

# Towards the future: What next for Telecom Businesses?

**Dr Tim Kelly, ITU  
Wednesday Session 1  
CTO Senior management  
seminar: Telecoms  
restructuring and business  
change  
Malta, 17-21 May, 1999**



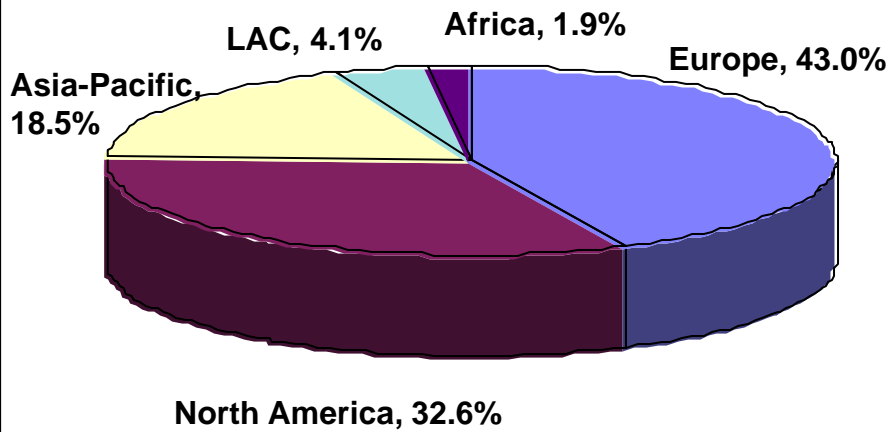
*The views expressed in this paper are those of the author and do not necessarily reflect the opinions of the ITU or its membership. Dr Kelly can be contacted at [Tim.Kelly@itu.int](mailto:Tim.Kelly@itu.int).*



## **Agenda**

- **The current international telecoms market**
- **Forecasting by projection of current trends**
  - ⇒ **Market trends**
  - ⇒ **Price trends**
  - ⇒ **Infrastructure trends**
- **Forecasting by identifying discontinuities**
  - ⇒ **Rise of the Internet**
  - ⇒ **Mobile / Fixed substitution**
  - ⇒ **Erosion of the accounting rate system**
- **The international telecoms market in 2005**

**International traffic by origin, 1997**  
**Global total, 81.8 billion minutes**



Note: "LAC" = Latin America & Caribbean. Source: ITU/TeleGeography "Direction of Traffic" Database.

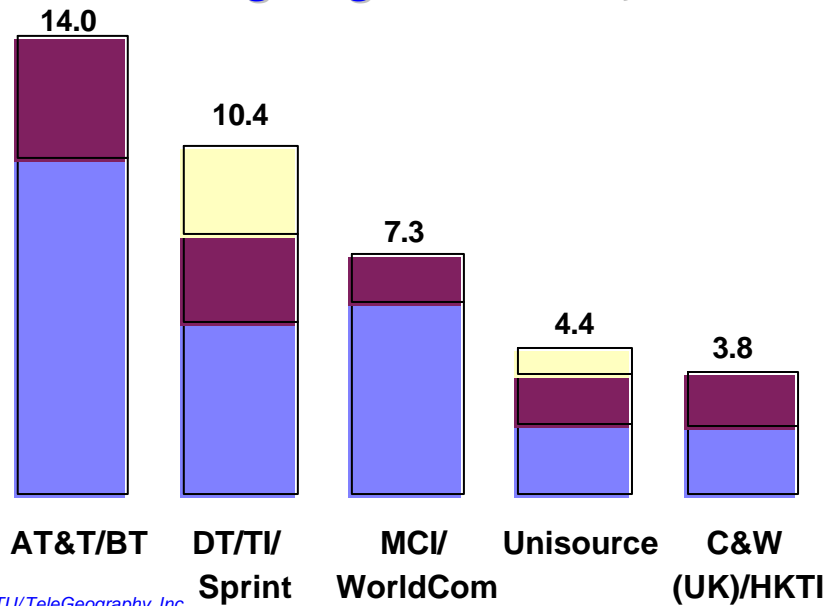


**Top ten international telecom carriers, 1997 (billions of minutes)**

<b>AT&amp;T</b>	<b>US</b>	<b>10.3</b>
<b>MCI / WorldCom</b>	<b>US</b>	<b>7.3</b>
<b>Deutsche Telekom</b>	<b>Germany</b>	<b>5.3</b>
<b>BT</b>	<b>UK</b>	<b>3.7</b>
<b>France Telecom</b>	<b>France</b>	<b>3.5</b>
<b>Sprint</b>	<b>US</b>	<b>2.8</b>
<b>Telecom Italia</b>	<b>Italy</b>	<b>2.4</b>
<b>Swisscom</b>	<b>Switz.</b>	<b>1.9</b>
<b>C&amp;W Comms</b>	<b>UK</b>	<b>2.1</b>
<b>Stentor</b>	<b>Canada</b>	<b>1.8</b>

Source: ITU/TeleGeography Inc.

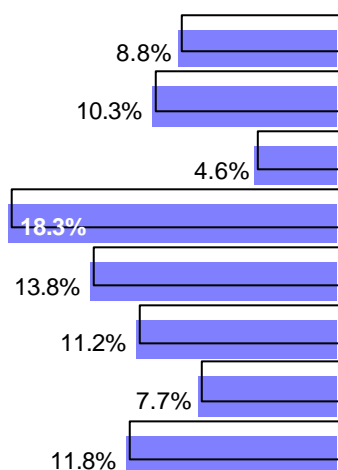
## Major alliances, ranked by billions of minutes of outgoing int'l traffic, 1997



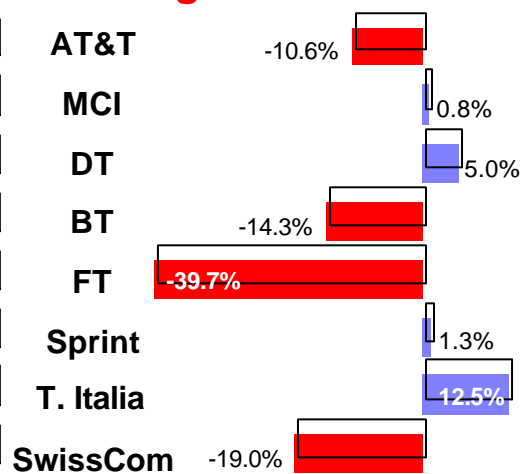
Source: ITU/TeleGeography Inc.

## Top 8 international carriers, 1996/97

### Growth in traffic



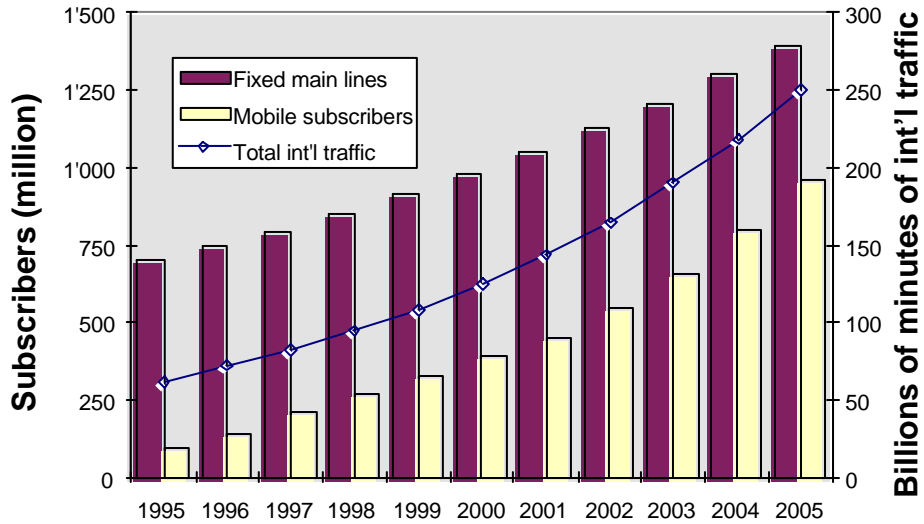
### Change in int'l revenue



Source: ITU, TeleGeography Inc.

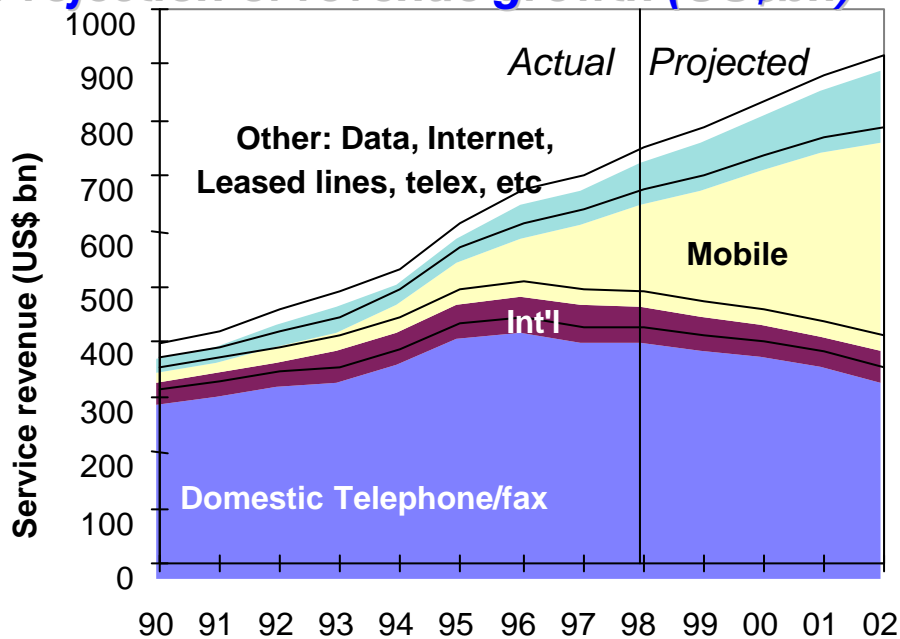
Note: Revenue change is based on dollar figures and may be different if expressed in local currency.

## Projection of growth trends, fixed and cellular subscribers and int'l traffic, 1995-2005



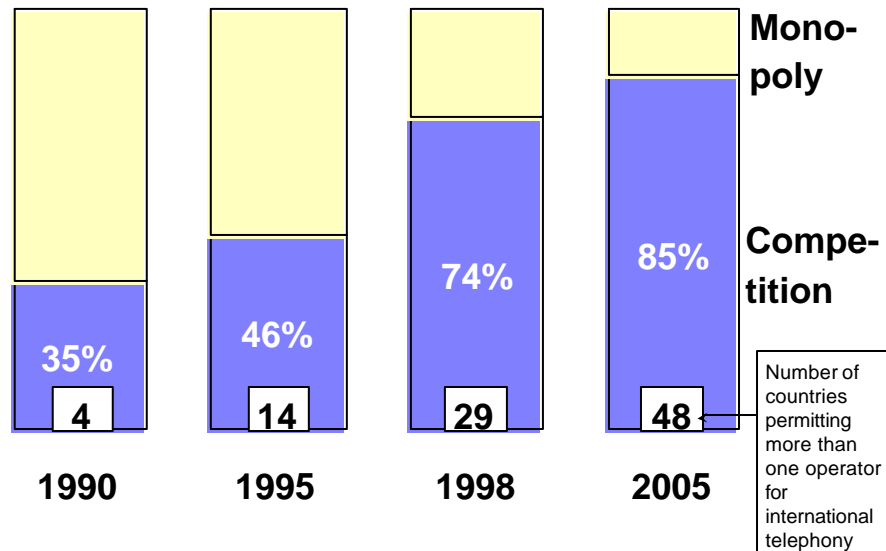
Source: ITU.

## Projection of revenue growth (US\$bn)



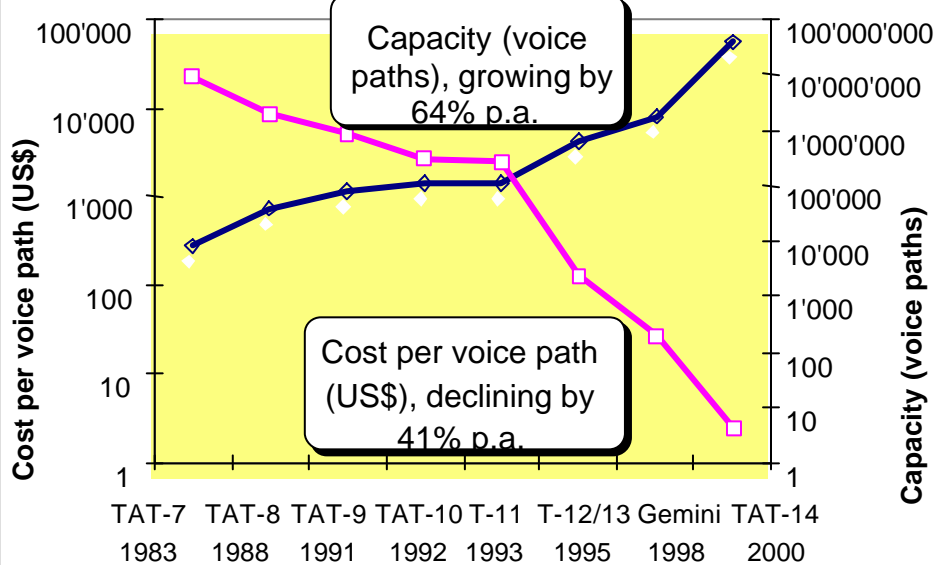
Source: ITU.

## Percentage of outgoing international traffic open to competition



Note: Analysis is based on WTO Basic Telecommunications Commitments and thus presents a minimum level of traffic likely to be open to competitive service provision. Source: ITU, WTO.

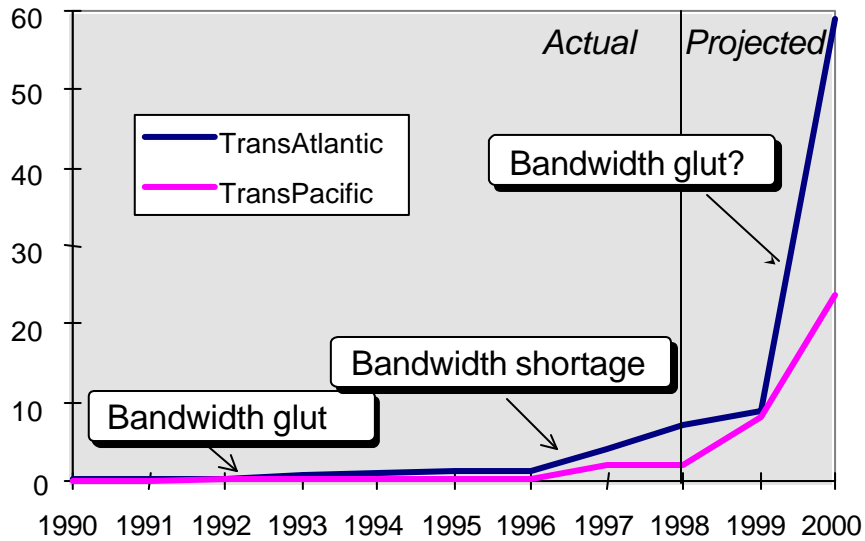
## Infrastructure capacity and costs, TransAtlantic cables, 1983-2000



Source: ITU, TeleGeography Inc., FCC.

Note: Voice-path numbers assume a compression ratio of 5:1 to number of circuits.

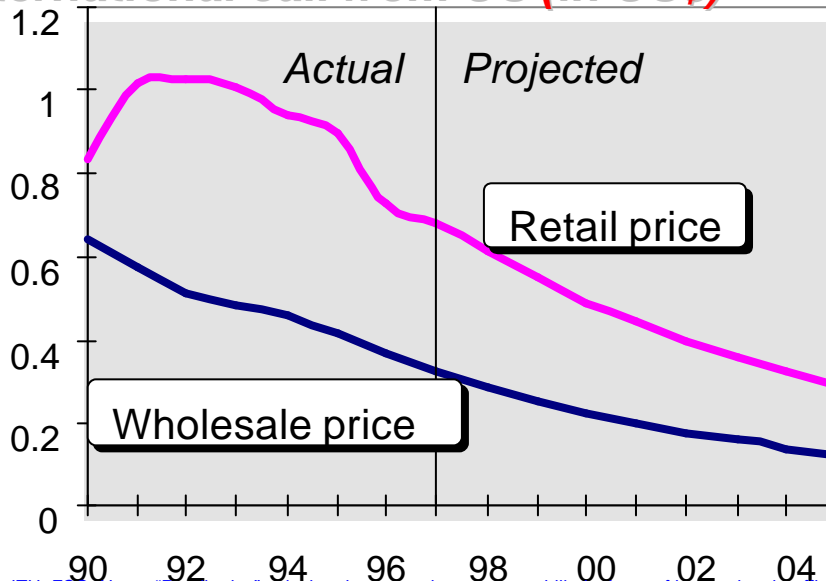
## Infrastructure capacity, TransAtlantic & TransPacific, in millions of voice-paths



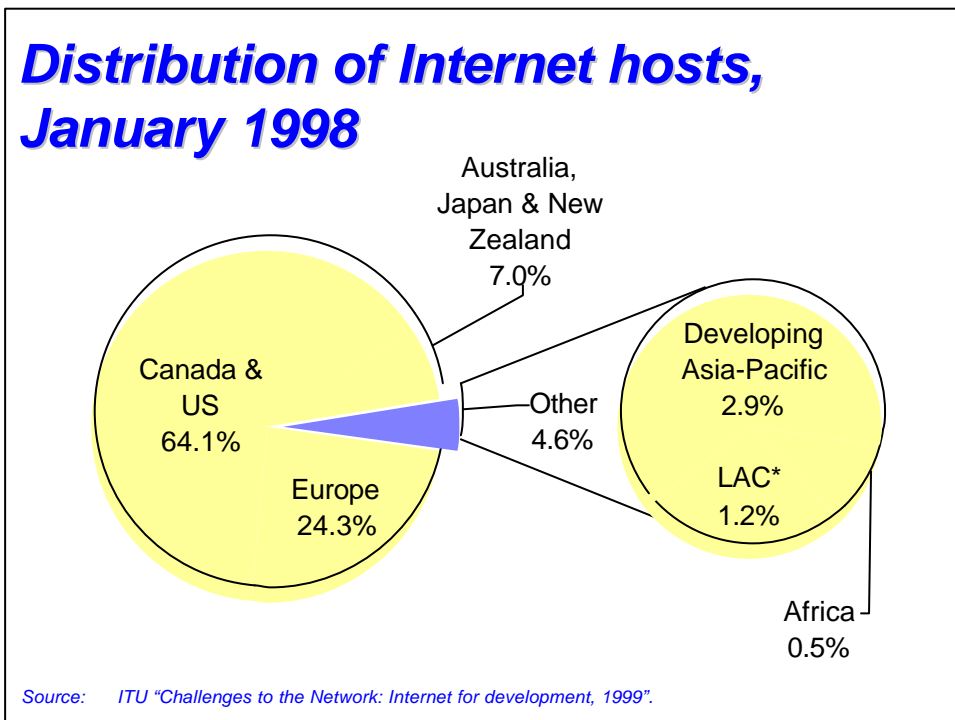
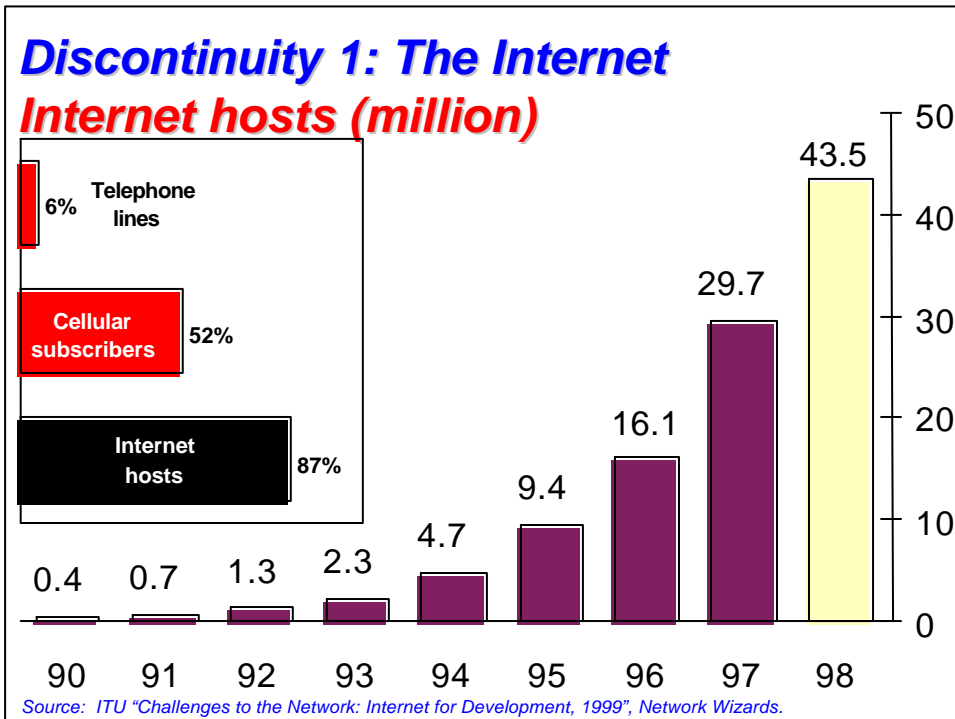
Source: ITU, TeleGeography Inc., FCC.

Note: Voice-path numbers assume a compression ratio of 5:1 to number of circuits.

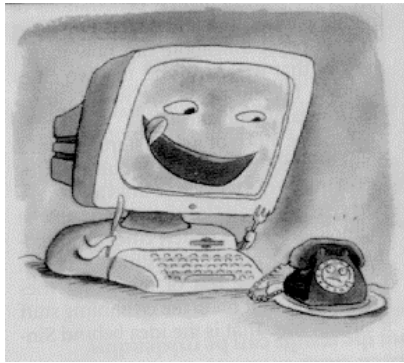
## Price projections: price per minute of international call from US (in US\$)



Source: ITU, FCC. Note: "Retail price" calculated as actual revenue per billed minute of international traffic. "Wholesale price" calculated as weighted average of settlement rate to all US destinations.



**“IP is to communications what the PC was to computing ... it’s that fundamental a shift”**



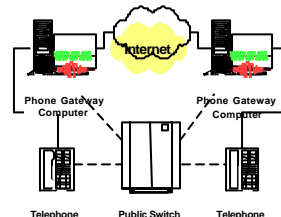
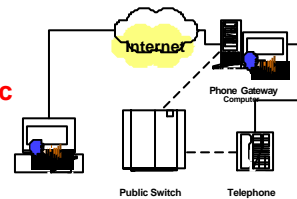
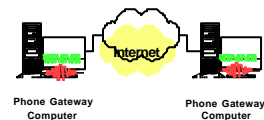
The Economist  
May 2nd 1998

*Dan Schulman,  
AT&T WorldNet Services,  
Quoted in  
Tele.Com, May 1998*



## **Internet telephony: Different modes**

- **Computer to computer Since 1994**  
⇒ **Conversation between two similarly equipped computer users via Internet**
- **Computer to telephone Since 1996**  
⇒ **Internet user interconnecting with Public Telephone Network via an intermediary service provider (e.g., call-back company) or a service provider’s Website**
- **Telephone to telephone Since 1997**  
⇒ **Telephone carrier routes telephone or fax message via a data network (Internet, frame relay) rather than via the Public Telephone Network**







## Discontinuity 2: Mobile / Fixed Substitution

Most mobile users currently also have a fixed line telephone. **But, in the longer term:**

- **Substitution of traffic**

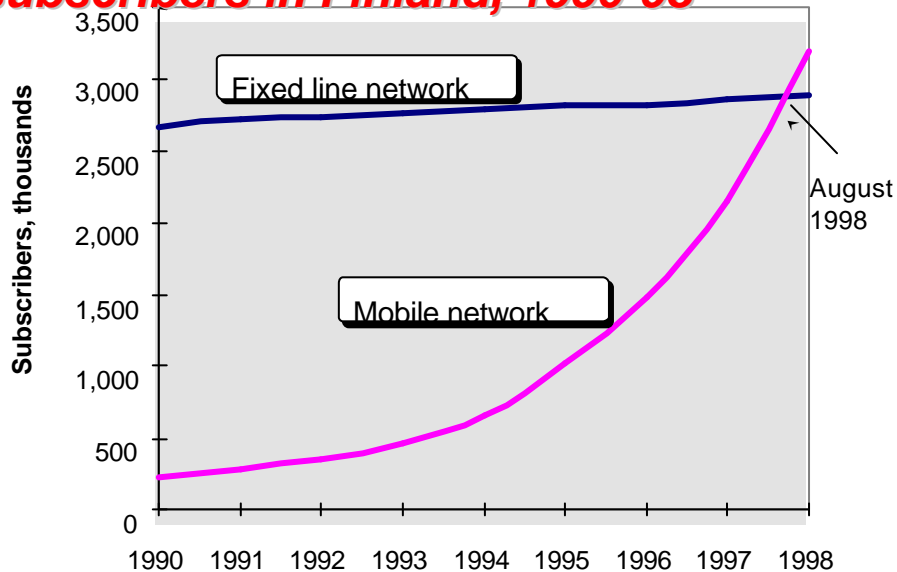
- ⇒ Users making calls from mobile instead of from fixed-line telephone
- ⇒ Mobile users making calls to other mobile users

- **Substitution of subscriber base**

- ⇒ New users (e.g., teenagers) choosing mobile connection without buying fixed line
- ⇒ Users with both mobile and fixed line giving up fixed line to save on monthly costs

*When will mobile calls be cheaper than fixed-line?*

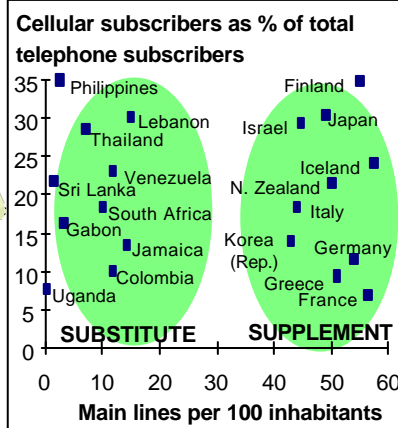
## Cross-over point. Fixed lines and mobile subscribers in Finland, 1990-98



Source: ITU "World Telecommunication Indicators Database".



## Mobile/fixed line substitution



- In some countries, wireless is already substituting for wired service
- Characterised by low levels of fixed-line density with competitive wireless markets
- Also where fixed-line network damaged



## Discontinuity 3: Erosion of the accounting rate system

- Accounting rate system has prevailed for more than 100 years
  - ⇒ Based on revenue-sharing between operators
- New market entrants prefer to pay domestic interconnect charges
  - ⇒ Pressure towards cost-oriented rates
  - ⇒ Internet has no end-to-end settlements
- BUT, developing countries highly dependent on net settlement payments
  - ⇒ Transfers worth some US\$7-10 billion per year, much of which is used for equipment purchases

**Two alternative scenarios:  
ITU Focus Group targets, by teledensity (T), to be achieved by 2001 (2004)**

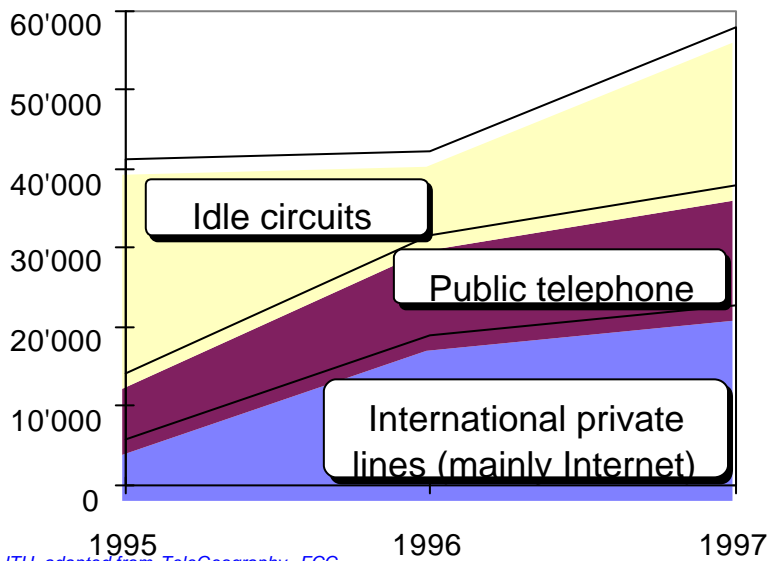
T < 1	1 < T < 5	5 < T < 10	10 < T < 20	20 < T < 35	35 < T < 50	T > 50
\$0.45	\$0.35	\$0.29	\$0.23	\$0.16	\$0.12	\$0.06

**FCC Benchmarks, by income group**

Low income, T < 1	Low income	Low-mid income	Upper-mid income	High income
\$0.23	\$0.23	\$0.19	\$0.19	\$0.15
2002	2001	2000	1999	1998

Source: ITU Focus Group Report, FCC.

**Traffic already shifting to the Internet.  
Usage of int'l circuits between US & UK, 1995-97**

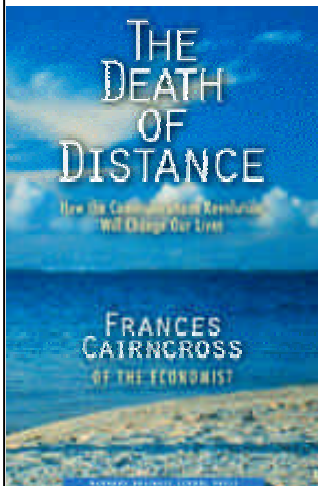


Source: ITU, adapted from TeleGeography, FCC.



## **Forecasting to 2005 by projecting forward current trends**

- **By 2005, there could be:**
  - ⇒ 1.4 billion telephone lines
  - ⇒ 950 million cellular telephone subscribers
  - ⇒ 400-500 million Internet users
- **These could account for:**
  - ⇒ 250 billion minutes of int'l voice/fax traffic
  - ⇒ 2.5 trillion minutes of total voice/fax traffic
  - ⇒ 1'000'000 Gigabits (1 Petabit) per second of Internet traffic
  - ⇒ Services market of around US\$1.1 trillion
  - ⇒ Equipment market of around US\$400 billion



***“The death of distance as a determinant of the cost of communicating will probably be the single most important factor shaping society in the first half of the next century.”***

**Frances Cairncross, “The Death of Distance”, 1997**



## **Forecasting to 2005 by identifying discontinuities**

- **By 2001, less than 10% of int'l traffic will use accounting rate system**
  - ⇒ **Domestic interconnect fees will be dominant mode**
- **Major price cuts in international calls after 2002/2003**
  - ⇒ **Availability of new infrastructures**
  - ⇒ **Impact of Internet pricing model (distance and duration independent)**
- **Mobiles exceed fixed-line phones in OECD countries by 2004/2005**
  - ⇒ **Introduction of "third generation" mobiles after 2000**
  - ⇒ **Generational shift, as new users reject fixed-lines**



## **The int'l telecoms market in 2005: Some educated guesses**

- **The premium of an international call over a domestic call (currently >300%) will be <20%**
  - ⇒ **Internet-like pricing structure**
- **Traffic flows will be dictated by a small number of hubs connected to multiple fat pipes**
  - ⇒ **Major hubs in New York, London and Hong Kong?**
- **Major alliances will own a smaller share of the market as infrastructure owners resell capacity**
  - ⇒ **Market significantly bigger by volume, but only slightly bigger by revenue**
- **Telecom development gap will grow**
  - ⇒ **Gap between middle income countries and LDCs**