

# **Regionalism and Nationalism in Mobile Communications: A Comparison of East Asia and Europe**

Tomoo Marukawa (Institute of Social  
Science, University of Tokyo)

# Outline

- 1. Introduction
- 2. Evolution of Mobile Communication Standards in East Asia and Europe
  - 2.1 The First Generation
  - 2.2 The Second Generation
  - 2.3 The Third Generation
- 3. Lessons from the Past and Prospects for the Future

# 1. Introduction

- Is there *de facto* regional integration in East Asia?
- The share of intra-regional trade among ten East Asian economies has increased from 33.6%(1980) to 50.8%(2001).
- But looking at the *technical* aspect of trade, we find a very different picture: East Asia is fragmented into many national markets by different industrial standards and technical regulations.

- A TV set sold in China is unsalable in Japan, because of safety regulations, and in the first place, the TV set will not function in Japan because the formats of transmission are different.
- Exports taking place in East Asia are largely those from the *technical* 'enclaves' of the exporting country, which are ruled by the standards of the destination country, to the destination.

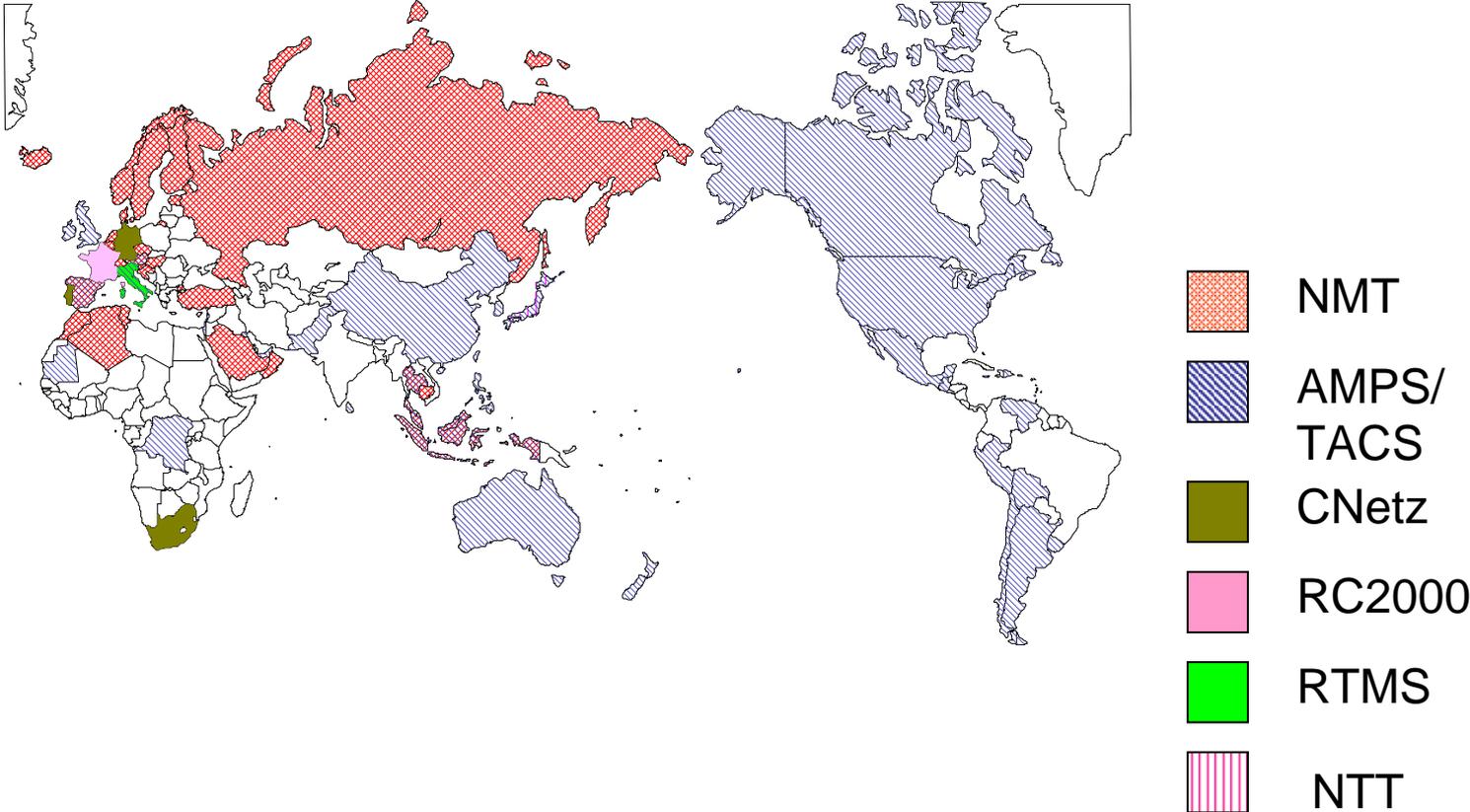
- Though the problem of standards as impediments to trade has been discussed in GATT and WTO as Technical Barriers to Trade (TBT), it has not received as much attention as tariffs because for many types of commodities it is not a difficult task for firms to adapt to different national standards.
- But there is at least one industrial sector in which industrial standards had a major impact on firm productivity and consumer welfare: mobile communications.

## 2. Evolution of Mobile Communication Standards in East Asia and Europe

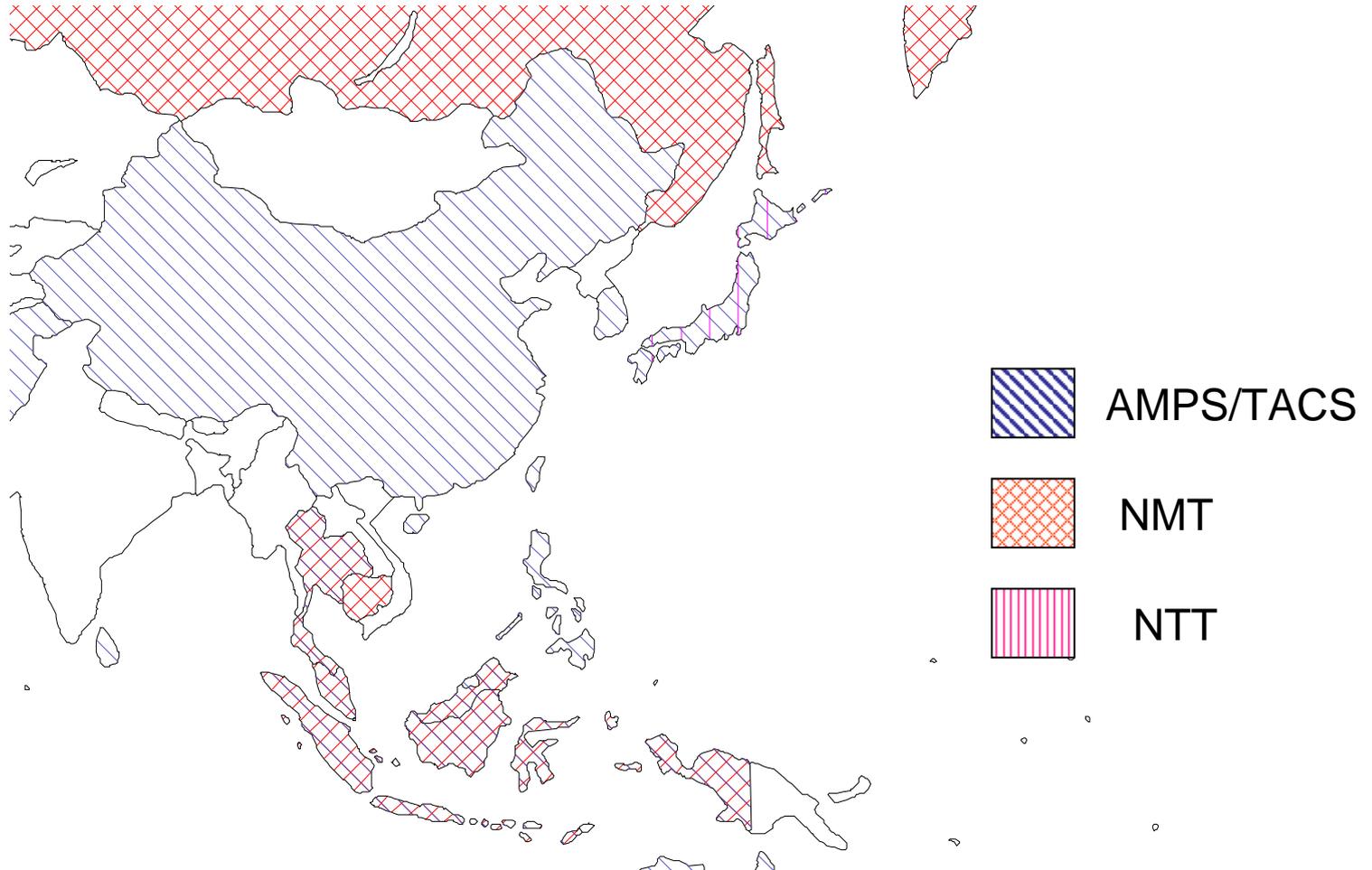
# The First Generation (1979- mid-1990s): the Age of Nationalism with a little bit of Regionalism

- Analog technology
- Advanced countries conducted R&D on their own and adopted different standards.
- US had 'AMPS', Japan had 'NTT', Italy, Germany, France had their own standard.
- Scandinavia had a region-wide standard, NMT, from the very beginning.
- In East Asia, no country except for Japan was able to develop mobile communications technology during the first generation. Asian countries adopted either AMPS or NMT.

# Cf. The First Generation Mobile Phone Standards in the World



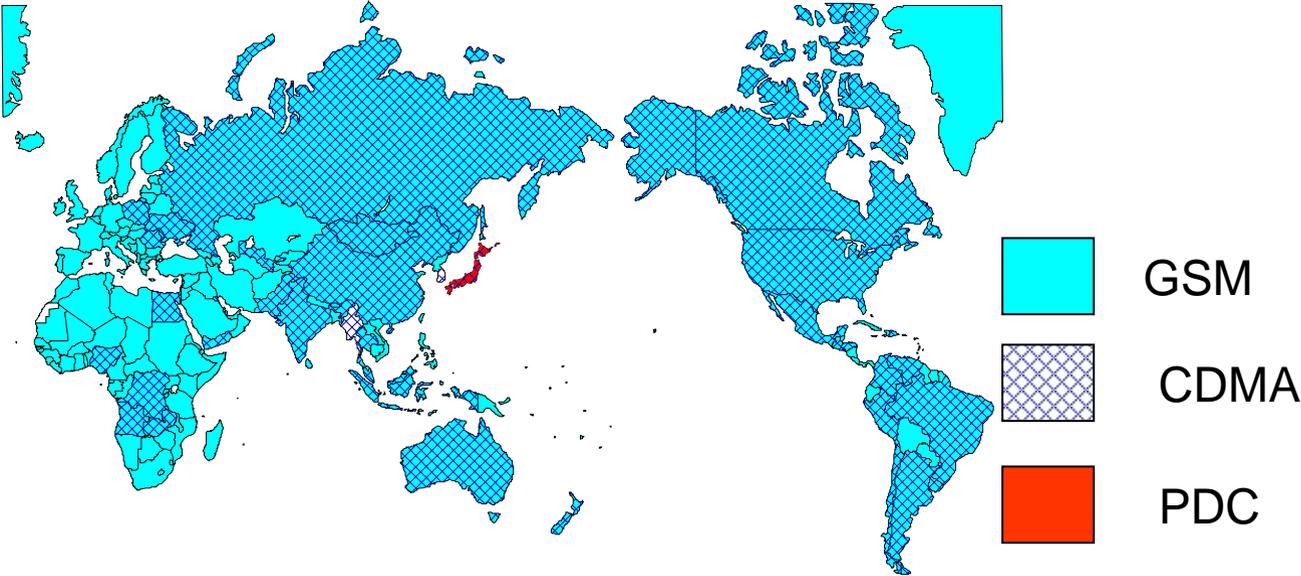
# Figure 1 Standards which the Asian Mobile Phone Carriers Adopted during the First Generation



# The Second Generation (1993-): The Regional Standard of Europe developed into a Global Standard

- Digital technology.
- Explosive growth: 29 million subscribers (1993) to 1.3 billion (2003).
- Europe adopted a common standard, GSM, but during the course of its development, GSM spread not only among the mobile phone carriers throughout Europe, but also among 220 countries and regions around the world by the end of 2005.
- The only countries that did not adopt GSM were Japan, South Korea, and Myanmar.

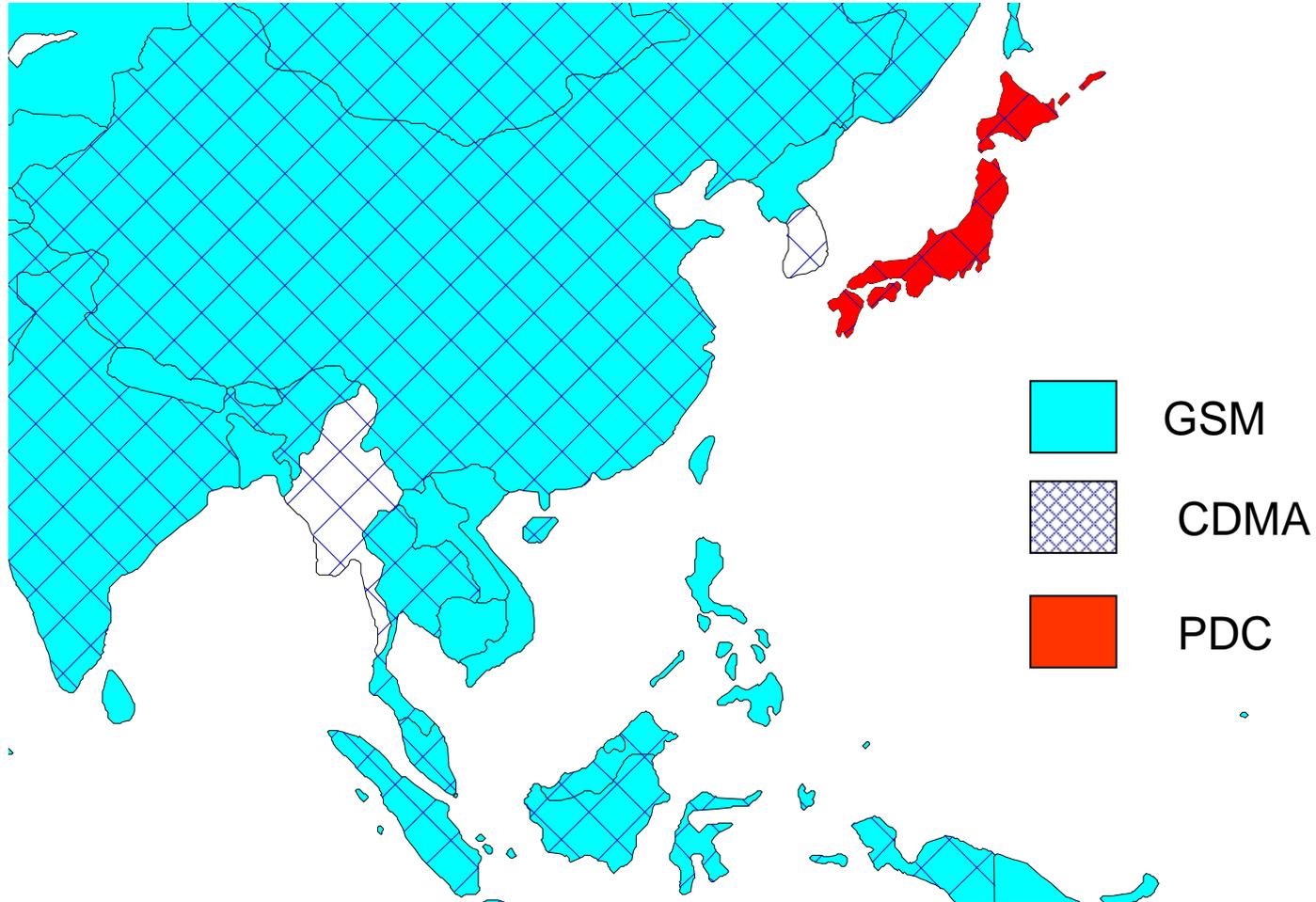
# Cf. The Second Generation Mobile Phone Standards in the World



# Why the success of GSM?

- The initiative to create a pan-European standard was taken in **1982** by the meeting of telecom administrations of twenty-six European countries.
- **European Commission** (EC) supported the project of creating a common mobile phone standard, believing that it was in line with the goal of creating an economically-integrated Europe.
- Countries outside of Europe, such as Australia, New Zealand, Qatar, Brunei, and Hong Kong decided to adopt GSM before it started operation in Europe, expecting that it would become the most competitive mobile phone system in the second generation due to scale economy.
- One feature of GSM is that carriers are obliged to provide **international roaming service** to their subscribers.

# Figure 2 Standards which the Asian Mobile Phone Carriers Adopted during the Second Generation



# East Asia during 2<sup>nd</sup> generation: fragmentation continued

- Japan's dominant operator NTT DoCoMo developed a proprietary standard, PDC.
- Why? First, the Japanese believed that PDC's superiority to GSM in frequency spectrum efficiency would open up markets abroad for the standard.
- Secondly, the Japanese carriers put little importance on international roaming.

- It turned out that international roaming function was a critical competitive advantage of GSM over PDC.
- What mattered to the Asian countries was not trivial differences in frequency spectrum efficiency but whether the mobile phones could be used in other countries, or in other provinces—in the case of China.

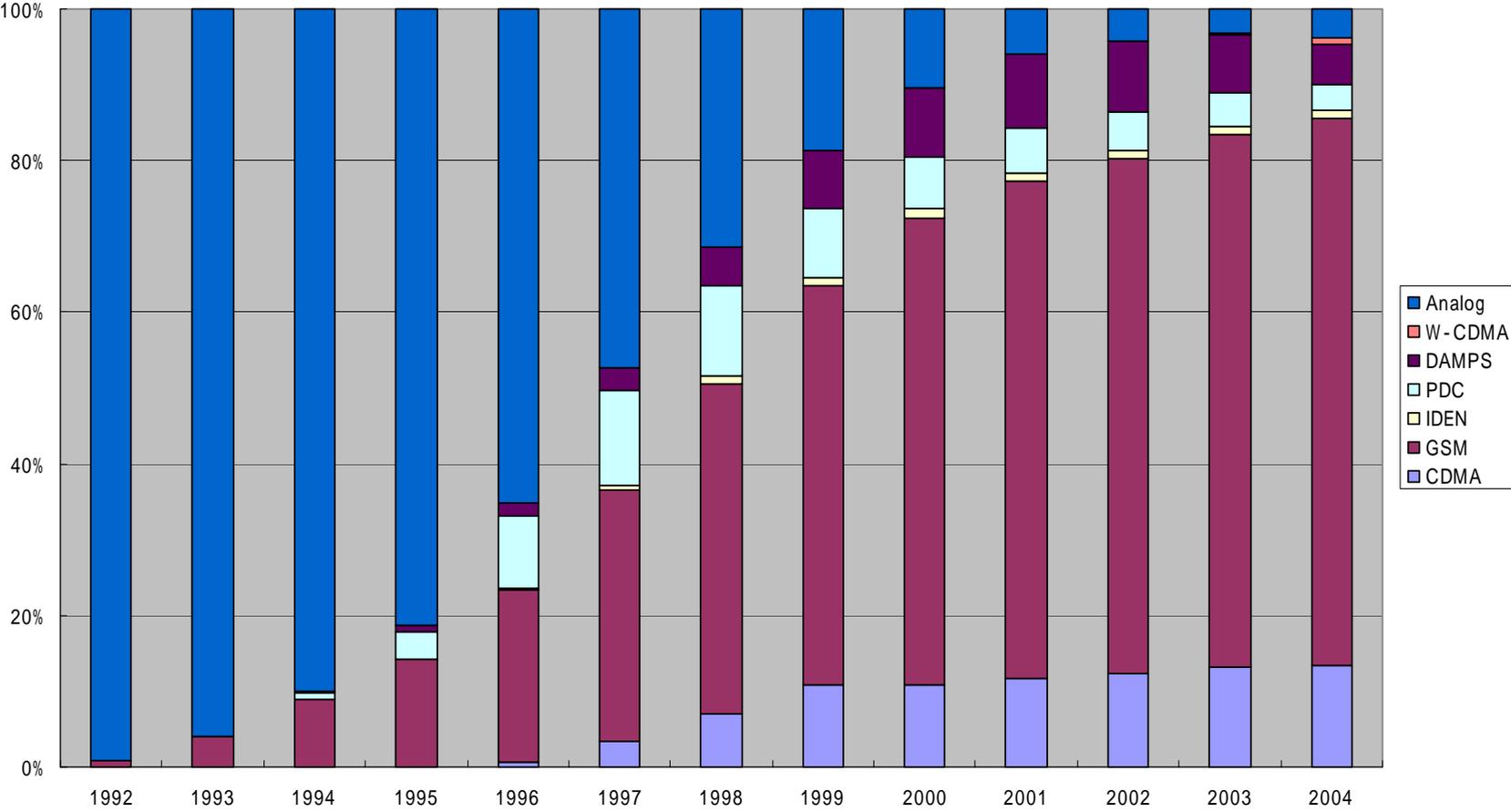
- Korea picked up an immature technology called CDMA, poured domestic R&D resources into its development, and made it into a half-Korean technology.
- While European mobile phone users enjoyed international roaming inside Europe and more and more outside Europe during the 1990s, only a part of the subscribers of secondary carriers in Japan, Korea, and China started to enjoy roaming in the three countries after 2002. The main reason for the split in East Asia is the decision by Japan and Korea not to adopt GSM, and to establish their own proprietary standards instead.

# The Consequence of Europe's Regionalism and Japan's Nationalism

Table 1 Market shares of major vendors in the world mobile phone market

	1990	1997	1998	2001	2003
Nokia	11.0	19.1	22.4	36.0	33.6
Motorola	23.0	23.5	19.8	11.0	14.1
Samsung		3.7	3.2	5.0	9.9
Ericsson		14.8	14.6	7.0	9.0
Siemens		3.4	3.1		8.5
LG Electronics					5.2
Oki	6.0				
Matsushita	15.0	8.0	8.2	5.0	
Mitsubishi Electric	9.0	3.3	2.8	4.0	
NEC	7.0	5.5	4.0	4.0	
Alcatel		2.4	4.3	3.0	
Kyosera				2.0	
Toshiba	7.0		3.2		
(Source)					
Nikkei Sangyo Shinbun Feb 10, 1999					
Nikkei Market Access Yearbook, IT Basic Data					
IDC Press release					
Tokuda (2000)					

# Figure 3 The Subscriber Shares of Various Mobile Phone Standards



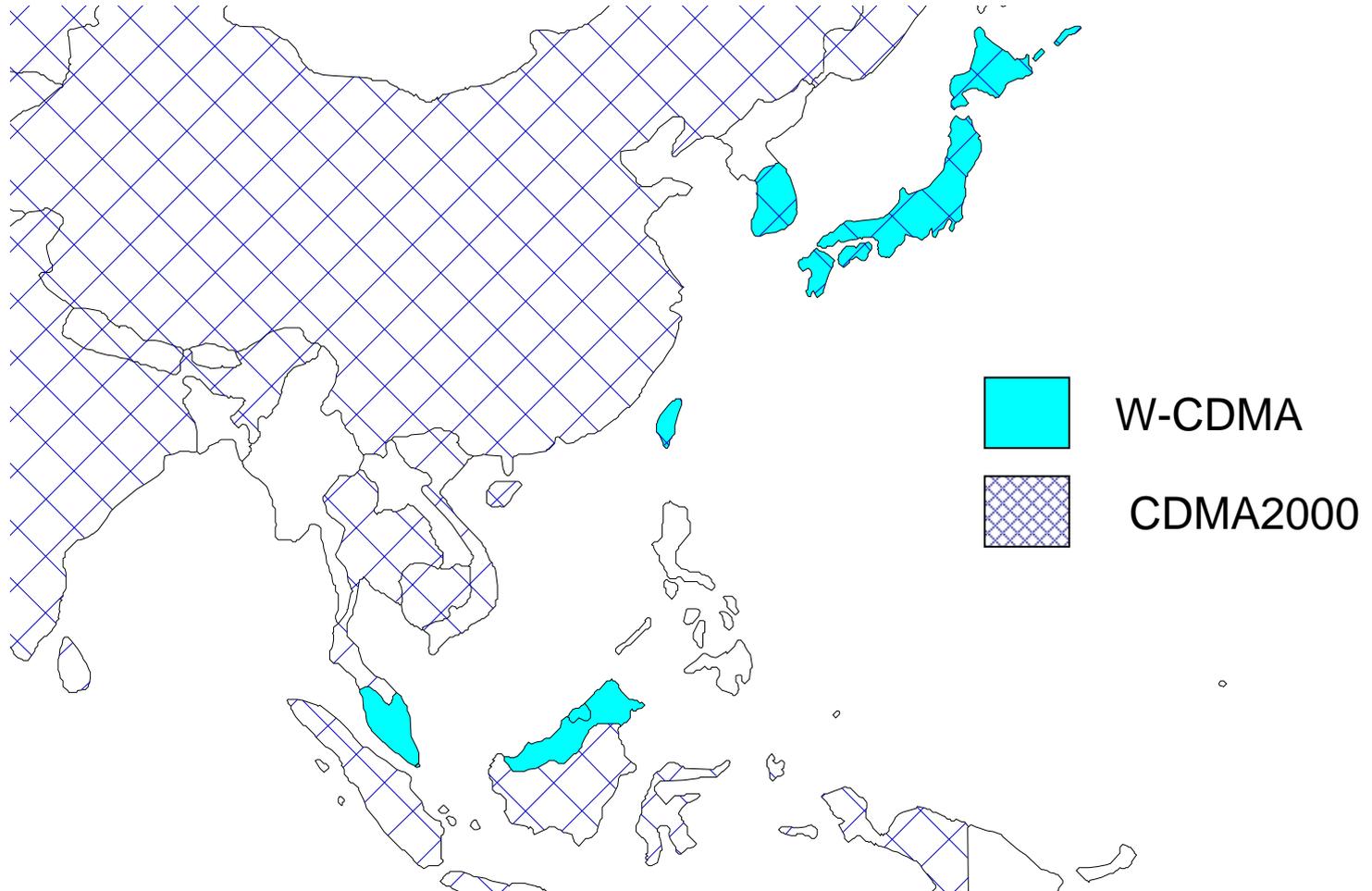
# Why the decline of Japanese handset manufacturers?

- Japanese vendors poured most of their R&D resources for the development of handsets for the Japanese market.
- Handicaps due to the lack of GSM patents.

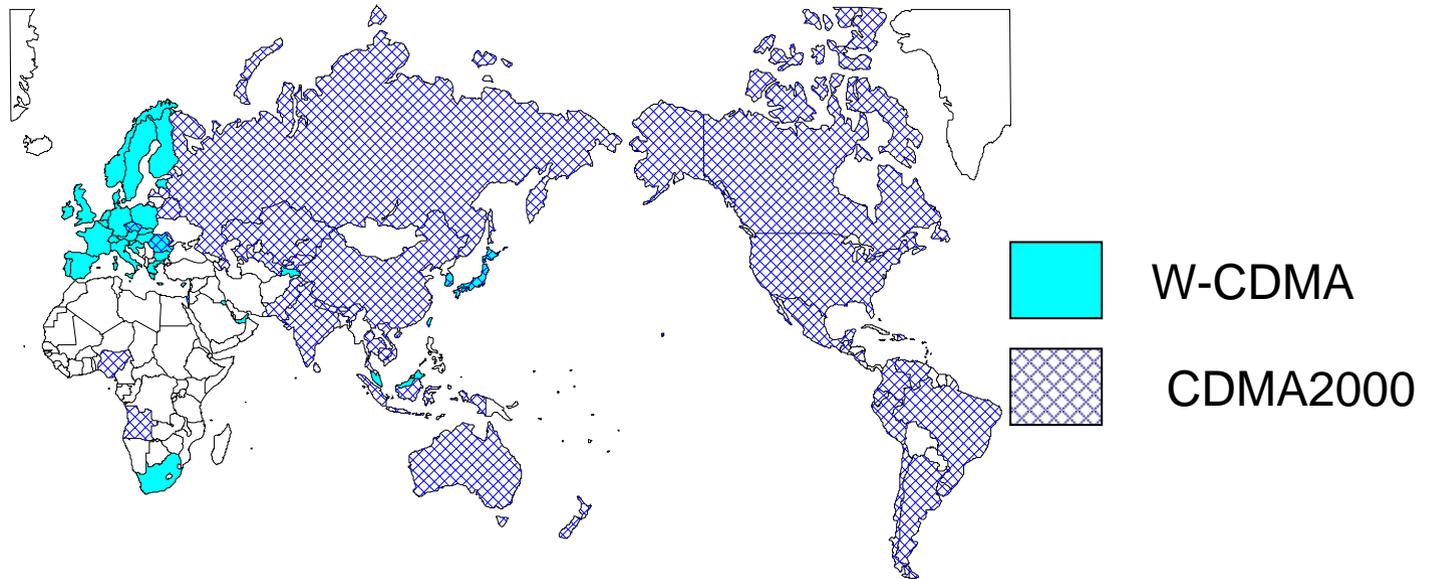
# The Third Generation (2002-): Three *de jure* 'Global Standards'

- The international community of mobile phone industry agreed upon setting a unified global standard in an International Telecommunications Union (ITU) meeting, so that mobile phone users could enjoy global roaming.
- In the end, however, the international mobile phone community failed to agree upon a single global standard. Japan and Europe developed W-CDMA, North America developed CDMA2000.

# Figure 4 Standards which the Asian Mobile Phone Carriers Adopted during the Third Generation



# Cf. The Third Generation Mobile Phone Standards in the World



# China's Nationalism

- Japan and Korea both adopted W-CDMA and CDMA2000.
- This time it was China's turn to resort to nationalism. Craving for a proprietary technology, China developed TD-SCDMA and succeeded in putting it among the ITU-recommended 'global standard.'
- It is most likely that TD-SCDMA will remain a *national standard*. Its implementation in China will mean that still in the 3<sup>rd</sup> generation East Asia is not integrated.

# 3. Lessons from the Past and Prospects for the Future

- The case of mobile phones shows that still there are substantial differences between de facto integration (East Asia) and de jure integration (Europe).
- The reason why European manufacturers united together to create a common standard while the East Asians did not can be explained by relative positions of the enterprises in the world market.
- In the 1980s, European electronics manufacturers faced the common problem of small domestic market and the increasing competition from Japanese manufacturers.

- East Asian manufacturers, on the other hand, have very different positions in the world market.
- During the 1<sup>st</sup> and 2<sup>nd</sup> generation, Japanese had overwhelming R&D capacity in East Asia. Market integration might have resulted in one-sided export of technology, equipment, and handsets from Japan to the rest of East Asia.
- Latecomers aiming to catch up have a good reason to build technical barriers against the most powerful rivals by intentionally adopting a different standard from them.
- Therefore, if there is a possibility for East Asian integration in mobile communications, it must take place after China has succeeded in developing its national mobile phone industry.

# East Asian Integration in the 4<sup>th</sup> generation?

- The telecom authorities of China, Japan, and Korea have started the discussion on creating a common mobile communications standard since 2003.
- A working group, gathering the government and enterprises of China, Japan, and Korea, has been organized. Public institutes of the three countries have already started joint research for fourth generation technology.
- The goal of the working group and joint research is to propose a common standard to ITU as a 'global standard,' which is very likely to be competitive.
- The rise of regionalism in East Asian mobile communications must be a good news for consumers and manufacturers in the region. But, do people really need the 4<sup>th</sup> generation technology????

# Note: A Brief Guide to Mobile Communication Technology

# 1<sup>st</sup> generation analog technology

Channel 1

Hello, how are you?

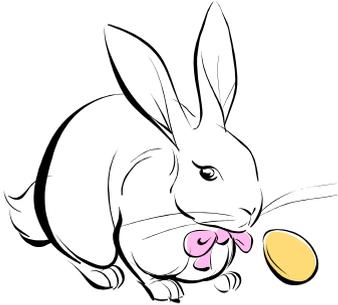
Channel 2

I am bored of being milked.

Channel 3

These are some of my favorites

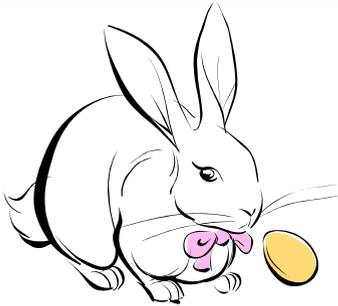
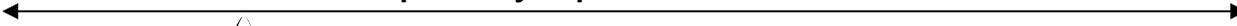
Frequency spectrum



# 2<sup>nd</sup> generation digital technology (GSM and PDC)

Channel 2  
Hello I am These how bored  
are

Frequency spectrum



# CDMA and 3<sup>rd</sup> generation technology

Hello **T**hese favorites are **I** am  
how being of my **m**ilked  
**b**ored are some you **f**avorites

Frequency spectrum

