

# “The world is moving from an industrial to an information economy”

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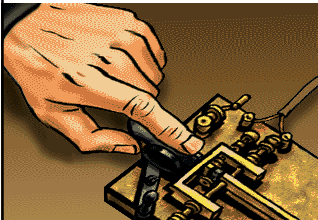
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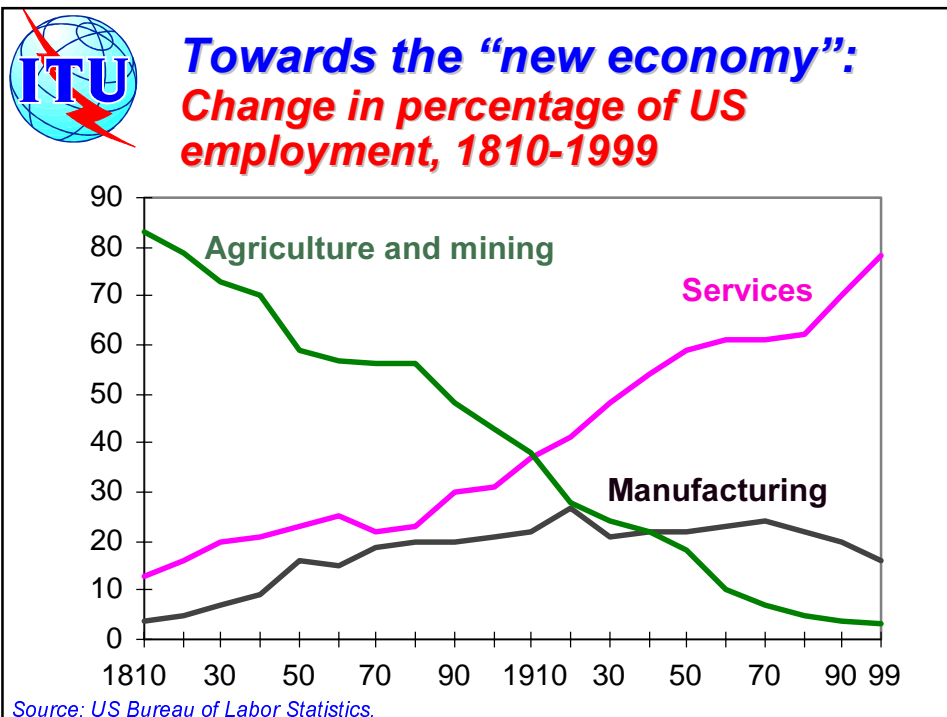
## *The world is moving from an industrial to an information economy*

- **The evidence**
  - ⇒ **The rise of the “new economy”**: information-based, network-driven and global in nature
- **The “new economy” network**
  - ⇒ **IP-based networks**
  - ⇒ **Privately-owned and operated**
  - ⇒ **“Light touch” regulation**
- **Some consequences and possible costs**
  - ⇒ **The nature of the “new economy” network**
  - ⇒ **Uneven patterns of investment in IP networks**
  - ⇒ **New gaps opening up between developed and developing countries?**

**“No revolutions in technology have as visibly marked the human condition as those in transport... Yet technologies to transport *ideas and information* across long distances have arguably achieved even more: they have spread knowledge and are the basis for economic growth”**



**The Economist,  
Millennium edition**





## **The “New Economy” is a world in which:**

- people work with their brains instead of their hands;
- communications technology creates global competition;
- innovation is more important than mass production;
- investment buys new concepts or the means to create them, rather than new machines;
- rapid change is a constant.

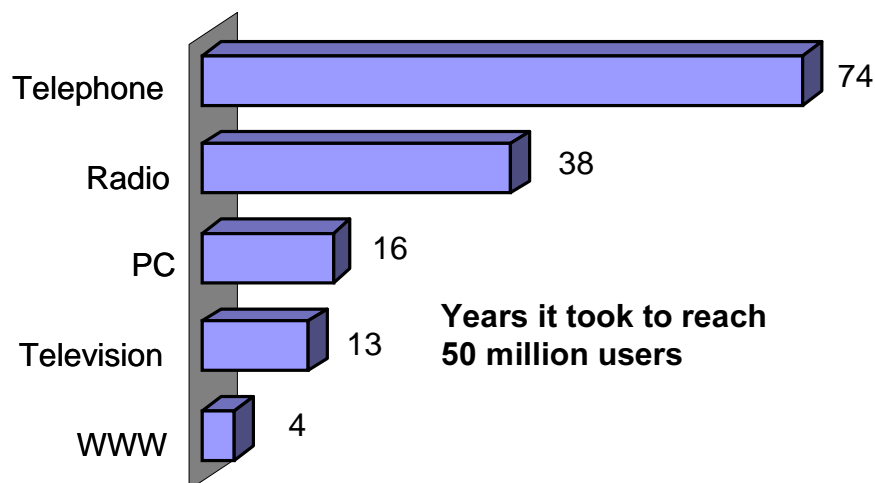
**A world so different, its emergence can only be described as a revolution.**



*Source: Wired Magazine, “The Encyclopaedia of the New Economy”, [www.hotwired.com](http://www.hotwired.com).*



## **Accelerating pace of diffusion**



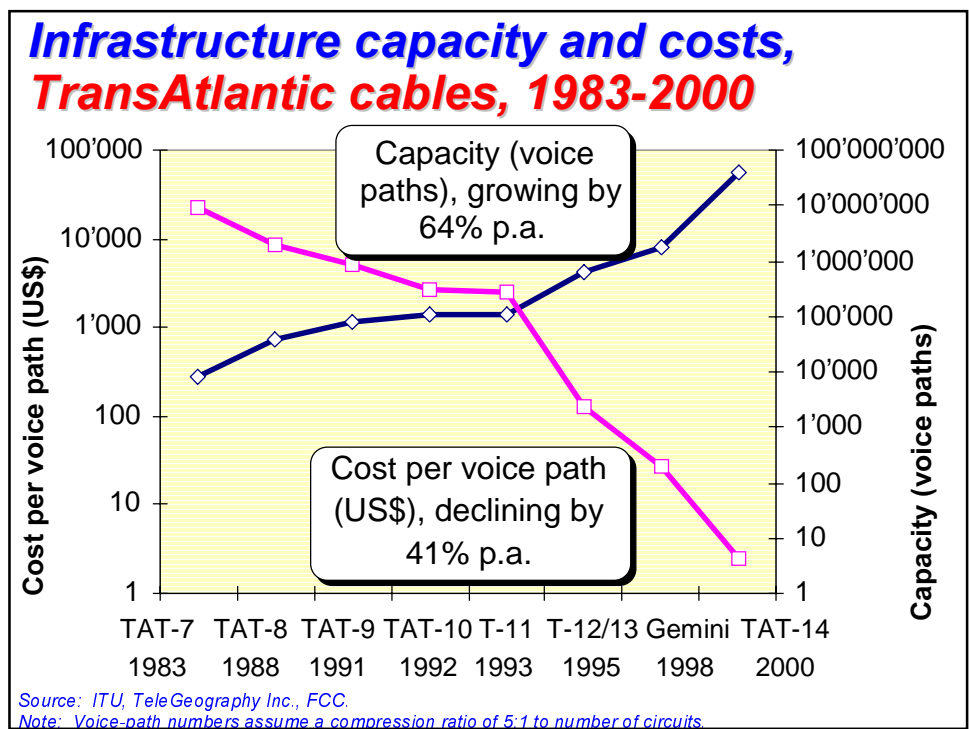
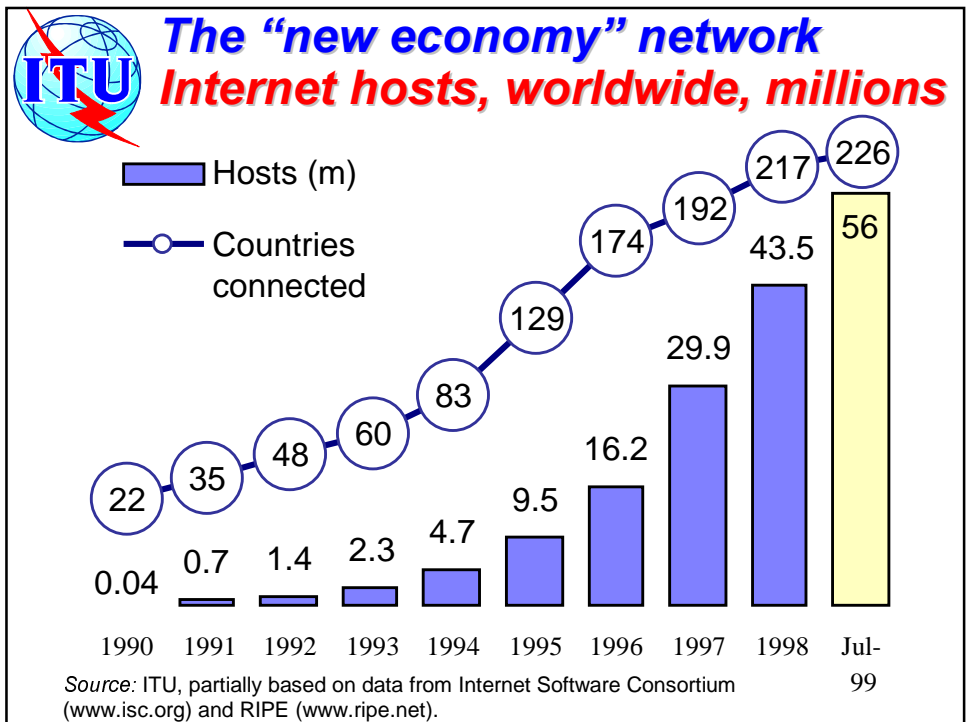
*Source: ITU 1999 “Challenges to the Network: Internet for Development”*

**Selected “new economy” corporations,  
ranked by market capitalisation, Jan 2000**

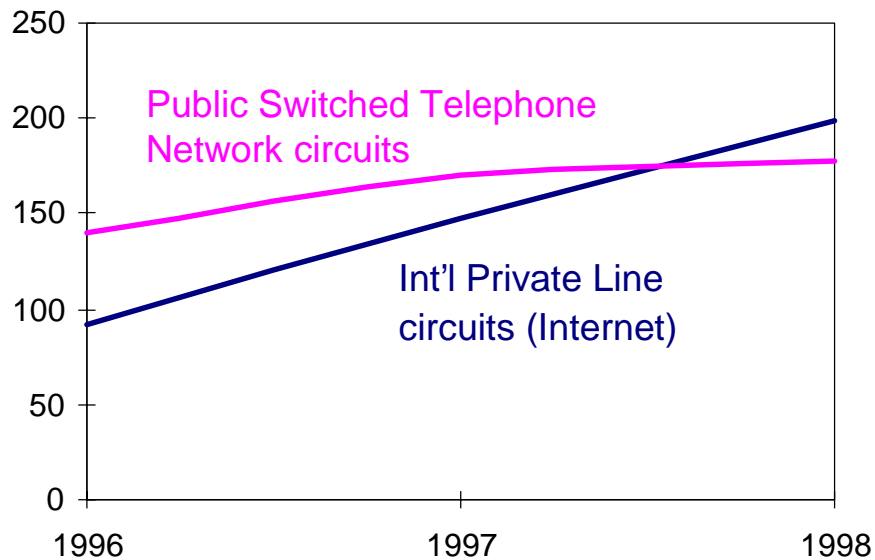
| <i>Company</i>         | <i>Market capitalisation</i> |
|------------------------|------------------------------|
| <b>Microsoft</b>       | <b>US\$564 bn</b>            |
| <b>GE</b>              | <b>US\$497 bn</b>            |
| <b>Cisco</b>           | <b>US\$348 bn</b>            |
| <b>NTT DoCoMo</b>      | <b>US\$312 bn</b>            |
| <b>AOL-Time Warner</b> | <b>US\$254 bn</b>            |

**Selected “new economy” corporations,  
ranked by market capitalisation, Jan 2000**

| <i>Company</i>         | <i>Market capitalisation</i> | <i>Equivalent country<br/>(in terms of GDP)</i> |
|------------------------|------------------------------|---|
| <b>Microsoft</b>       | <b>US\$564 bn</b>            | <b>Spain</b>                                    |
| <b>GE</b>              | <b>US\$497 bn</b>            | <b>India</b>                                    |
| <b>Cisco</b>           | <b>US\$348 bn</b>            | <b>Netherlands</b>                              |
| <b>NTT DoCoMo</b>      | <b>US\$312 bn</b>            | <b>Switzerland</b>                              |
| <b>AOL-Time Warner</b> | <b>US\$254 bn</b>            | <b>Belgium</b>                                  |



## **Out with the old; in with the new: Usage of International circuits, in thousands**



*Note: Based on usage of circuits between the US and the rest of the world. Source: FCC.*

## **“Old economy” and “new economy” networks: What’s the difference?**

### “Old economy” network

- Hybrid analogue/digital
- Circuit-switched
- Highly regulated
- Priced per minute
- Distance-sensitive pricing
- Generally state-owned and operated
- Accounting rate system means cash flows from net traffic generating to net traffic receiving countries

### “New economy” network

- All digital
- IP (packet-switched)
- Largely unregulated
- Priced per megabyte
- Distance-insensitive pricing
- Generally privately-owned and operated
- Peering and transit system means cash flows from net traffic receiving to net traffic generating countries

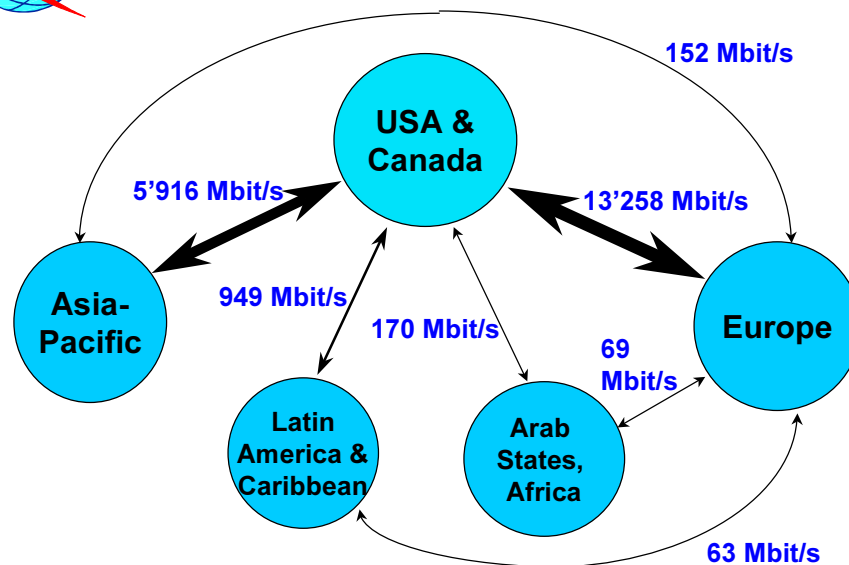


## Some features of the “new economy” network

- >95 per cent of global IP capacity passes through United States
- 96 out of top 100 websites in the United States
- Developing countries wanting to hook up to US IP backbone must pay both half-circuits of the leased line
- Smaller ISPs must pay bigger ones for transit
- Accelerating returns to scale
  - ⇒ high volume routes have lowest unit costs
  - ⇒ big hubs get bigger
  - ⇒ resources go to the strong



## Inter-regional Internet backbone



Source: TeleGeography Inc., Global Backbone Database. Data valid for Sept. 1999.



## Top Internet cities, Ranked by Int'l IP bandwidth (Mbit/s) available per 1'000 inhabitants

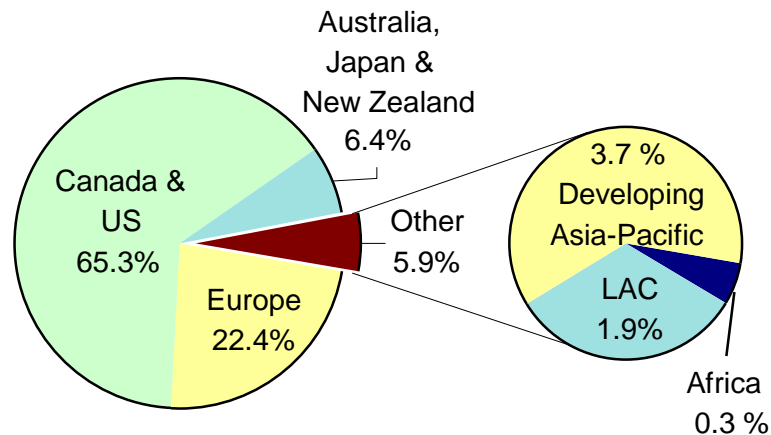
| <i>World</i>  |       | <i>Asia-Pacific</i> |      |
|---------------|-------|---------------------|------|
| Geneva        | 15.06 | Tokyo               | 0.31 |
| Amsterdam     | 9.81  | Sydney              | 0.19 |
| Washington DC | 7.36  | Auckland            | 0.16 |
| Brussels      | 5.54  | Kuala Lumpur        | 0.15 |
| Toronto       | 5.38  | Singapore           | 0.15 |
| San Francisco | 5.37  | Taipei              | 0.12 |
| Seattle       | 4.98  | Osaka               | 0.10 |
| Frankfurt     | 3.00  | Seoul               | 0.10 |
| Stockholm     | 2.84  | Hongkong            | 0.08 |

Source: ITU, adapted from TeleGeography Inc. Global Backbone Database. Data valid for Sept. 1999.

## Global distribution of IP hosts is uneven

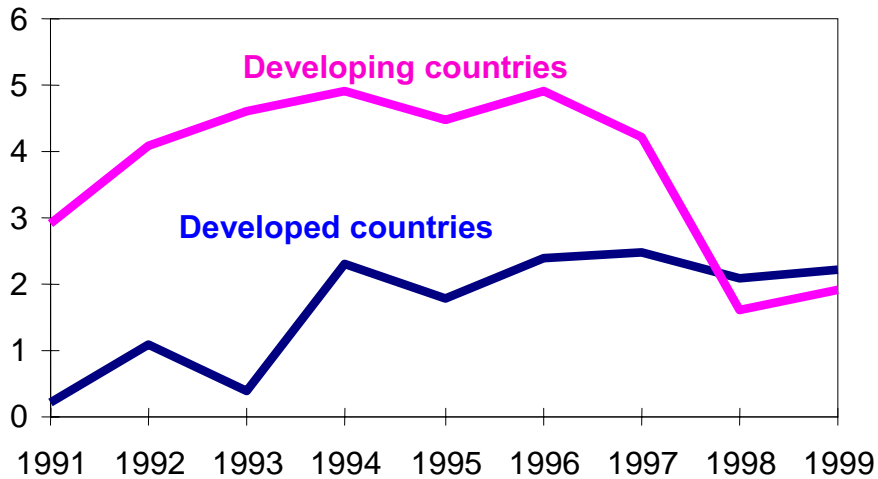
**Developed:**  
94 % of hosts  
16 % population

**Developing:**  
6 % of hosts  
84 % population



Source: ITU 1999 "Challenges to the Network: Internet for Development"

**Is the “new economy” changing the nature of the development gap?**  
**GDP growth per capita, 1991-1999**



Source: IMF



**Conclusions:**  
**Towards the new economy**

- **Long-term trends (post-war period)**
  - ⇒ Rise of services employment
  - ⇒ Development of info-communication networks
  - ⇒ Information as a means for creating wealth
  - ⇒ Gap between rich and poor narrowing
- **Short-term trends (latter half of 1990s)**
  - ⇒ Development of information-based economy
  - ⇒ IP-based networks eclipsing voice-based networks
  - ⇒ Elevated stock market valuations for “dot.com” companies
  - ⇒ Gap between rich and poor widening