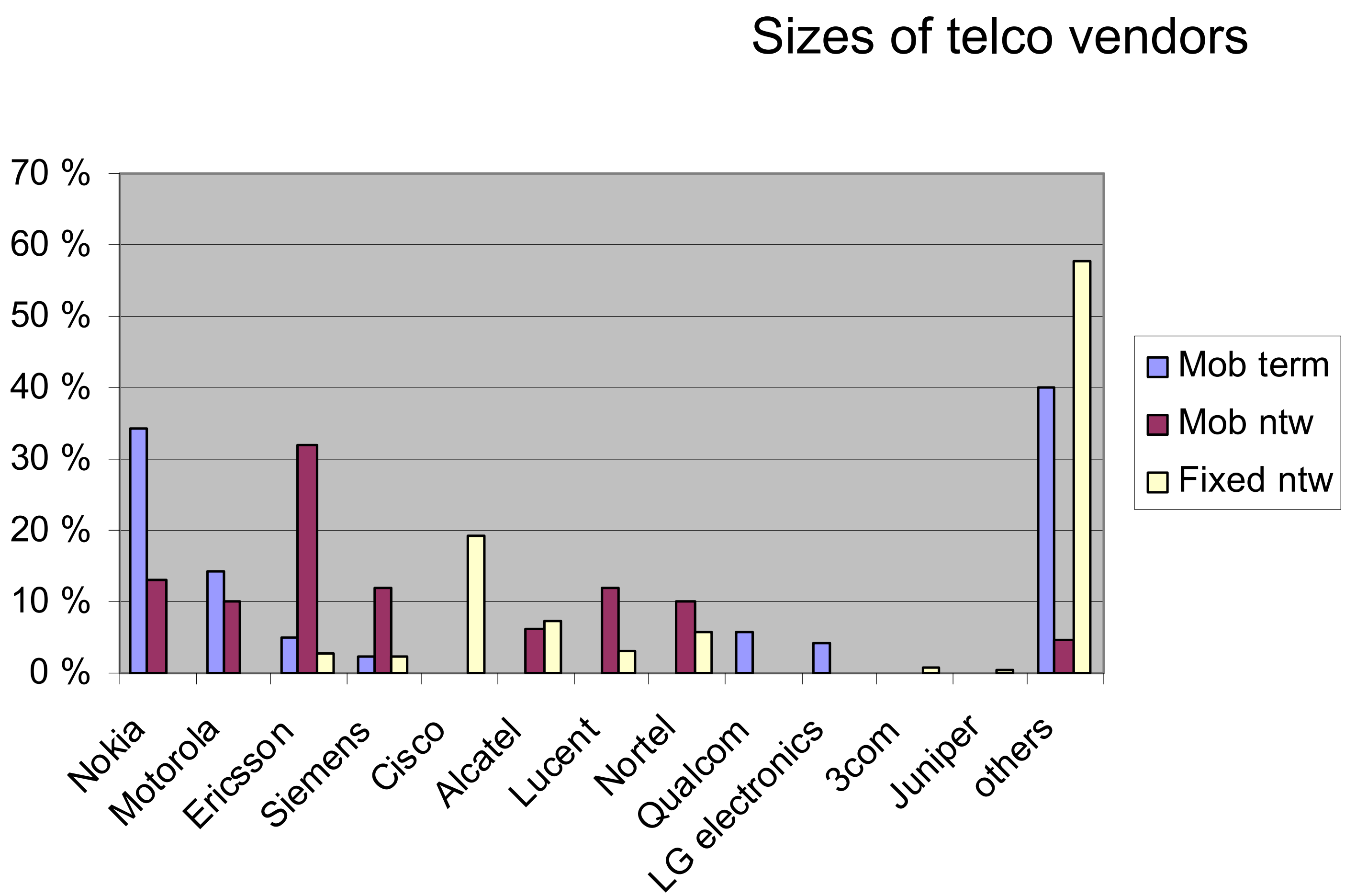
Telco positioning



Vendor positioning

- Top 3 mobile terminal vendors have 60% market share
- Top 5 mobile vendors (terminals and networks) have 66% market share
- Top 5 fixed network vendors have 30% market share (getting more fragmented)
- Horizontal development may fragment mobile technology business

Vendor positioning



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