Future Vision of Business Oriented Innovation in Wireless and Mobile Communication Sectors

ICWMC 2009

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- **ICTmc Vienna/Munich**
- **IARIA**
- **IFIP**

Overview

- The ICT Evolution: Technology
- Techno-Economic
- Mobility
- Security & Trust
- The Industry Vision

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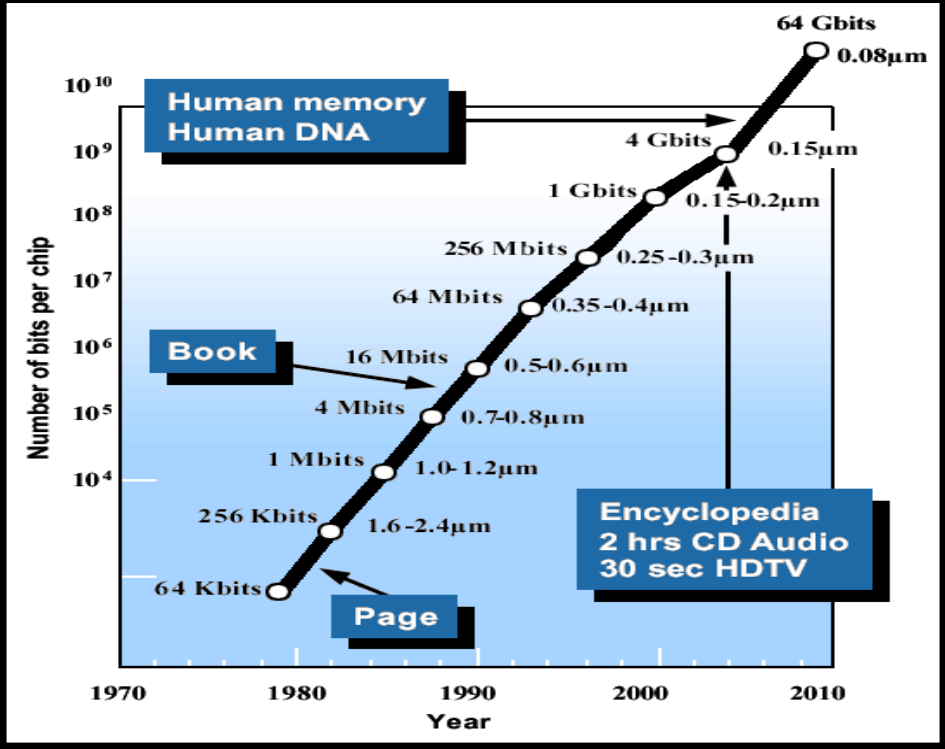
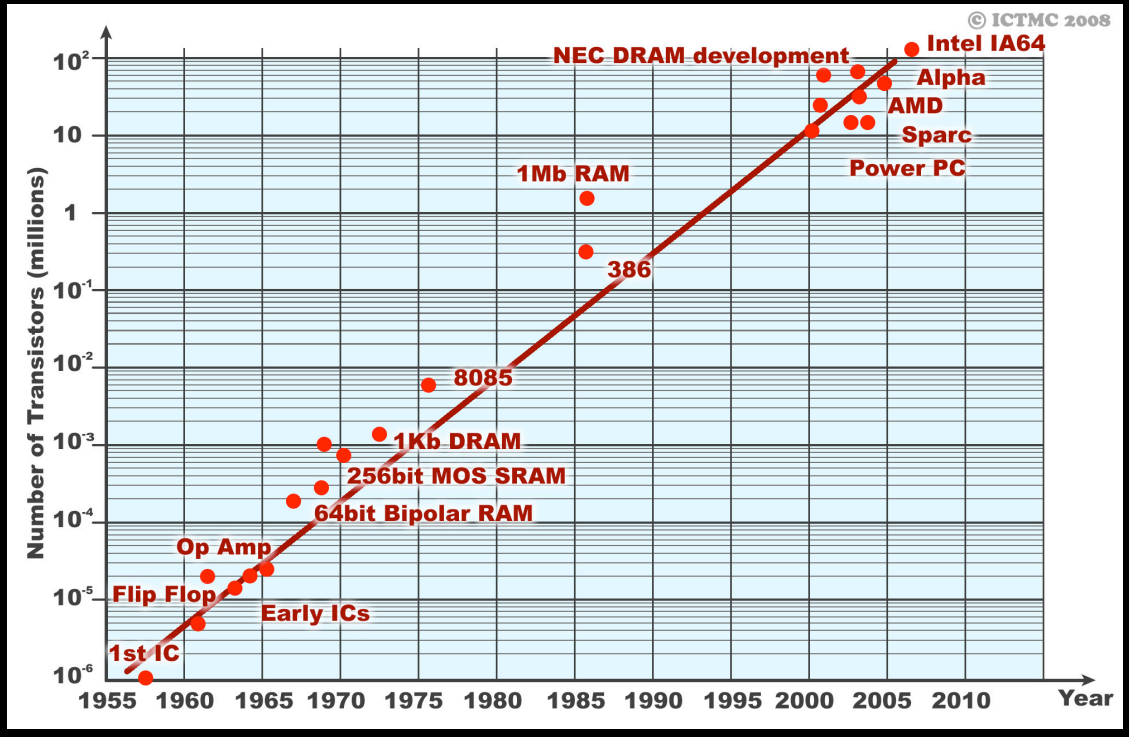
Meomry Capacity per Chip



Number of Transistors per IC: Scales every 4-5 Y

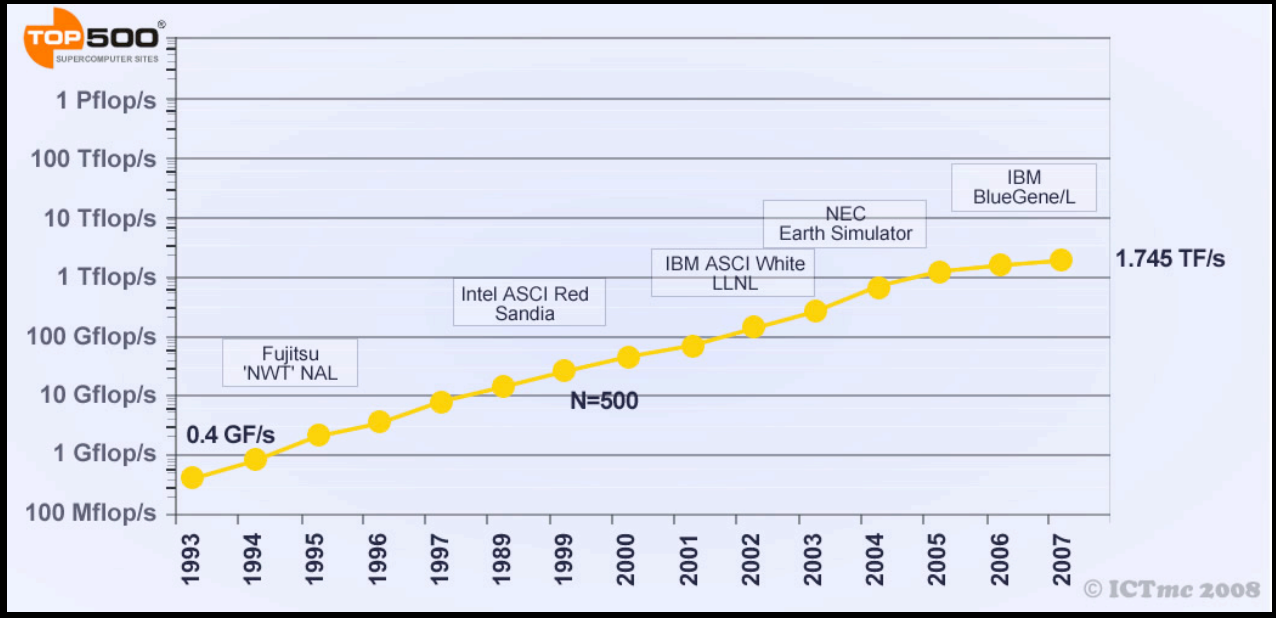


High Performance Computing HPC

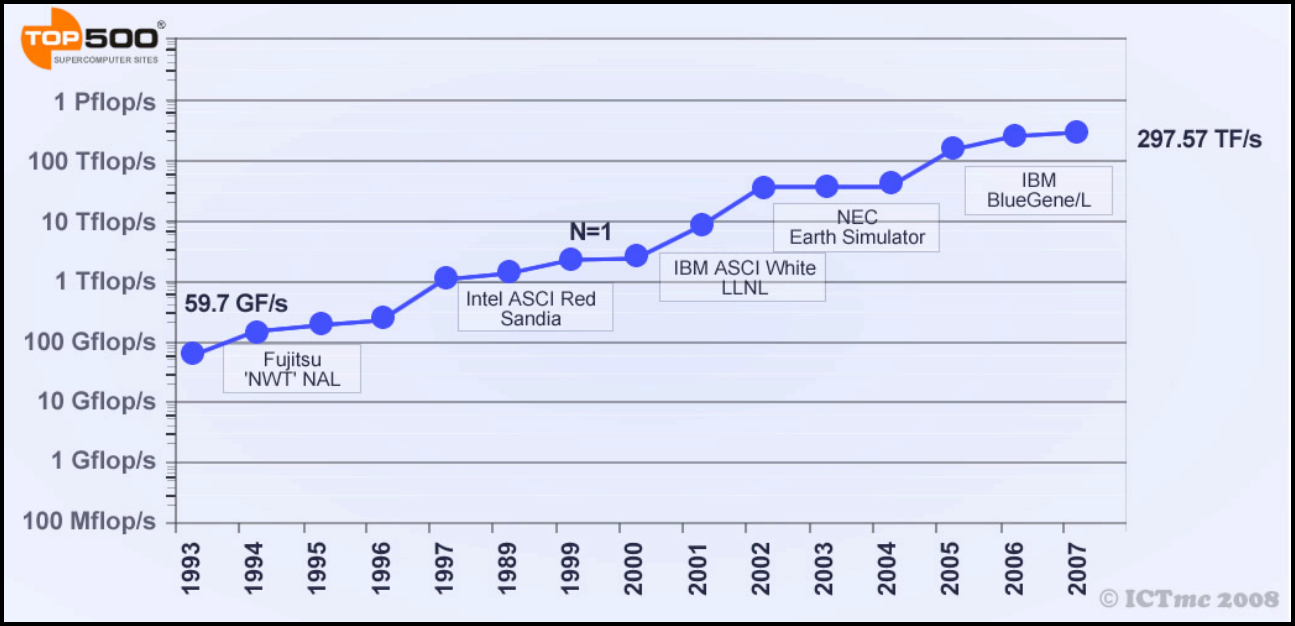
- The Top 500 Super Computers

- Inependent Market Analysis

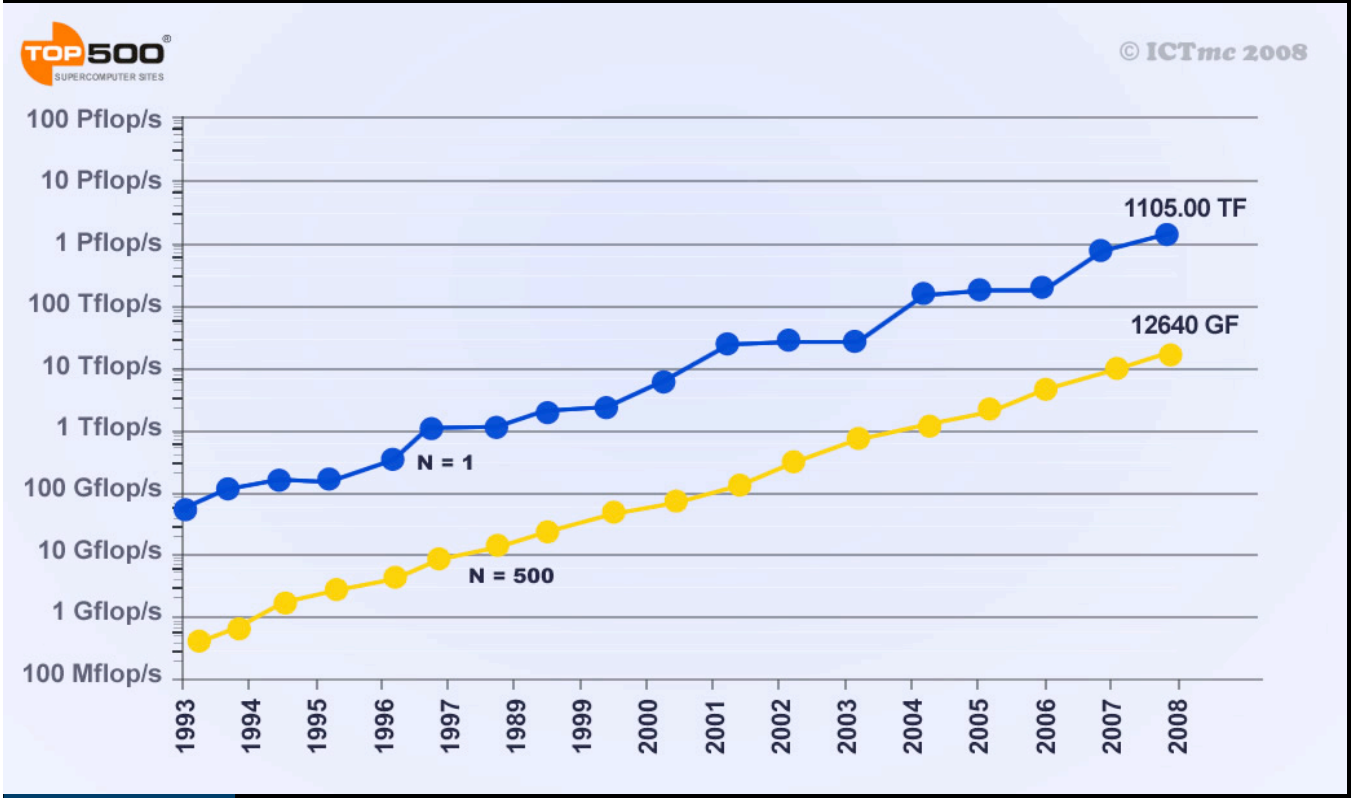
HPC: Number 500



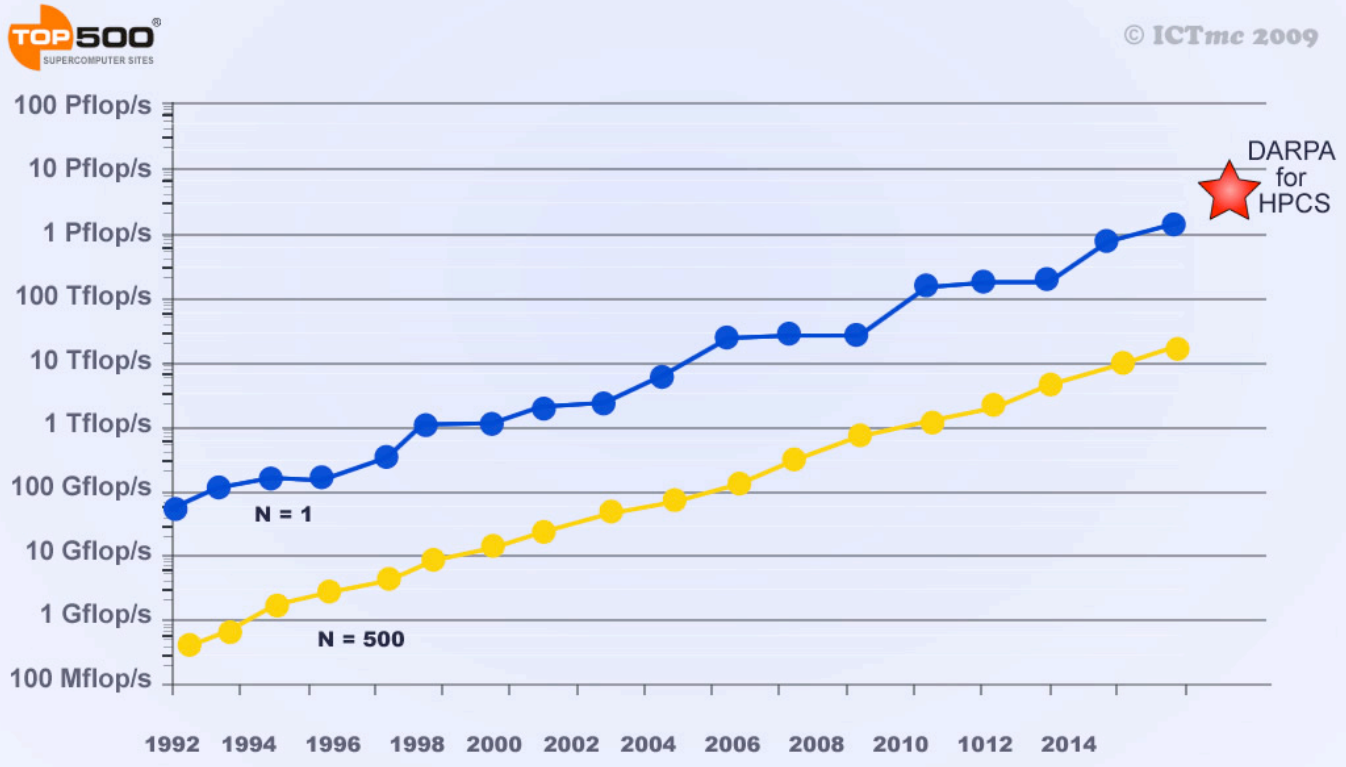
HPC: Number One



HPC: Number One

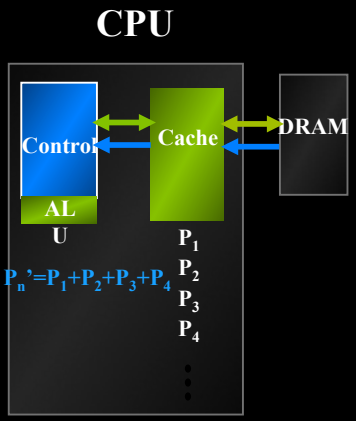


HPC: Evolution Trend



The New MC Trend

CPU vs GPU

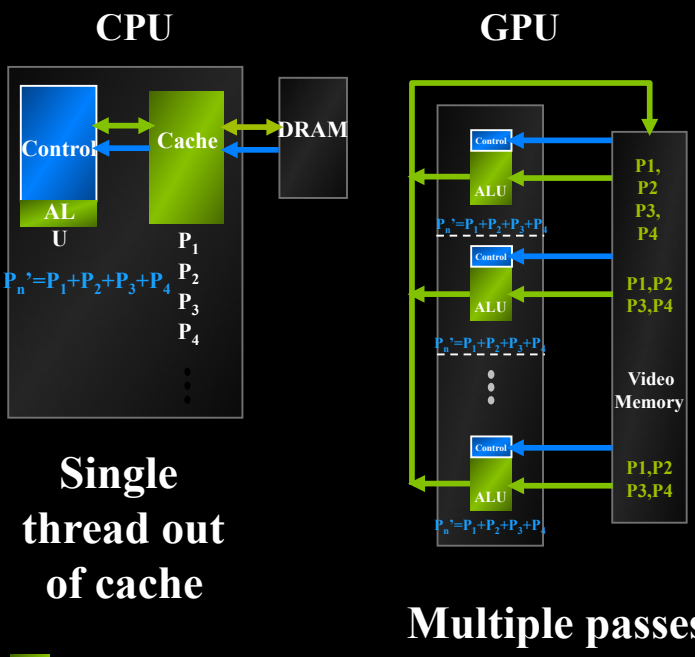


Single thread out of cache

Data/Computation

Program/Control

Example Fluid Algorithm



Single thread out of cache

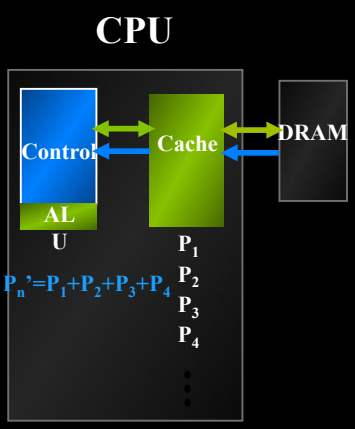
Multiple passes

Data/Computation

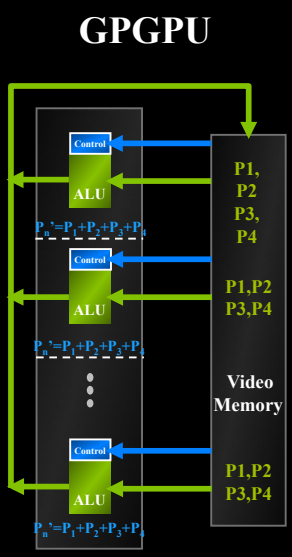
Program/Control

GPU Computing

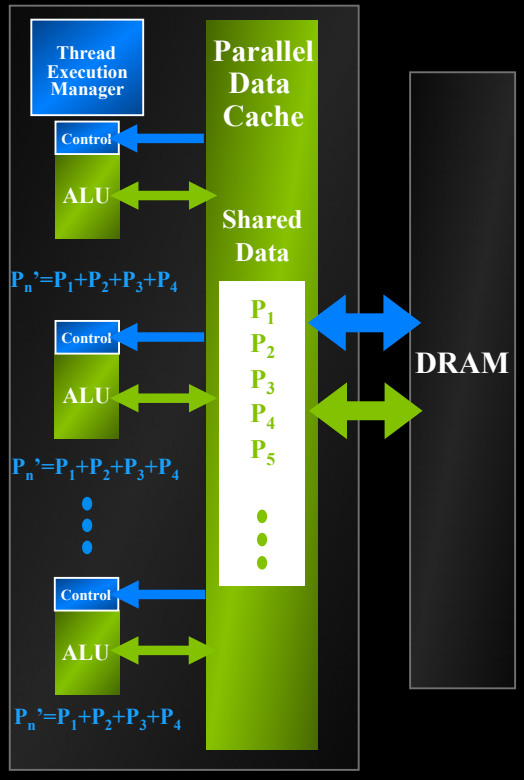
Example Fluid Algorithm



Single thread out of cache



Multiple passes through video memory



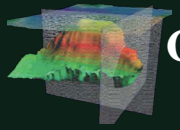
Parallel execution through cache

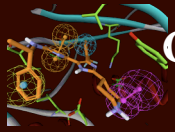
Data/Computation

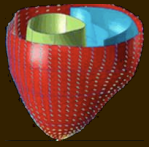
Program/Control

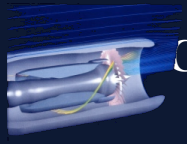
The New/Future MC Applications

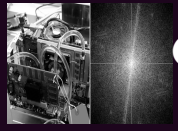
GPU Computing Example Markets

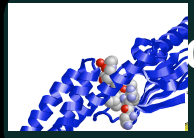

Computational Geoscience

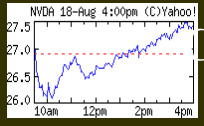

Computational Chemistry


Computational Medicine


Computational Modeling


Computational Science


Computational Biology



Computational Finance

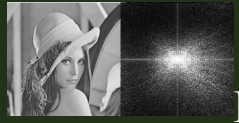


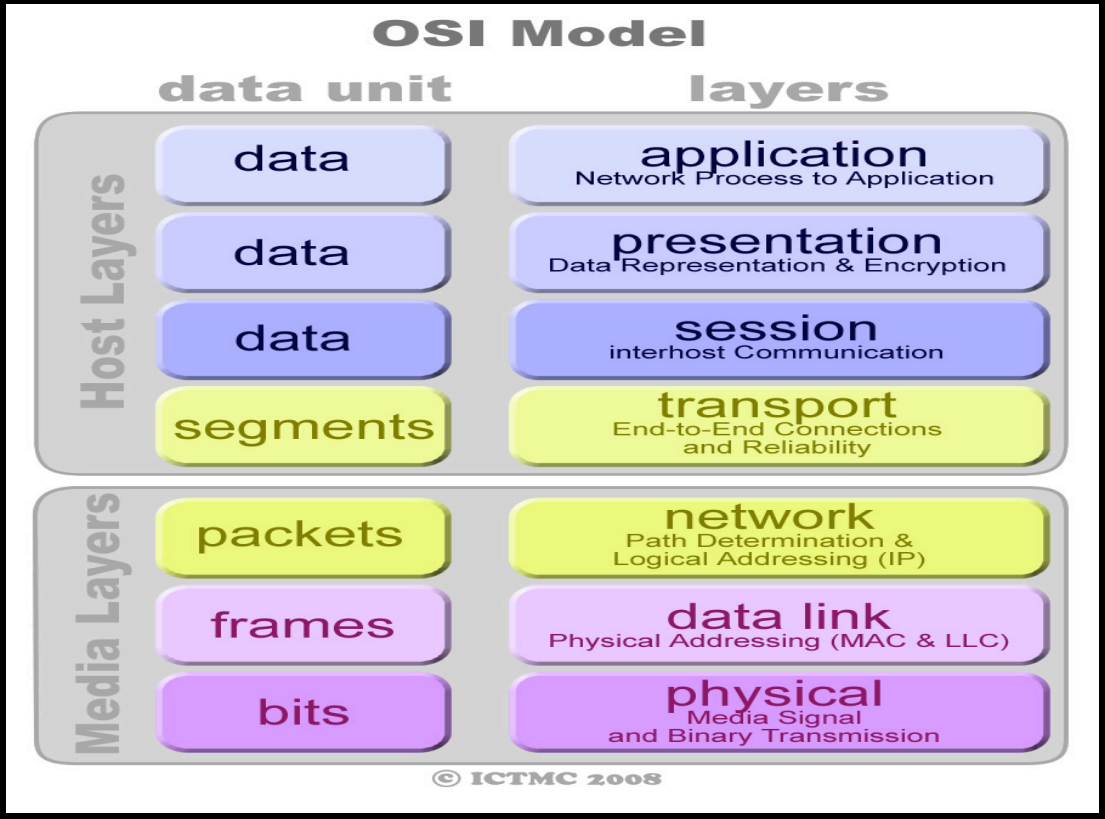
Image Processing

Applications - Condensed

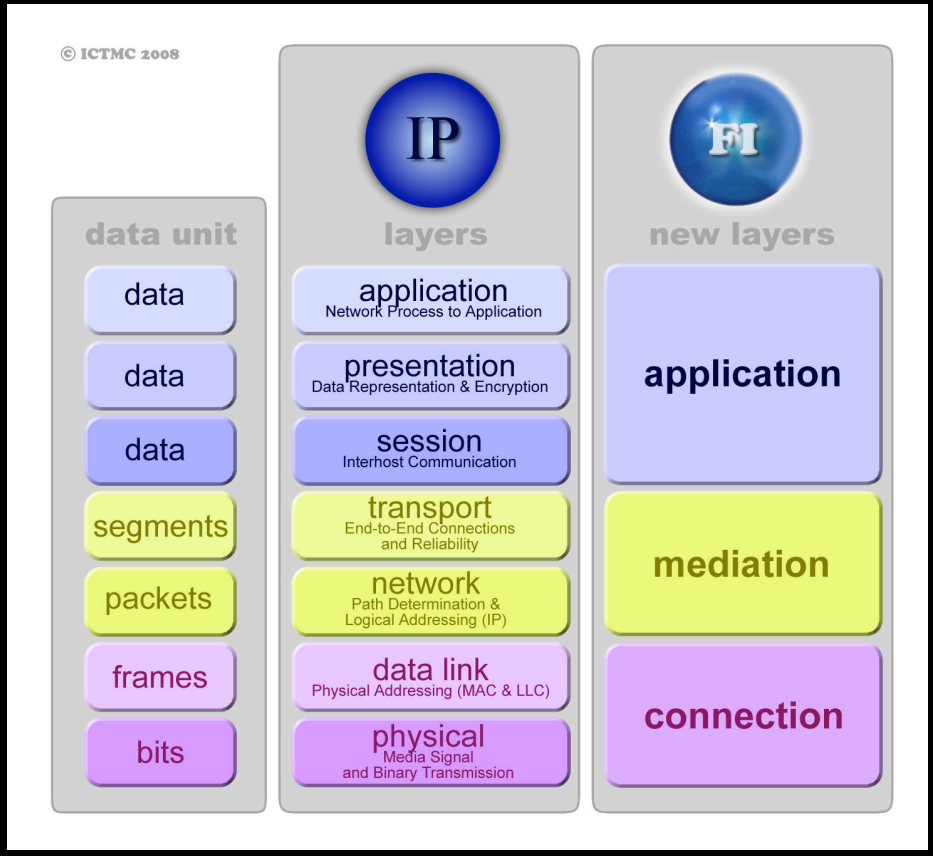
- 3D image analysis
- Adaptive radiation therapy
- Acoustics
- Astronomy
- Audio
- Automobile vision
- Bioinfomatics
- Biological simulation
- Broadcast
- Cellular automata
- Computational Fluid Dynamics
- Computer Vision
- Cryptography
- CT reconstruction
- Data Mining
- Digital cinema/projections
- Electromagnetic simulation
- Equity training
- Film
- Financial - lots of areas
- Languages
- GIS
- Holographics cinema
- Imaging (lots)
- Mathematics research
- Military (lots)
- Mine planning
- Molecular dynamics
- MRI reconstruction
- Multispectral imaging
- nbody
- Network processing
- Neural network
- Oceanographic research
- Optical inspection
- Particle physics
- Protein folding
- Quantum chemistry
- Ray tracing
- Radar
- Reservoir simulation
- Robotic vision/AI
- Robotic surgery
- Satellite data analysis
- Seismic imaging
- Surgery simulation
- Surveillance
- Ultrasound
- Video conferencing
- Telescope
- Video surveillance
- Visualization
- Wireless
- X-ray

FI vs. IP

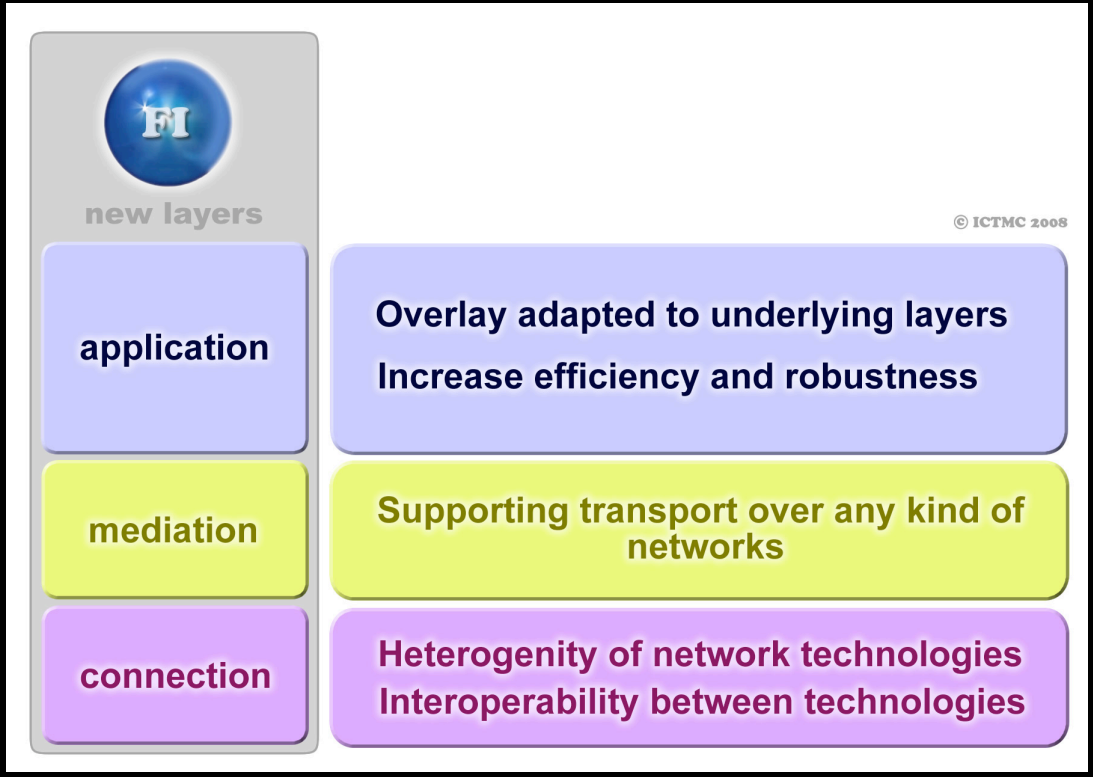
Current OSI Model



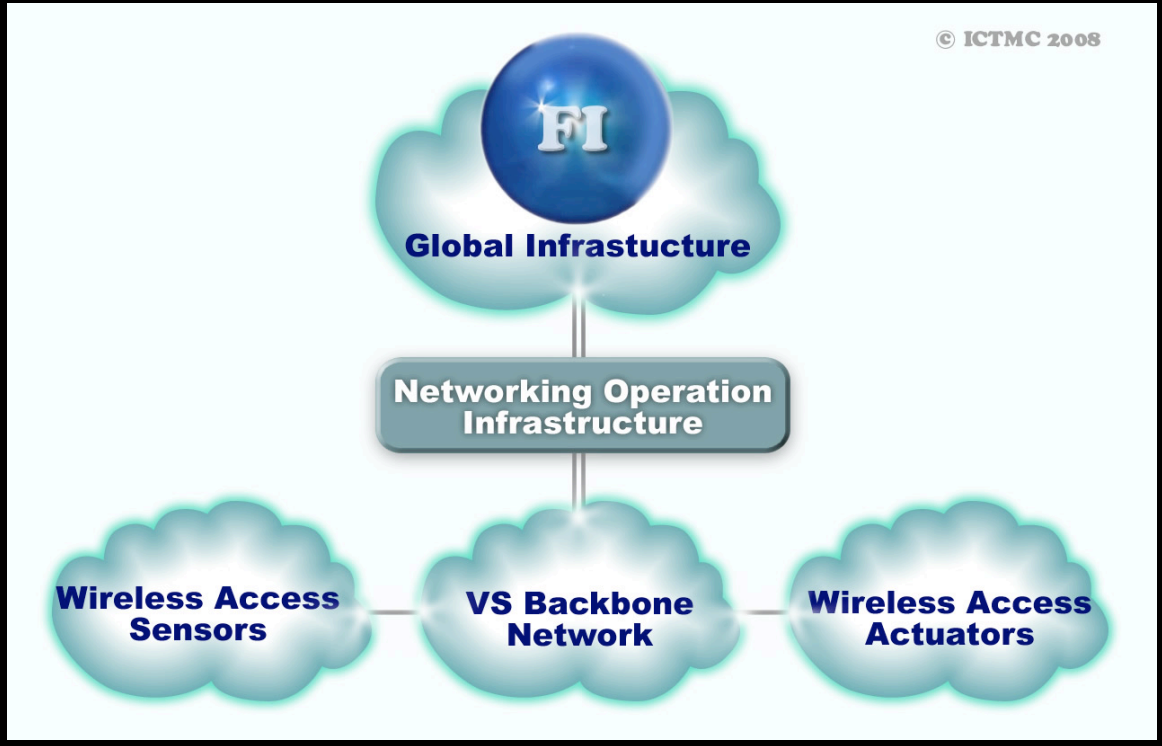
OSI Model vs. FI Model



FI 3-Layers Model



FI: The New Architecture



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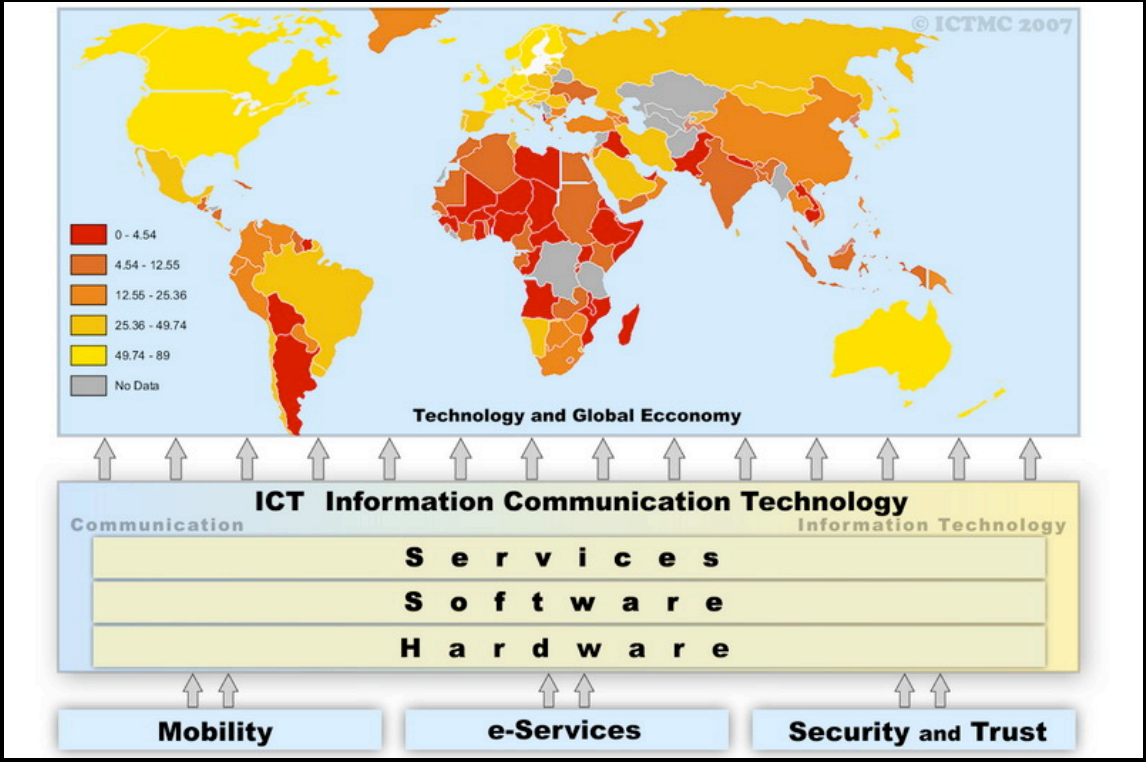
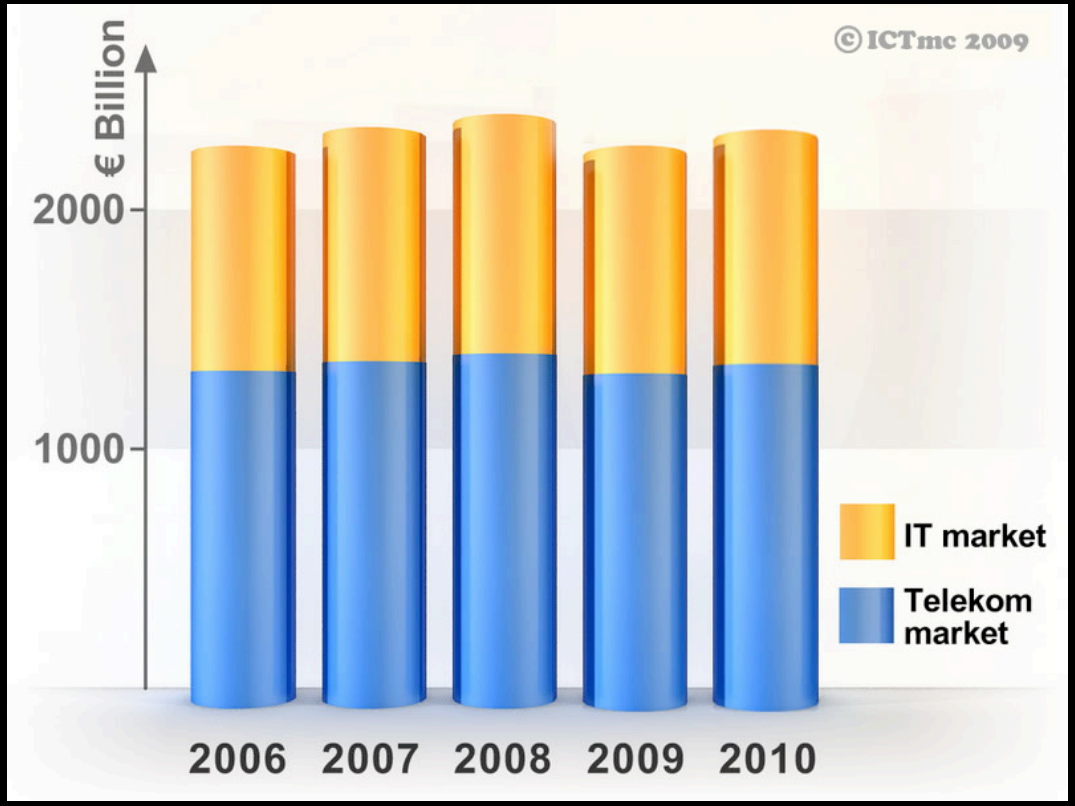
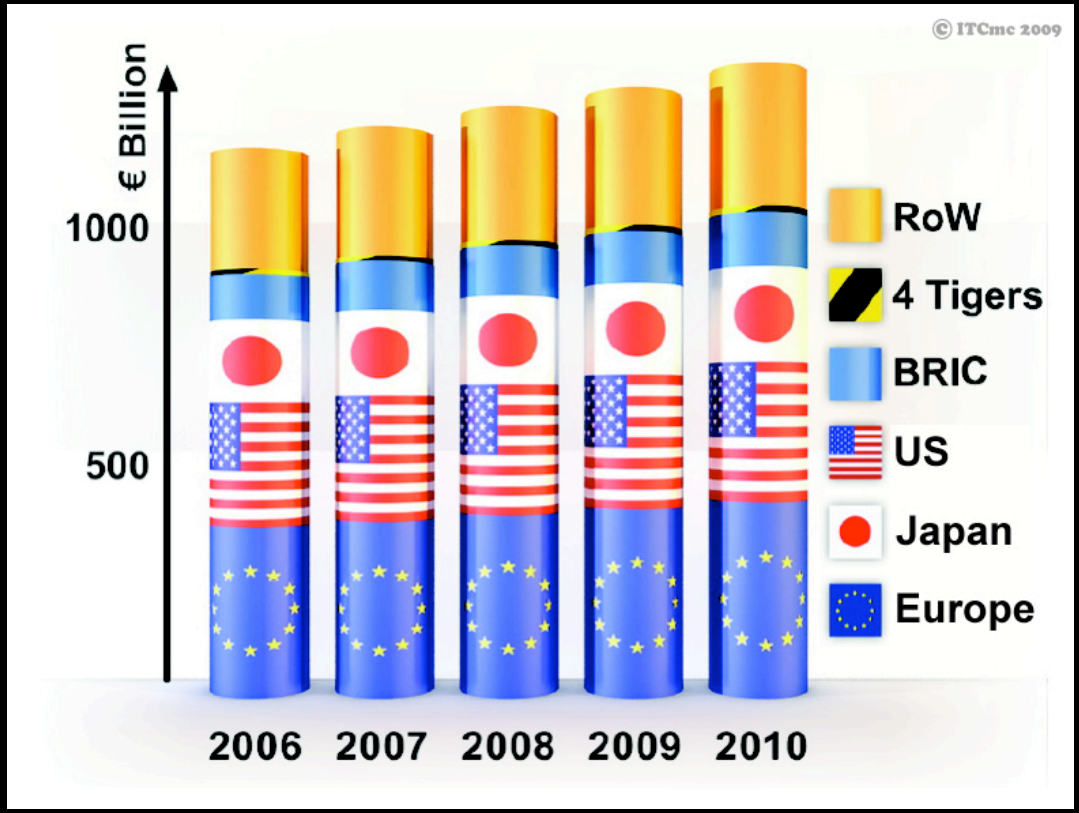
Techno-Economics: The Big Picture



IT & C : ICT Market



Communication Market Worldwide



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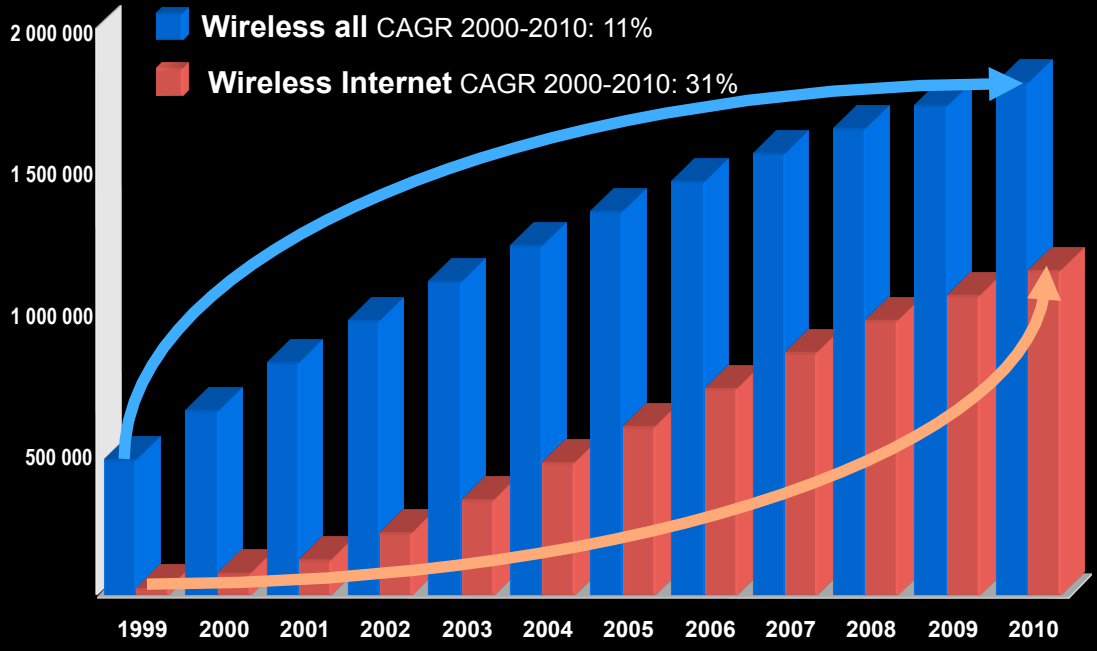
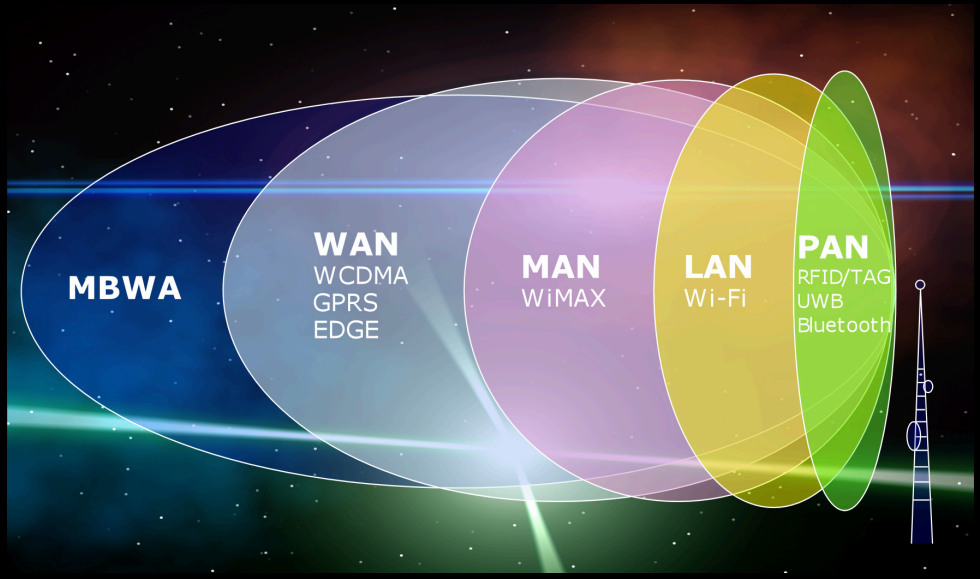
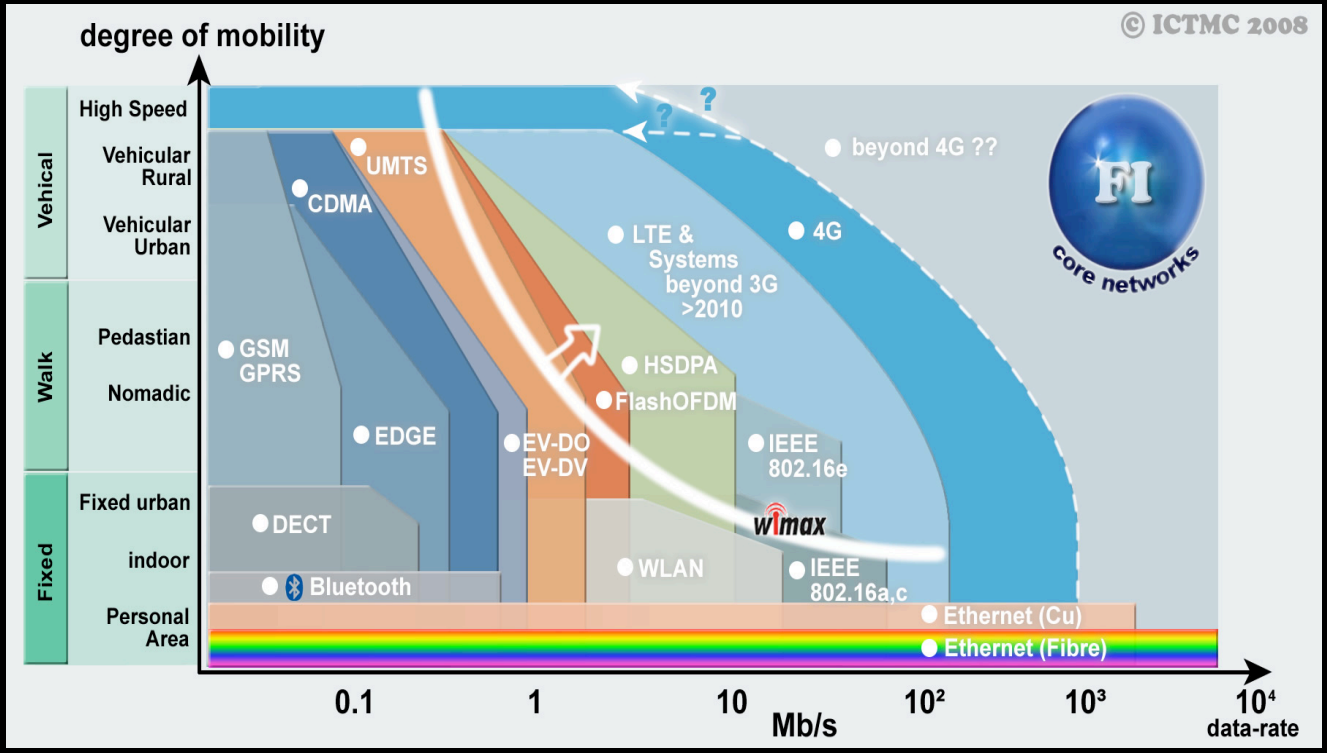
Wireless Internet Access



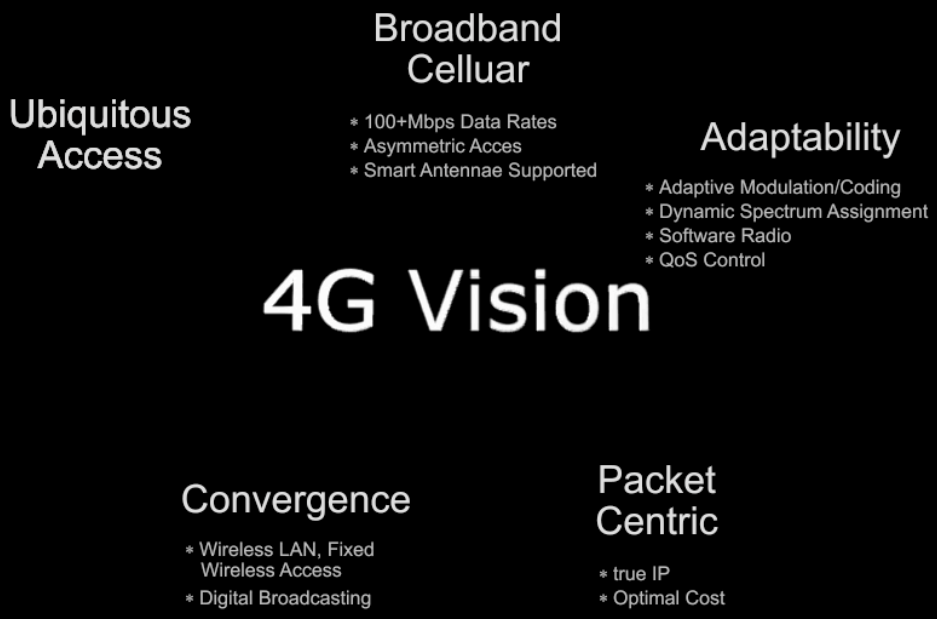
Wireless Standards



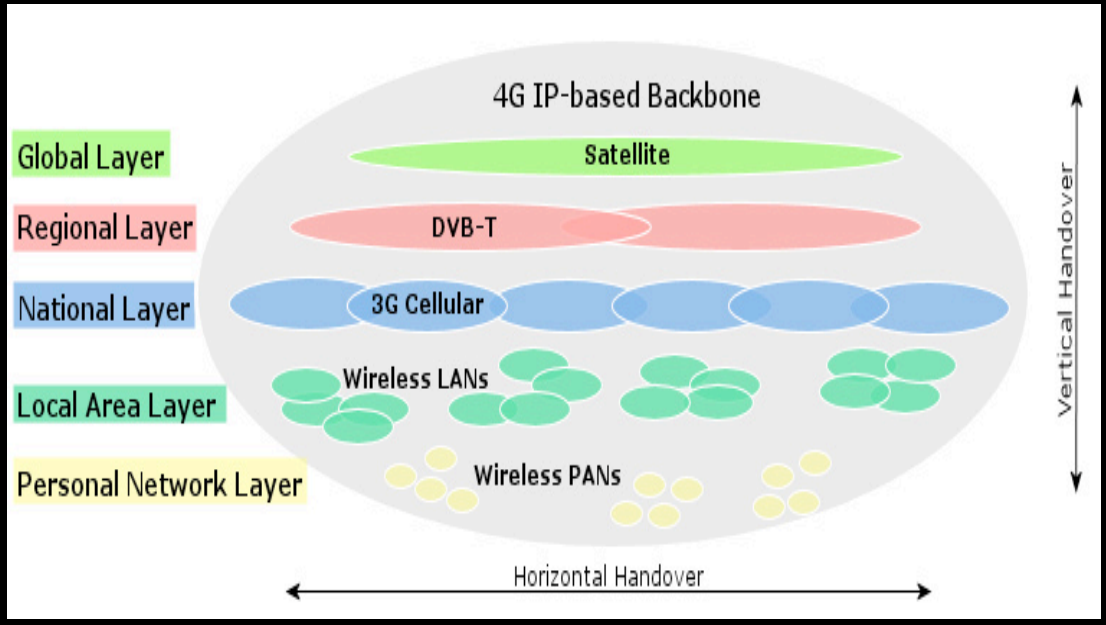
Wireless Technologies / Standards & Mobility



Vision of the 4G



Nightmare of Heterogeneous Networking



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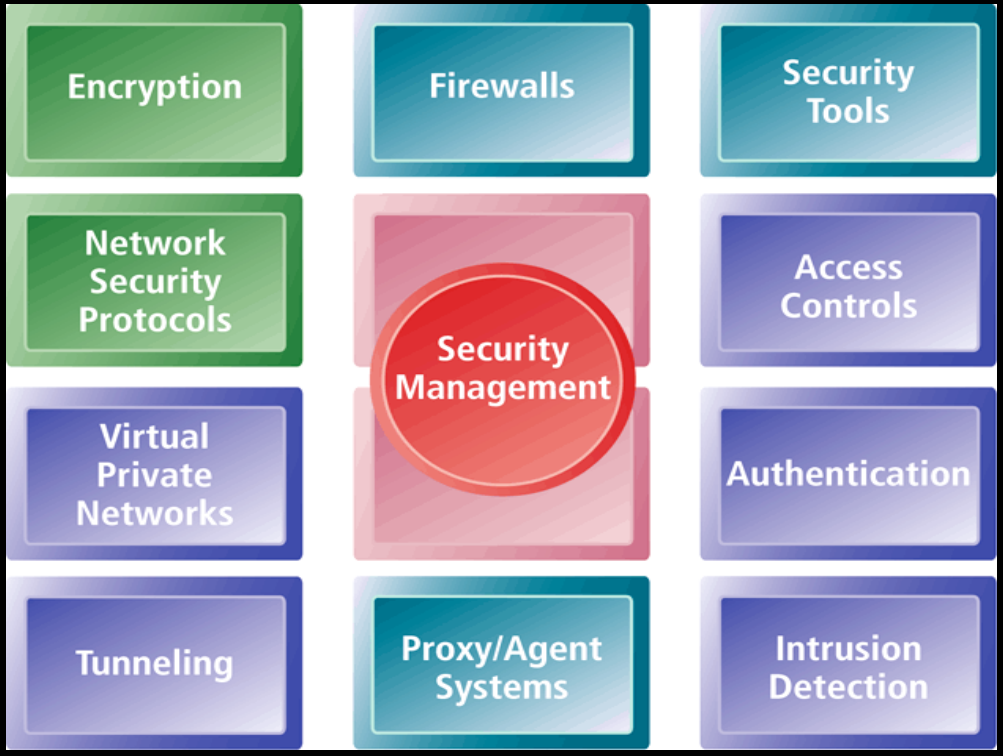
Do we have

SECURITY ?

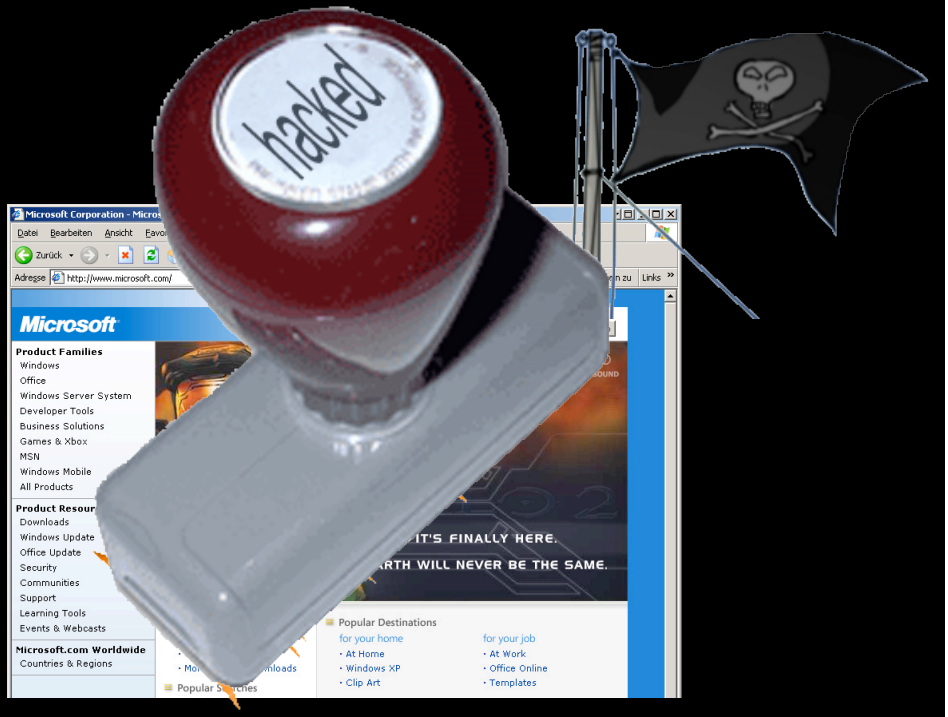
Tools Available to Achieve Site Security



NASA – www.nasa.gov

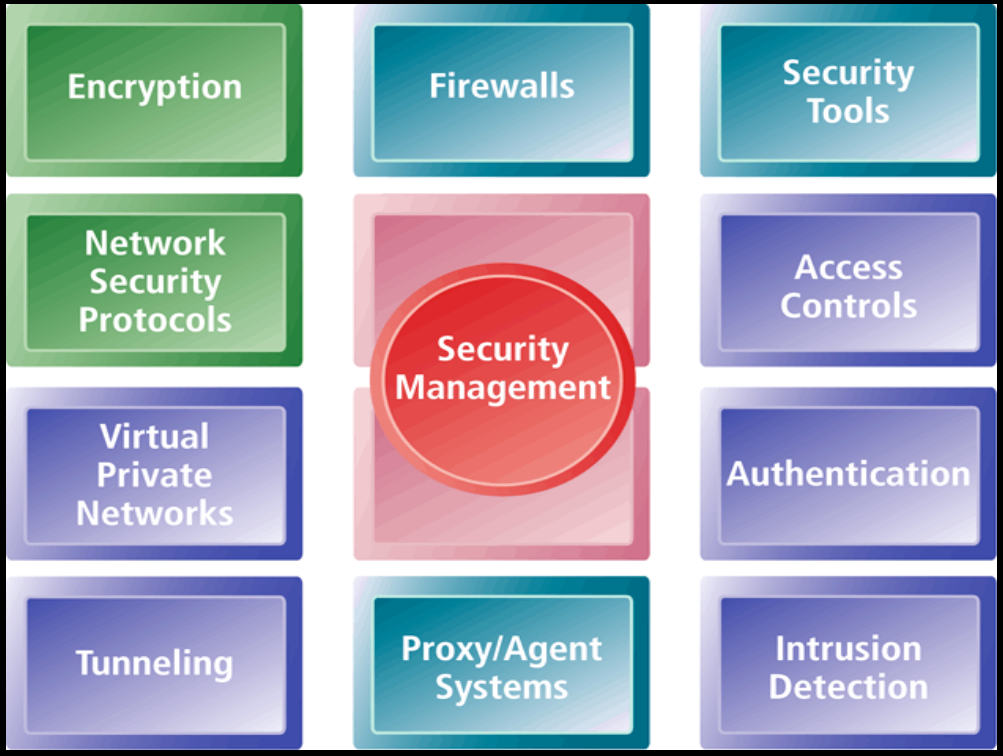
CNN – www.cnn.com

NSA – www.nsa.gov

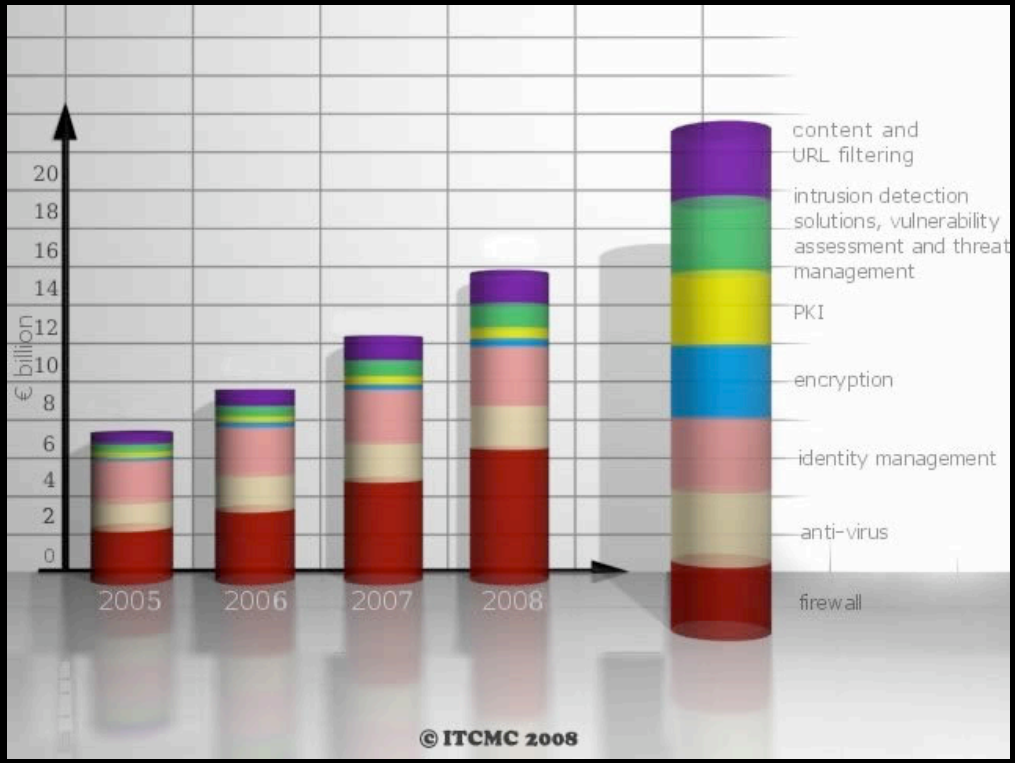


Microsoft - www.microsoft.com

Security Bla Bla ….
Tools Available to Achieve Site Security



Split-Out of the ICT Security Market



Balance: A and C

SECURITY

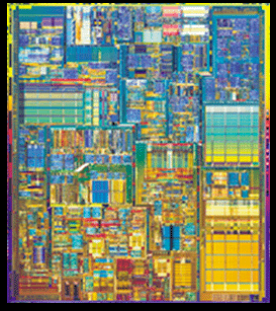
The

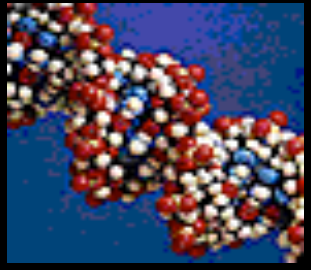
R & D Trends

Information may take different physical forms…

… mechanical,

… or electronic,





… or bio-molecular,

… or quantum, etc.

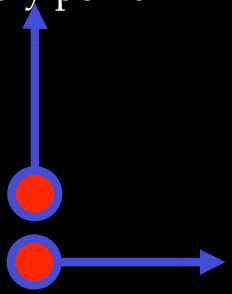
There is no information without a physical carrier, and no computation without a physical process.

The laws of physics dictate what computations can b

Classical Bit

A classical bit is, at every point in time:

- either in state 1:
- or in state 0:



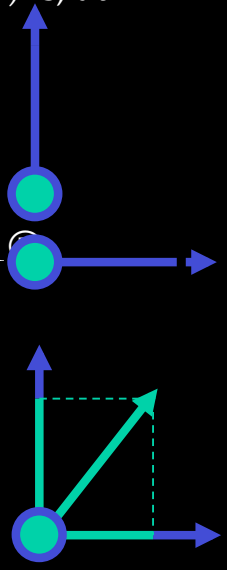
State of a classical bit: $b \in \{0,1\}$

B ist ein element aus dem wertbereich 0 or 1

Quantum Bit

A quantum bit (« qubit ») is, at every point in time:

- either in basis state $|1®$
- or in basis state $|0®$:
- or in a superposition state, i.e. at the same time $|1®$ and $|0®$:



State of a qubit:

$|\psi® \in E$

where E is a 2-dimensional vector space

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System of the Year:
Properties / Performance Paramaters:

SOB
BB- Wireless
Core : FI with
Best P.
Best TMN of HN
Best Security and Trust
+ 4G
+ 380 mph
+ Seamless HO
+ 3S

System of the Year

The Industry Dream for 2012

- *SOB*
- *BB- Wireless*
- *Core : FI with*
  - *Best A.*
  - *Best TMN of HN*
- *Best Security and Trust*
- *+ 4G*
- *+ 380 mph*
- *+ Seamless HO*
- *+ 3S*

Thank You

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