

초청강연

21세기 정보통신기술의 발전추세와  
한국의 대응방안 -IMT-2000의  
전망과 과제를 중심으로 -

박 재 하 부사장

(모토로라 코리아 (주))

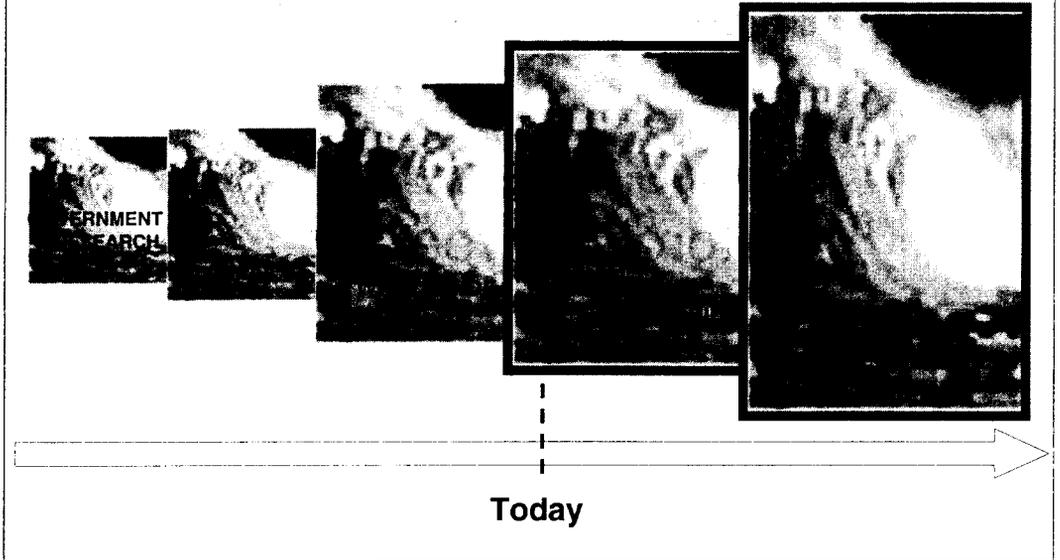
# ***Jae Ha Park***

Vice President,  
Motorola Korea, Inc.

## **Agenda**

- **Seven Global Trends**
- **Korea efforts**
- **Recommendation**

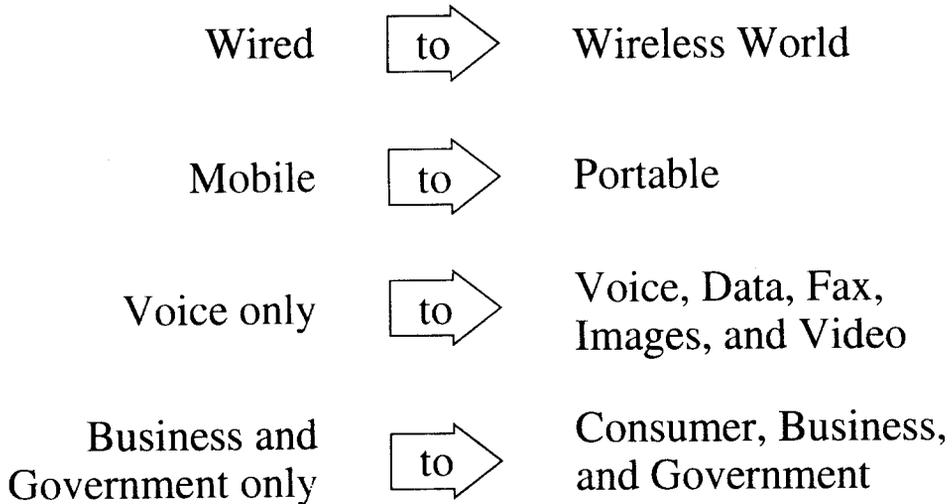
# Internet Waves



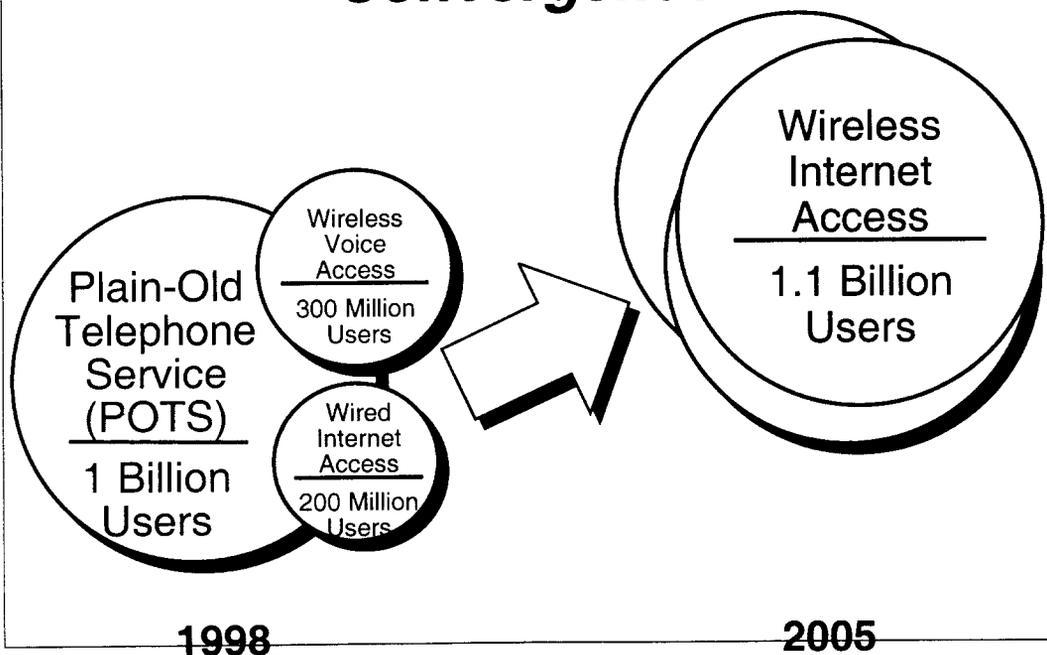
## Essential Element: Allocations (North America)

|               |              |
|---------------|--------------|
| 50 years ago: | 30 MHz       |
| 40 years ago: | 150 MHz      |
| 30 years ago: | 450 MHz Band |
| 20 years ago: | 800 MHz Band |
| 10 years ago: | 900 MHz Band |
| Today:        | 1–3 GHz      |
| Tomorrow: ?   |              |

# Trend #1: Growth in Wireless Communication

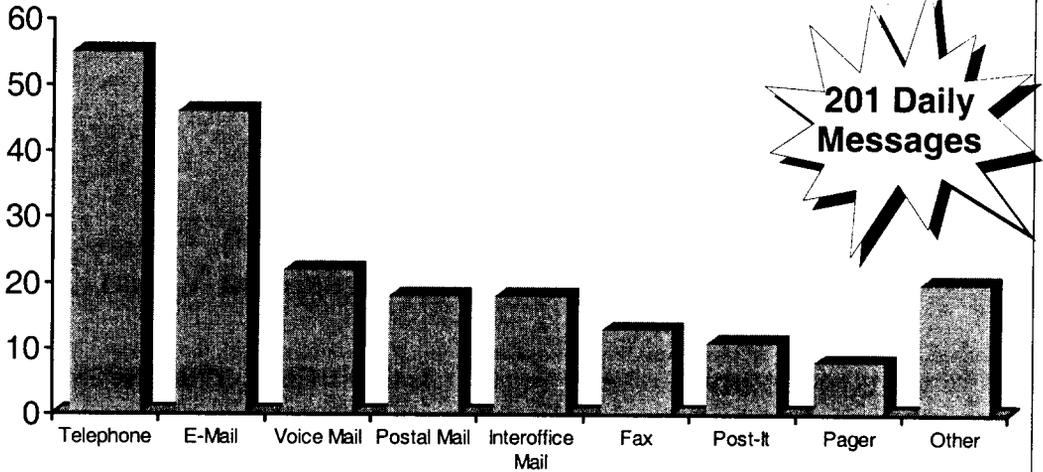


## Convergence



# Content

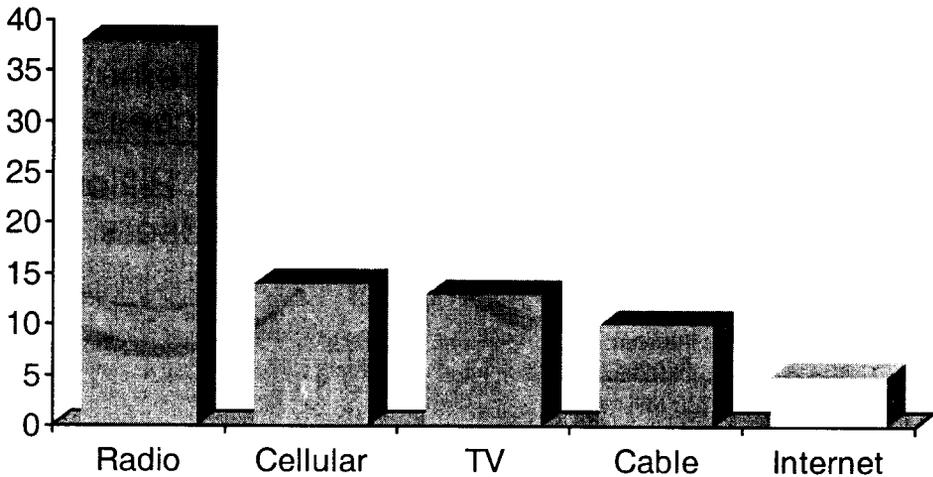
Average Daily Total Messages (Office Workers)



Source: Pitney Bowes Inc.: Institute for the Future

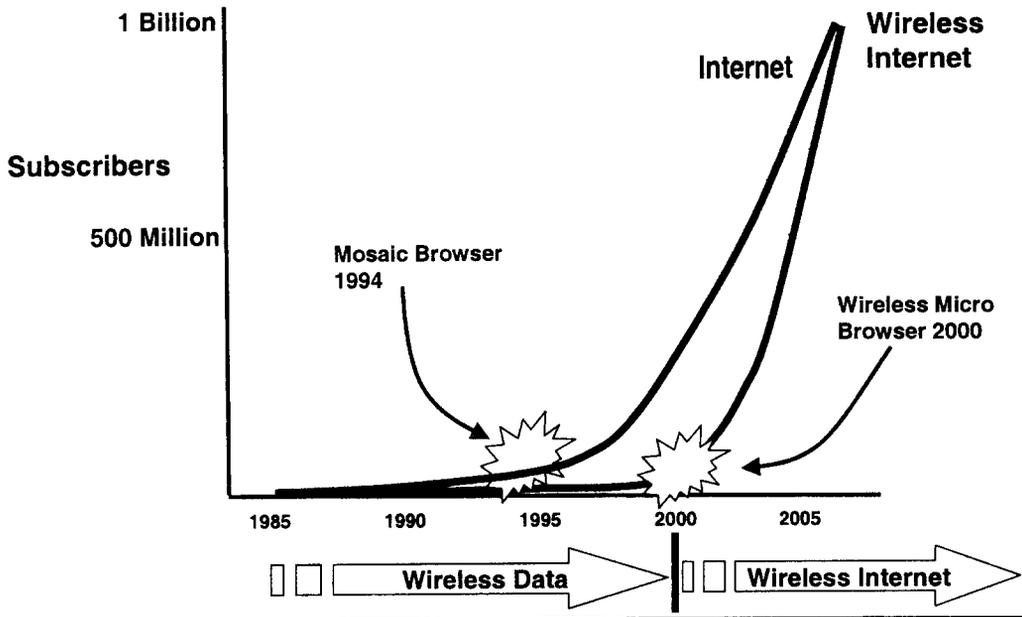
# ...At Lightning Speed

Years to 50 Million Users – U.S.



Source: Morgan Stanley Technology Research

## Internet and Wireless Data Take Off

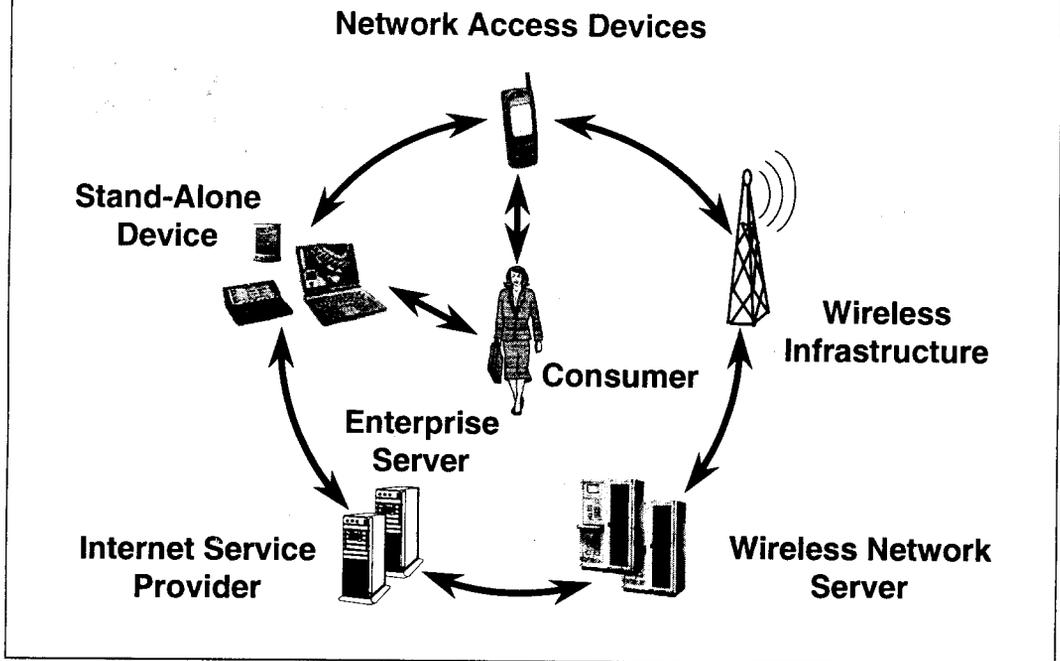


## Trend #2: Deregulation

More countries are restructuring and deregulating telecommunication by...

- Separation of operator from regulator
- Privatisation
- Creation and offering of new services
- Allocations for private business use

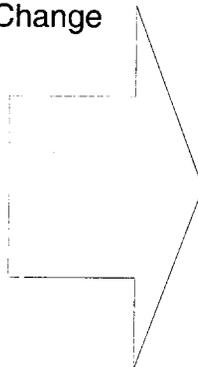
# Personal Networking



## Essential Element: Nurturing Regulatory Environment

### Things You May Have:

- Slow Regulatory Change
- Government only
- Duplication
- Segregation
- Over control
- Tariff control
- No enforcement
- Secrecy
- Inadequate Allocations
- Technology Limitation



### Things You Will Need:

- Fast Regulatory Change
- All stake-holders
- Co-operation (MRA, etc.)
- Convergence
- De-regulation
- Tariff disclosure
- Adequate enforcement
- Communication
- Adequate Allocations
- Technology Neutrality

## **Trend #3: Competition**

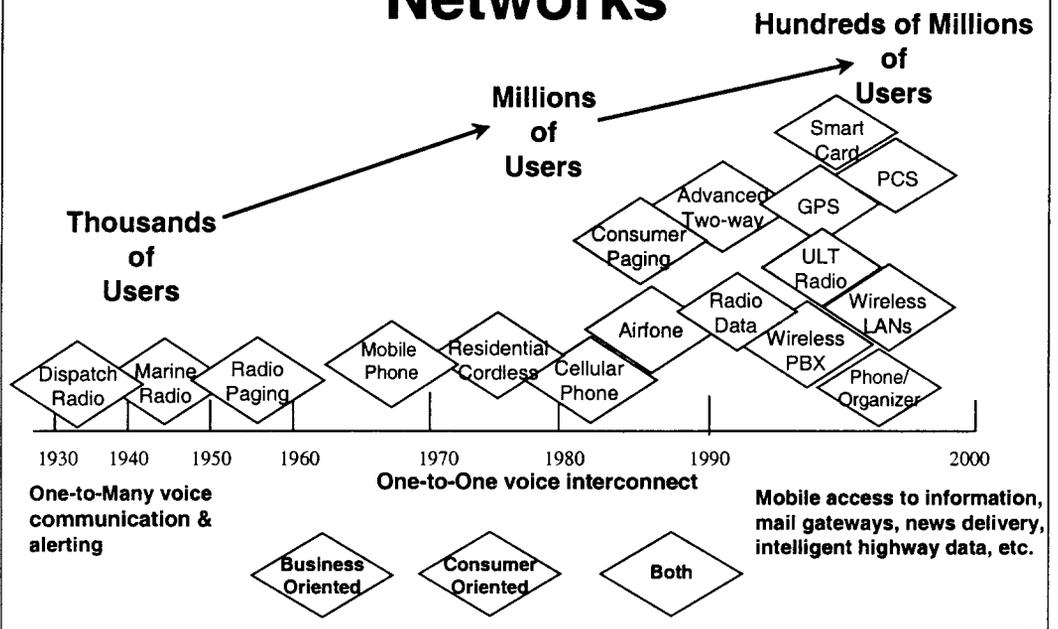
Competition contributes to the overall economy of the country by...

- Increasing efficiency.
- Promoting customer choice.
- Lowering prices.
- Promoting innovation in products and services.

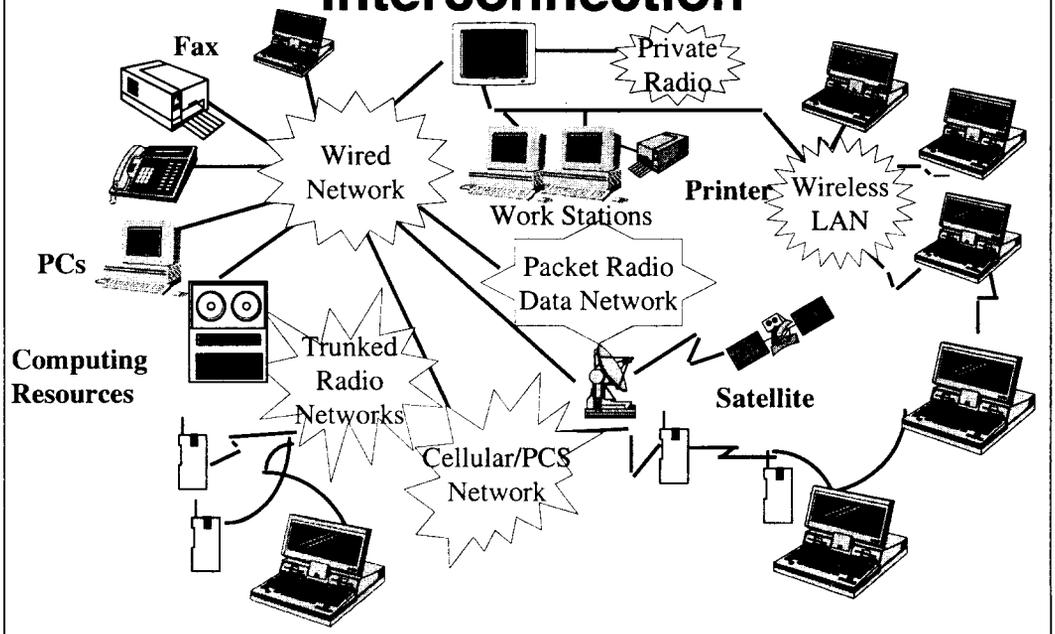
## **Trend #4: Advancement of Wireless Technology**

- The pace of technological advancement has accelerated dramatically in recent years...
- Increase in demand for wireless technologies means increase in demand for spectrum.
- Increase in demand for spectrum means increase of pressure on managers to
  - Accommodate demands
  - Ensure efficiency
  - Minimise harmful interference

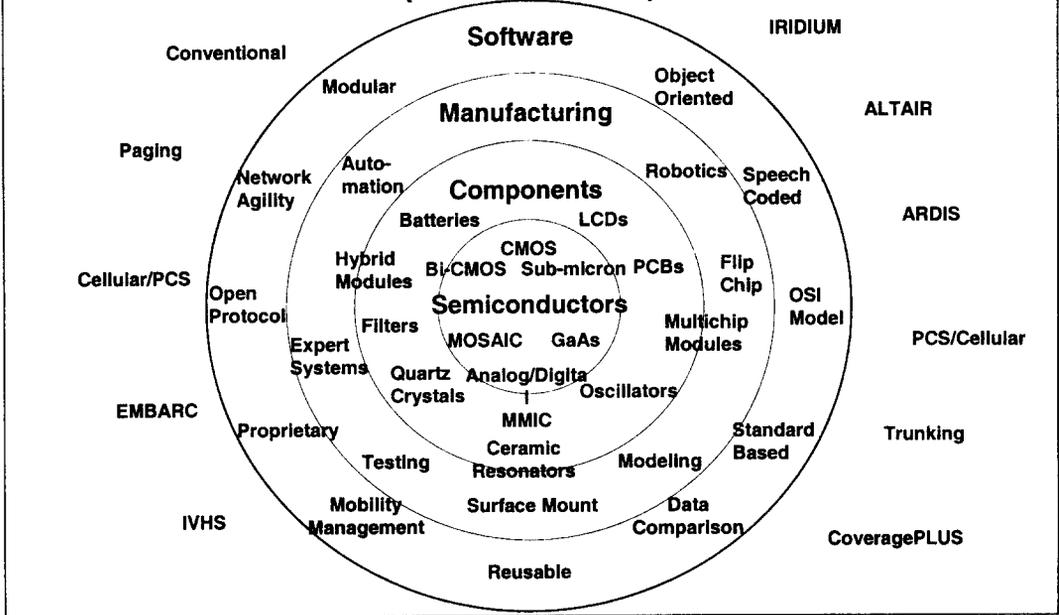
# How: More and Better Wireless Networks



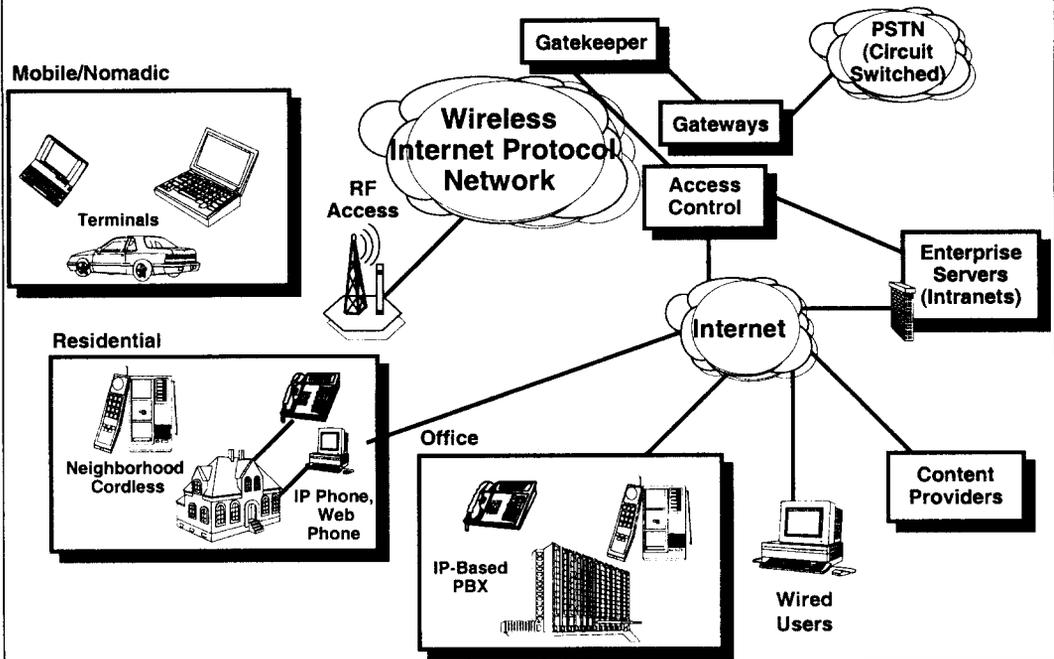
# How: Better Network Interconnection



# How: Enabling Technologies (Already Here)



# Wireless Internet Architecture



## Application Performance Requirements

| <u>Technology</u>         | <u>Technology Transmit Speed Capability</u> |                              |                              |                                  |                       |                       |                       |
|---------------------------|---|------------------------------|------------------------------|----------------------------------|-----------------------|-----------------------|-----------------------|
| 3G                        |   |                              |                              |                                  |                       |                       |                       |
| 1X                        |   |                              |                              |                                  |                       |                       |                       |
| IS95B                     |   |                              |                              |                                  |                       |                       |                       |
| 2G                        |   |                              |                              |                                  |                       |                       |                       |
| <u>Data Rates (k bps)</u> | 9.6   | 14.4                         | 32                           | 64                               | 128                   | 384                   | 2000                  |
| <u>Applications</u>       | <u>Application Performance Rating</u>       |                              |                              |                                  |                       |                       |                       |
| Voice, SMS                | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| E-mail                    | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Internet Web Access       | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Database Access           | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Synchronization           | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Document transfer         | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Location Services         | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Still Image Transfer      | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Video Lower Quality       | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Video High Quality        | <input type="radio"/>                       | <input type="radio"/>        | <input type="radio"/>        | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|                           | <input type="radio"/> = Excellent           | <input type="radio"/> = Fair | <input type="radio"/> = Poor |                                  |                       |                       |                       |

## Trend #5: Globalisation

Telecommunication systems are interconnecting and creating...

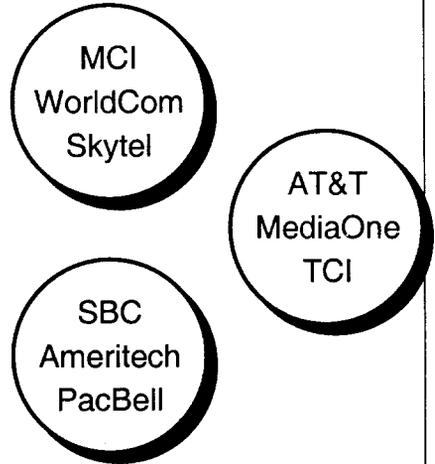
- Global systems (e.g., LEOs, PCS/PCN, and Internet)
- Global telecom consortia (e.g., business alliances, joint ventures, and acquisitions)

# Consolidation

## Convergence

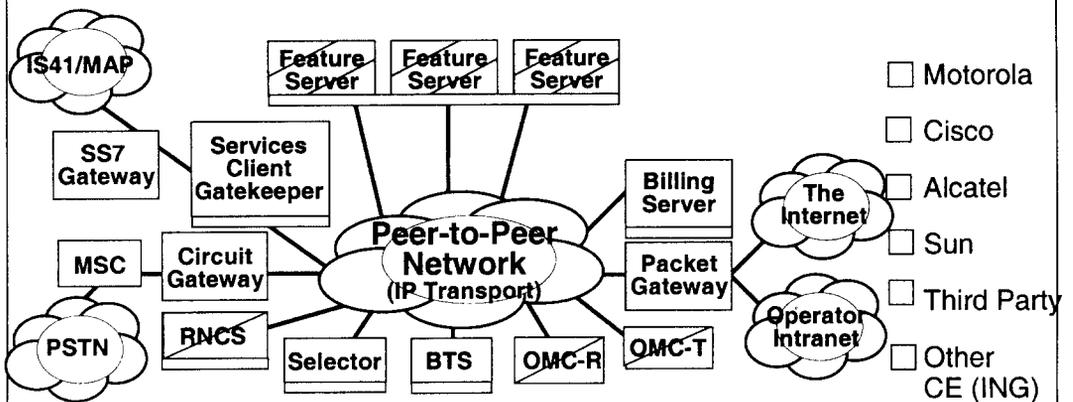
## Consolidation

| Operator        | Wireline | Wireless | Paging | Cable | Internet | Satellite |
|-----------------|----------|----------|--------|-------|----------|-----------|
| MCI WorldCom    |          |          |        |       |          |           |
| AT&T            |          |          |        |       |          |           |
| Telefonica      |          |          |        |       |          |           |
| France Telecom  |          |          |        |       |          |           |
| British Telecom |          |          |        |       |          |           |
| NTT             |          |          |        |       |          |           |
| Telstra         |          |          |        |       |          |           |



*Yellow Indicates Presence*

# Partnerships – Alcatel



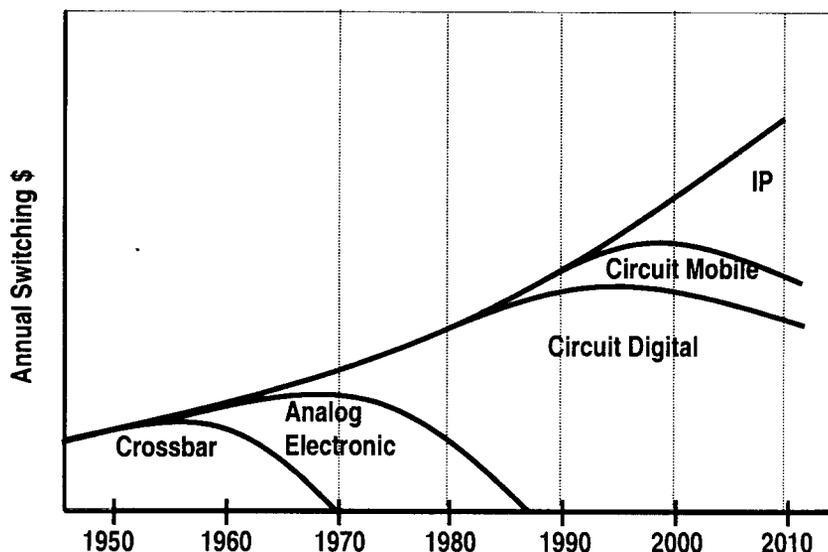
- Strategic Cooperation in UMTS
- Ongoing Development of EMX Switching Platform
- Supply Ancillary and Backhaul Products

## Trend #6: Emergence of Global Information Economies

As developed and developing nations grow, telecommunications...

- Becomes a catalyst for expansion.
- Creates supporting industries and related employment

## Telecom Industry Inflection Points



# Trend #7: Regionalisation

Countries are forming regional...

## ■ Organisations

- Asia-Pacific Telecommunity (APT)
- Asia-Pacific Economic Cooperation (APEC)
- Conference of European Postal and Telecommunications Administrations [CEPT]
- European Telecommunications Standards Institute [ETSI]
- Pan African Telecom Union [PATU]
- Inter-American Telecommunications Commission [CITEL]
- Arab Telecom Union [ATU]

## ■ Standards

- Harmonisation
- Mutual recognition

## Looking back Korean 2G and 2.5G policy

- Korea prepared telecommunication development plan from 1988.
- Privatization of Korea mobile Inc.,(2G) into SK telecom in 1991
- Korea worked CDMA commercialization with QUALCOMM( 1991-1995)
- Allowing one more 2G operator ( Shinseggi) in 1994 for the managed competitiveness
- Licensing three PCS( 2.5G) operators into Korean market in 1996

### ● Impacts

- Timely preparation for global wireless information revolution and WTO
- Contribution to overcoming IMF crisis by telecommunication market activation
- Contributing to Korea s new paradigmming economic growth model in future

### ● Regrets:

- Focusing only on short-term domestic market only
- Unreasonable agreement with Qualcomm on royalty rate
- Limitation of global telecommunication market growth opportunity due to the zero-sum standard policy

## 3G Global market opportunity

|                             | 2000           | 2005          | 2009          |              |
|-----------------------------|----------------|---------------|---------------|--------------|
| <b>Subscribers(Million)</b> | <b>595</b>     | <b>1247.2</b> | <b>1898.6</b> |              |
| <b>Technology</b>           | <b>Analog</b>  | <b>4.7%</b>   | <b>0.0%</b>   | <b>0.0%</b>  |
|                             | <b>GSM</b>     | <b>50.2%</b>  | <b>0.0%</b>   | <b>0.0%</b>  |
|                             | <b>CDMA</b>    | <b>14.6%</b>  | <b>0.6%</b>   | <b>0.0%</b>  |
|                             | <b>TDMA</b>    | <b>7.1%</b>   | <b>4.8%</b>   | <b>0.0%</b>  |
|                             | <b>PDC</b>     | <b>7.8%</b>   | <b>0.0%</b>   | <b>0.0%</b>  |
|                             | <b>GPRS</b>    | <b>0.0%</b>   | <b>26.5%</b>  | <b>0.8%</b>  |
|                             | <b>EDGE</b>    | <b>0.0%</b>   | <b>18.9%</b>  | <b>34.7%</b> |
|                             | <b>IS-2000</b> | <b>0.0%</b>   | <b>25.3%</b>  | <b>0.7%</b>  |
|                             | <b>WCDMA</b>   | <b>0.0%</b>   | <b>23.3%</b>  | <b>38.6%</b> |
|                             | <b>MC-41</b>   | <b>0.0%</b>   | <b>1%</b>     | <b>0.0%</b>  |
| <b>DS-41</b>                | <b>0.0%</b>    | <b>9.5%</b>   | <b>25.2%</b>  |              |

### Comments

- For GSM series( WCDMA, PDC,GPRS,EDGE) are absolutely predominant (74.8%) in global market
- MC-41(1%) has only short term benefit.

## CDMA & GSM ANTICIPATED ESSENTIAL PATENT HOLDERS

|              | GSM | CDMA | WCDMA-DS | WCDMA-MC |
|--------------|-----|------|----------|----------|
| Ericsson     | X   | X    | X        | X        |
| Nokia        | X   | X    | X        | X        |
| Motorola     | X   | X    | X        | X        |
| QUALCOMM     | O   | X    | X        | X        |
| Interdigital | X   | X    | X        | X        |
| NEC          | X   | X    | X        | X        |
| Philips      | X   | X    | X        | X        |
| NTT DoCoMo   | O   | O    | X        | X        |
| Matushita    | X   | X    | X        | X        |
| Alcatel      | X   | O    | O        | O        |

### Comments:

- 2G(CDMA) charges more royalties than WCDMA as long as Qualcomm adheres to 5.25%(domestic) and 5.75%(export)

## **Korean domestic industry capability**

- Samsung now records No. 4( 17.6 million, 1999) in sale of handset in the world
- The first commercialization of CDMA in the world( 1996)
- After IMF crisis(LG semiconductor merges into Hyundai) Korea manufacturing capability was more enhanced
- Global ranking: Shipbuilding industry(2), Textile(4), Car(5), Semiconductor(3), petrochemical(5), telecom(10?)

## **Seven Global Trends**

1. Growth in wireless communications
2. Deregulation
3. Competition
4. Advancement of wireless technologies
5. Globalisation of service providers and systems
6. Emergence of global information economies and societies
7. Regionalisation

# Recommendation

- **Technology neutrality**
- **Support Market**
- **Regional Band plans**
- **Global Standard activity (APT,ITU)**