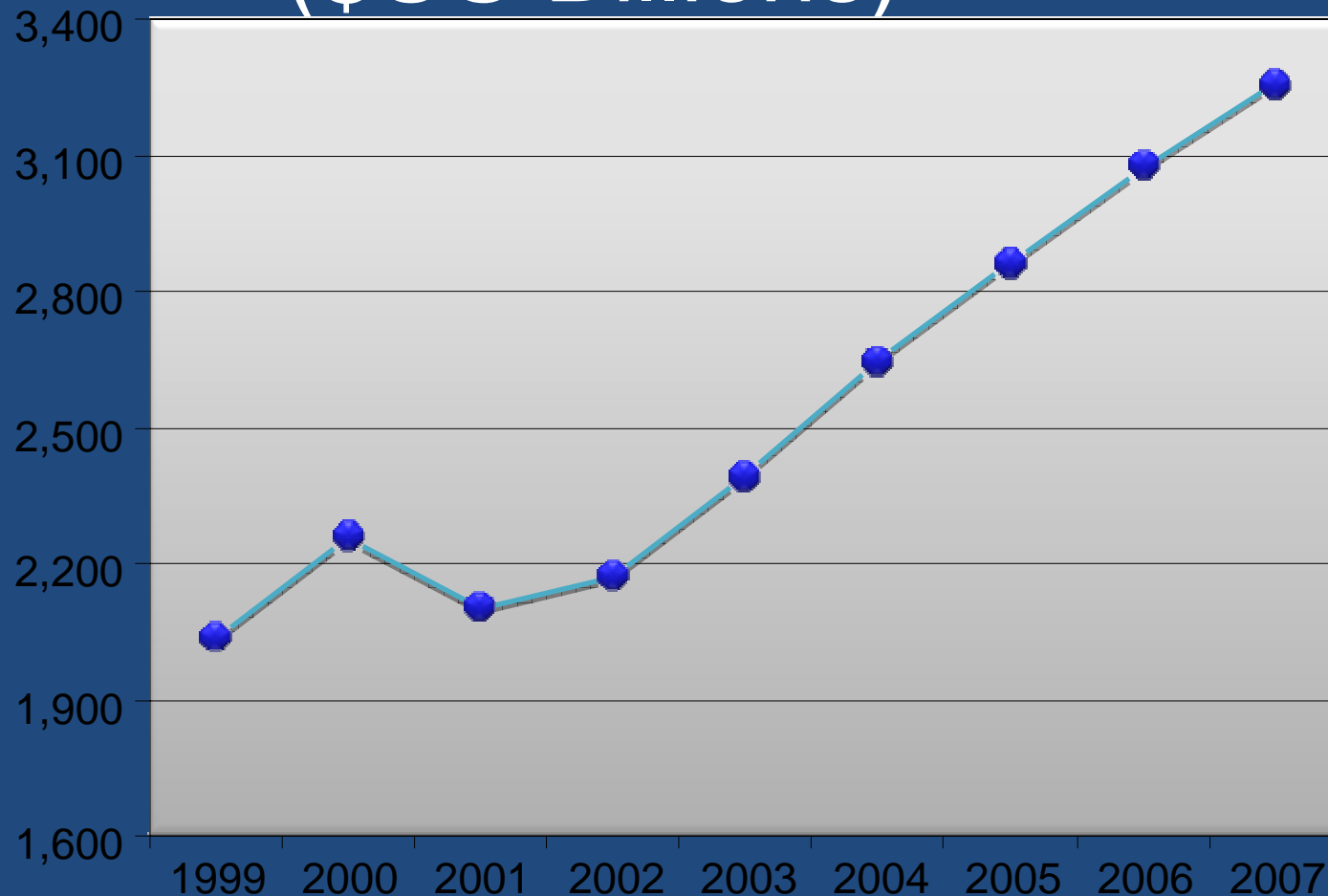


The Next Revolution in Global Communications and Information Markets—Implications for Global Governance

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The Market Stakes are Very Big: Global ICT Spending (\$US Billions)



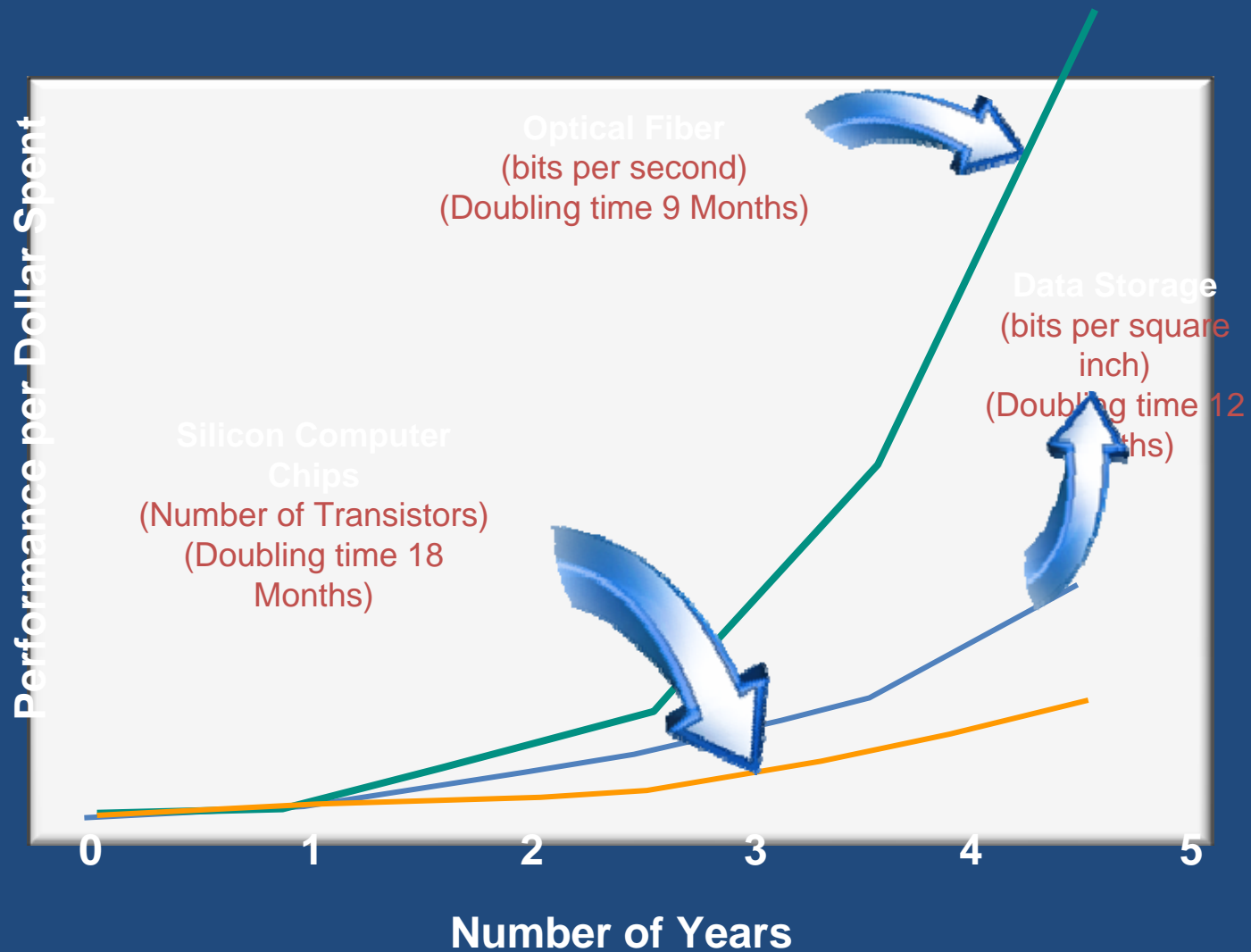
Source: WITSA's 2004, Digital Planet: The Global Information Economy.

The Foundations of this “Inflection Point” (a fundamental shift) for ICT

- Modular architecture – policy builds standardized interfaces—like Legos building blocks: Goal is mix and match innovation
- Cheap revolution—
 - Microelectronics: processing, storage & terminals
 - Communications: Ubiquitous broadband
 - Software: Last ten years
 - Digital content: last seven years



The Cheap Revolution

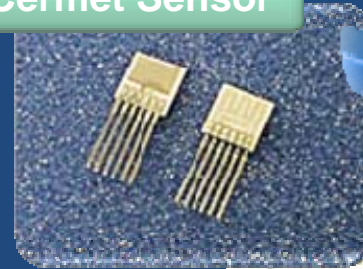


Breakthroughs on Environmental Monitoring Systems through “Laboratories on a Chip”



\$ 300,000

Cermet Sensor

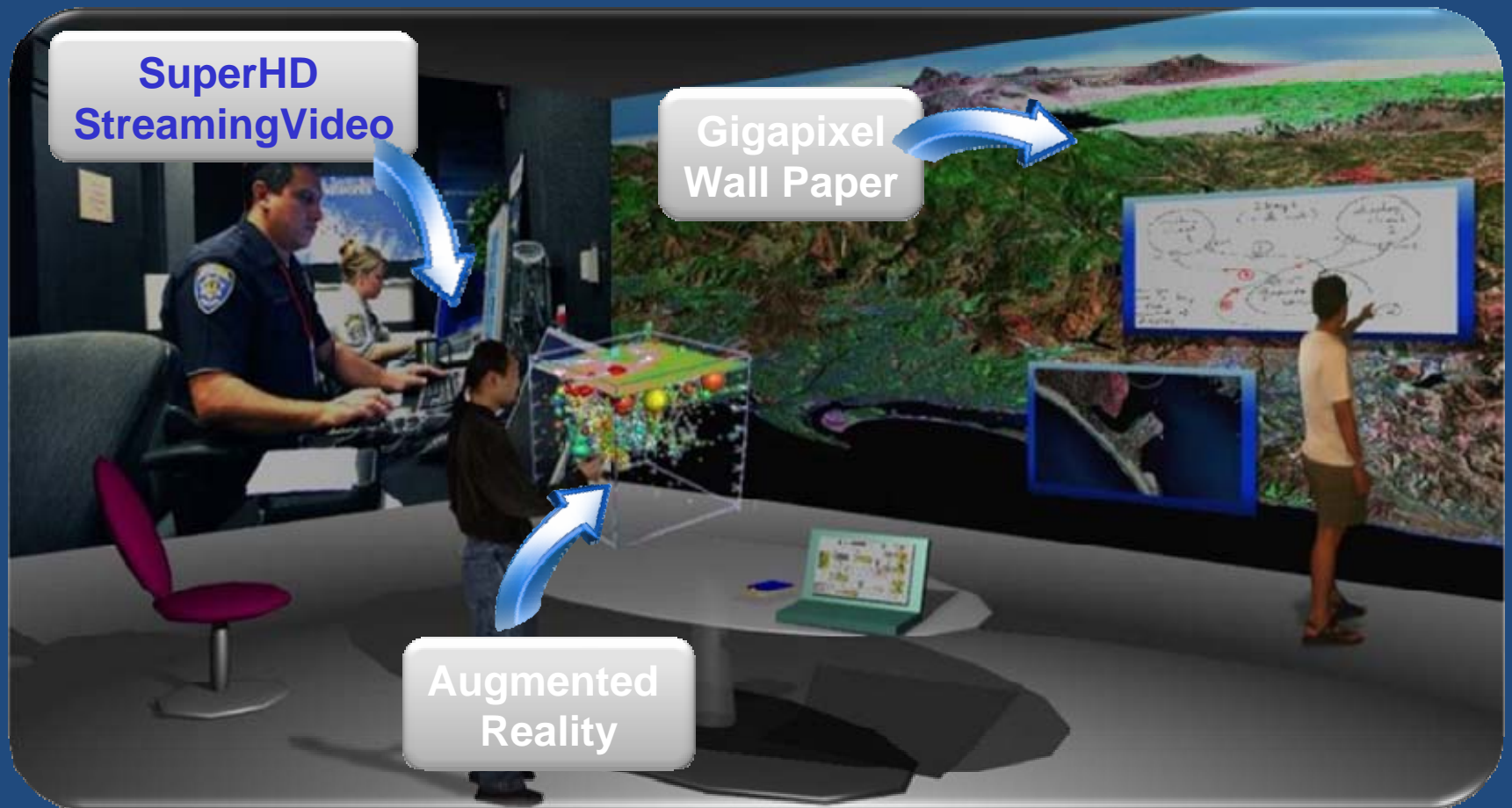


\$ 10

The Internet of Things

- IBM estimate: Networked terminals will grow from 24 billion to 1 trillion by 2012
- Novel architectures and services require flexible spectrum and regulatory arrangements

An Innovation Vision for the Future: Towards Gigabit/s Research Nets



**SuperHD
StreamingVideo**

**Gigapixel
Wall Paper**

**Augmented
Reality**

1 GigaPixel x 3 Bytes/pixel x 8 bits/byte x 30 frames/sec ~ 1 Terabit/sec!

Source: Jason Leigh, EVL, UIC

Predicting Bandwidth Utilization and Innovation

- The 1 gigabit/second research networks lead “high end” commercial use by about 7 years
- The research networks lead “high end” consumer use by about 12 to 15 years
- The leading edge use for pictures and sound today is illegal sharing of movies and music
- The leading edge tomorrow will be interactive visual and data applications for work and personal uses



In 1997 the money was in voice telephone services—not now

- In 2008 (the Web 2.0) turning information into dollars is driving innovation in information networks
 - Digital ad revenues=\$45 billion
 - Print and broadcast ads=\$360 billion
- Ads tied to search are the first and easiest target—but many new forms of making money on information will follow
 - Personal health care information
 - Audio-visual content (YouTube is only the start)

Three Implications of Technology

- Anti-competitive behavior is harder as modularity emerges
 - BAT principles are a requisite for modularity
- Pricing can be totally surprising—e.g., VoIP may mean that voice is free but basic rate for broadband data may increase
- Service applications respect no boundaries—audio-visual digital content services ignore national regulations

There will be a variety of institutions involved in governance

- Should take advantage of industry or non-governmental governance systems as long as they are subject to government review
- WTO advantages:
 - Scheduling system allows countries to make “modular” commitments (X, but not Y)
 - Reference paper allows creation of binding principles to harmonize essential requirements of national policy while allowing considerable freedom for particular rules implementing the principles

Light touch regulation to promote next generation of broadband

- User cooperatives can share costs of investing in dark fiber and fixed mobile build out: Requires countries to have regulations that facilitate network sharing among users and interconnect right to backbone network—both BTA commitments
- Spectrum—Use BTA to promote service and technology neutrality for spectrum and schedule commitments to allow commercial resale of spectrum.

Next Generation Interconnection

- Next Generation Peering Policy—how to deal with viruses that could corrupt networks? Could grant peering only to networks that are certified as “secure”
 - Create BTA requirement that governments may only set functional security requirements—not particular technologies—that are least burdensome for trade
 - Allow industry associations to administer the safety certification
 - Allow third party suppliers (value added suppliers) to provide security functions for networks
- Mobile services: Freedom of terminal attachment and terminal software for broadband

How BTA could address Audio-Visual

- Liberalize cross-border A-V service market while allowing rules to encourage localism, pluralism, and diversity of content—
- Distinguish Push (broadcast) vs. Pull (Internet downloads)—at least liberalize “pull”
- Transparent subsidies for local content that are least burdensome for trade—a “bit tax”?

Is Personal data portable?

- Telecom carriers are moving to become providers of enhanced web services and information storage—many of these services involve considerable co-investment by users
 - Personal health web services
- If you switch from NTT to Google, can you move the personal data stored on NTT website?: This is the equivalent to number portability.