Measures to Promote Inter-Operable Transport Smart Card Project

March 24, 2008

Excerpt from the Final Report

by the Experts Committee on Transport Smart Card in Japan

Contents

1.Development of the common transport smart card inter-operable in several Asian economies

(Developing technologies and experiments)

3 methods of technologies and experiments are proposed.

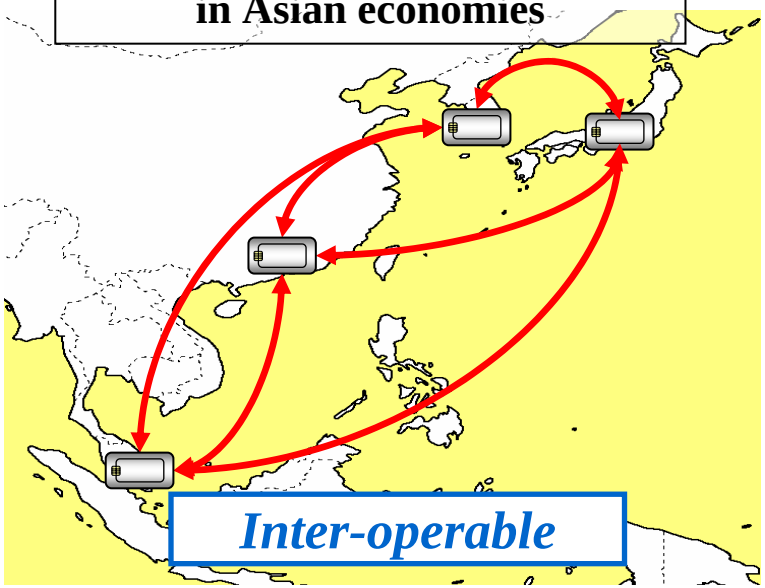
(method 1) *Multi Smart Card with memory partition technology*

(method 2) *Multi Smart Card with selector software technology*

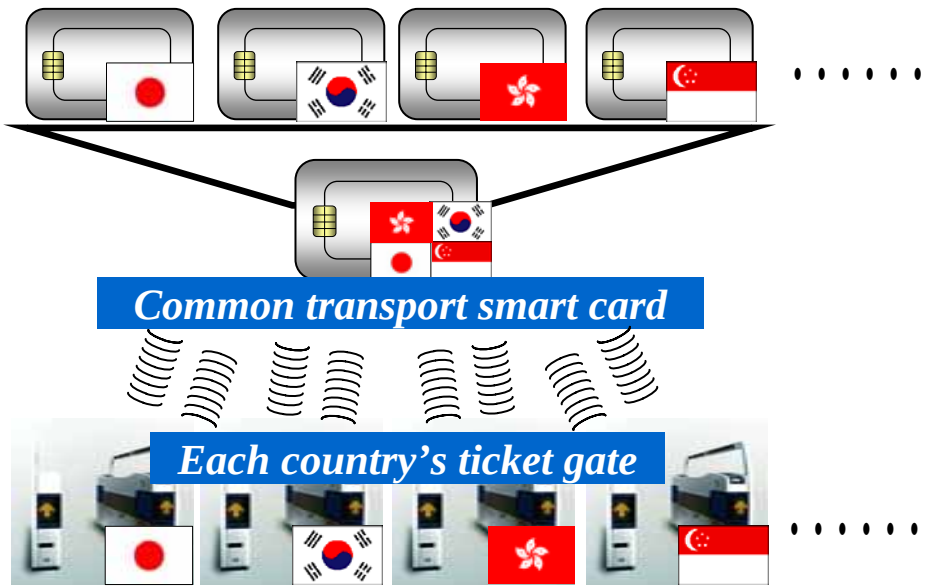
(method 3) *Multi Smart Card with emulation technology*

Concept of Asian common Smart Card (common to all the 3 methods)

(ex.) Common transport smart card in Asian economies



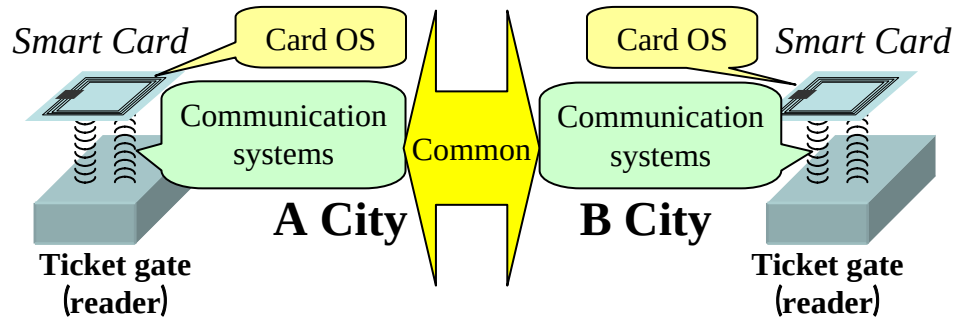
(ex.) Common transport smart card works as each economy's card automatically by detecting radio wave of its ticket gate.

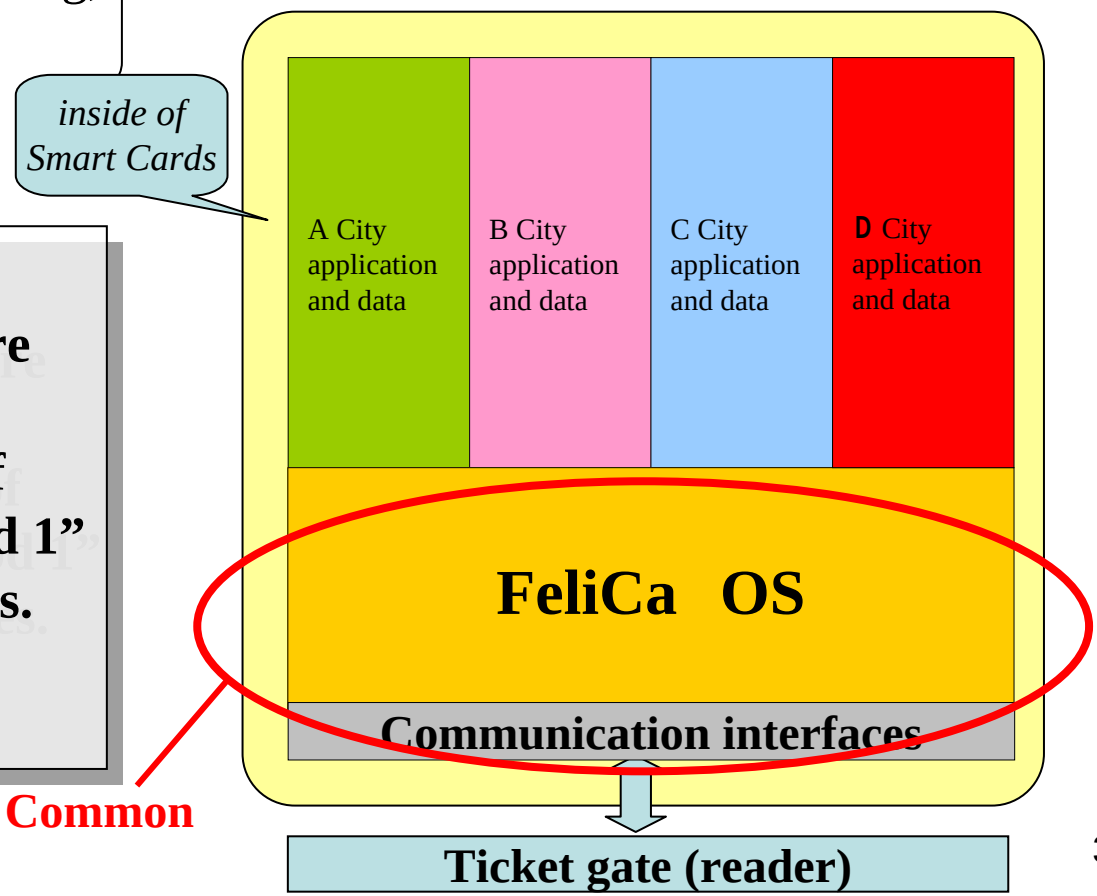


Method 1 : Multi Smart Card with memory partition technology

In this case, communication systems and OS are common.

(ex.) FeliCa Card in Japan, Hong Kong, Singapore and so on





A Realization Method

Communication interfaces and OS are common in different economies. And each city's application and the data of smart card are recorded into "Method 1" cards separately by dividing memories. So these cards are inter-operable in several economies.

Method 2 : Multi Smart Card with selector software technology

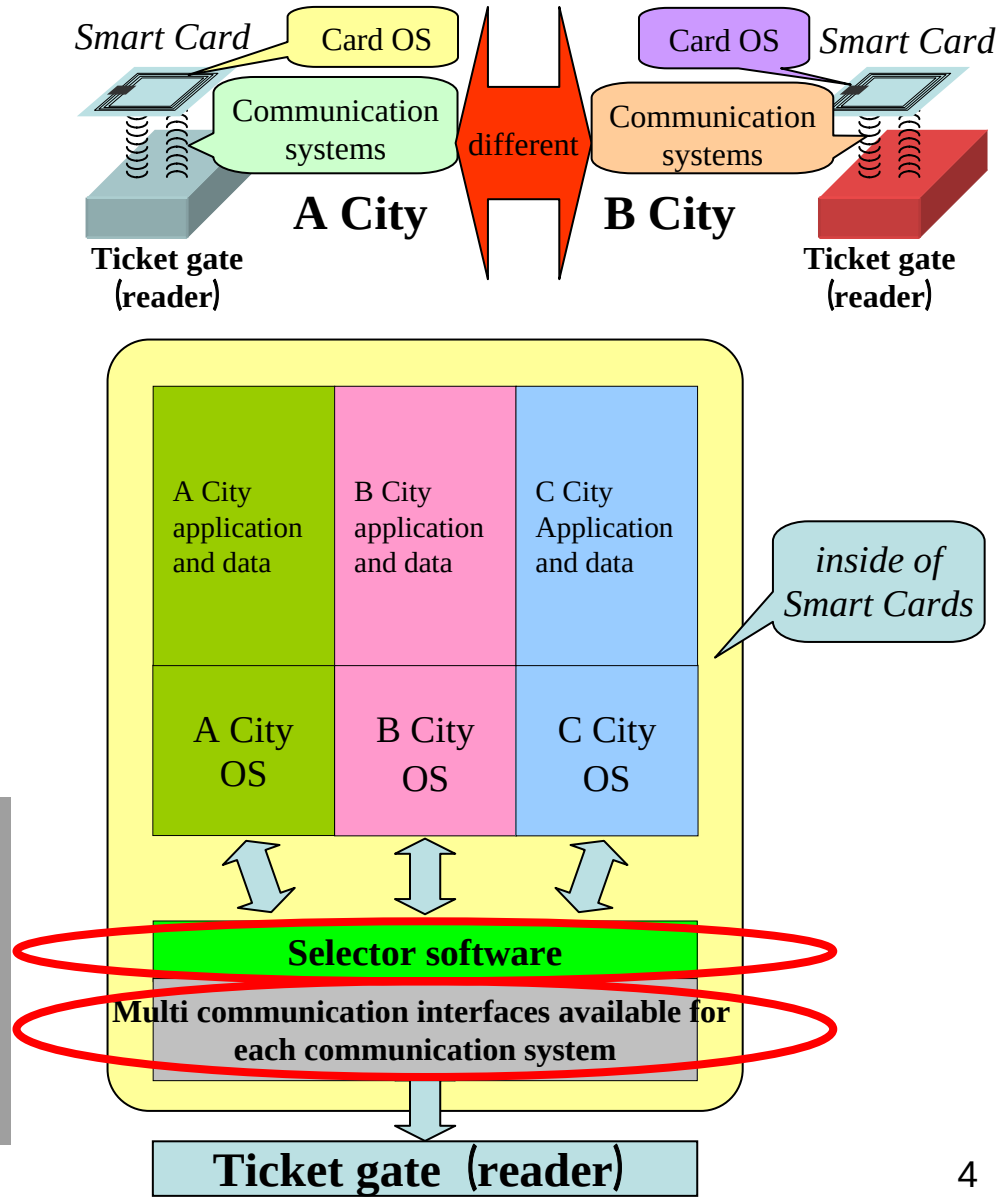
In this case, communication systems and OS are different.

(ex.)

OS	Communication systems	Economy
FeliCa OS	TypeC	Japan, Hong Kong and Singapore
JAVA OS	TypeB	Seoul

A Realization Method

The data, application and OS of transport smart card of several economies are loaded with one IC tip , and those are connected by selector software.

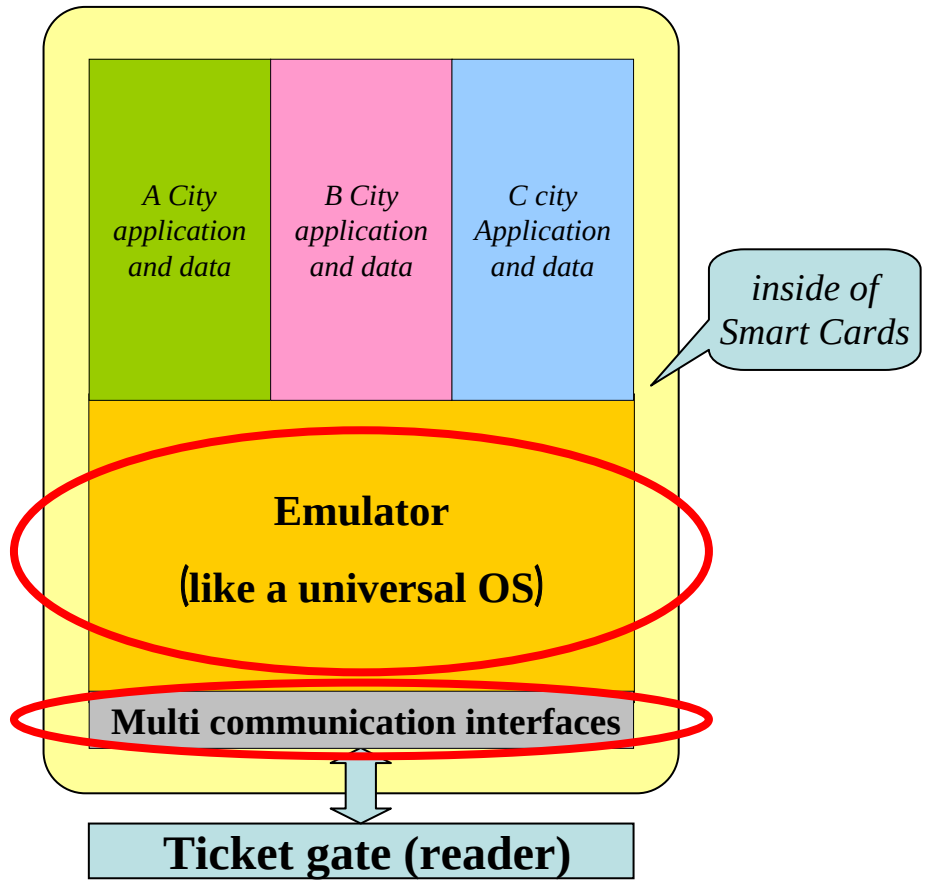


Method 3 : Multi Smart Card with emulation technology

This method can also be used in several economies whose OS and communication systems differ. (The same as Method 2)

A Realization Method

Applications of transport smart cards of several cities are loaded with one IC tip.
And the difference of the OS is overcome by the emulator (like a universal OS) on the IC tip. (Each application works on the emulator.)



2. Process of the experiment and development of the common transport smart card (in 2008)

Multi Smart Card with selector software technology <Method 2> (or memory partition technology < Method 1>)

1st Stage

Make the smart card (ensuring the security of programs through measures which make programs un-analyzable and tamper-resistant)

2nd Stage

Install application programs of participating economies' transport smart card into the smart card
(trial from Korean application program)

3rd Stage

Experiment in the laboratory

4th Stage

Public experiment at some railway stations in Kansai area, Fukuoka area, etc.

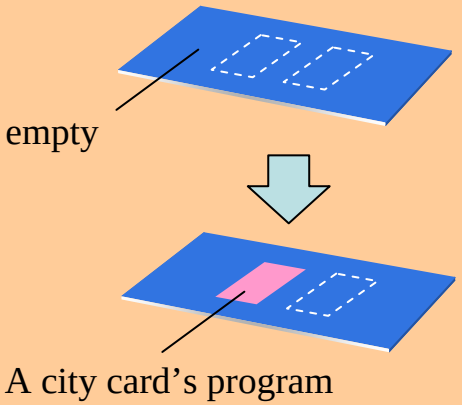
Multi Smart Card with emulation technology <Method 3>

Examination of the design and development of emulation program of each economy (from May) → Examination of the design and development of whole program by uniting each program (from fall)

3. Manufacturing process of the transport smart card for demonstration test using selector software technology (Method 2)

A city

①
- Install A city card's program
- Procedure for issuance the smart card



⑤
- Conduct the demonstration test on card in order to examine their workability, such as performance in the laboratory

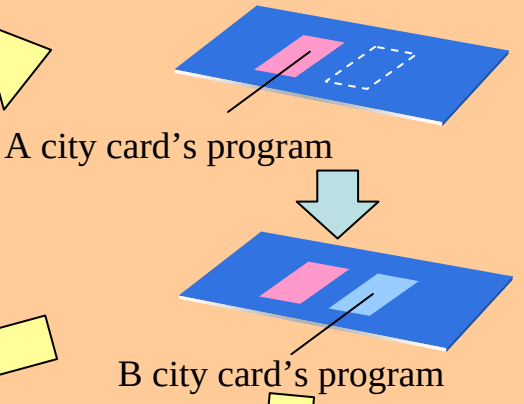
②delivery to B city

The issuer company in A city sends the smart card to the other company in B city.

④delivery to A city

B city

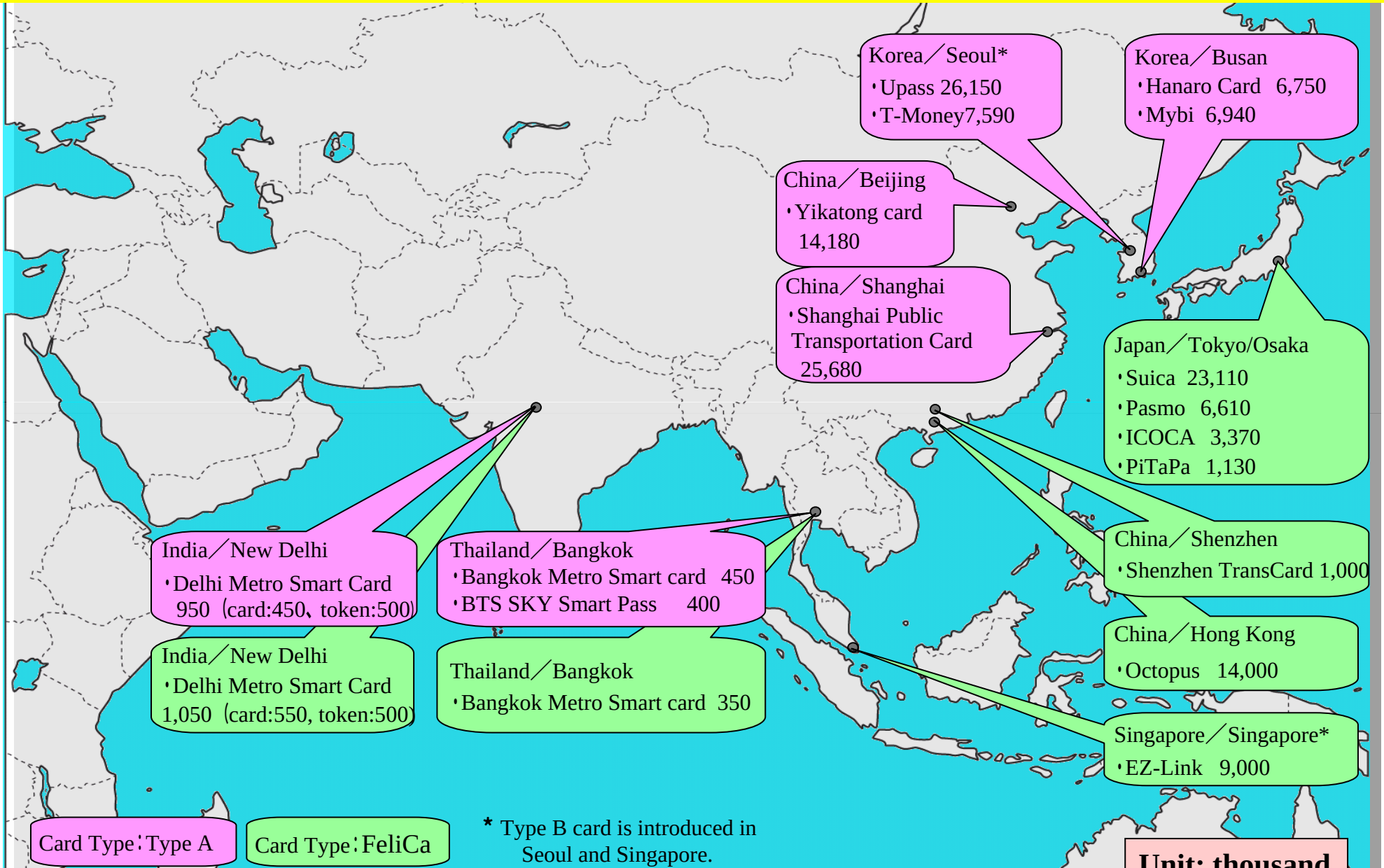
③
- Install B city card's program
- Procedure for issuance the smart card



⑤'
- Conduct the demonstration test on card in order to examine their workability, such as performance in the laboratory

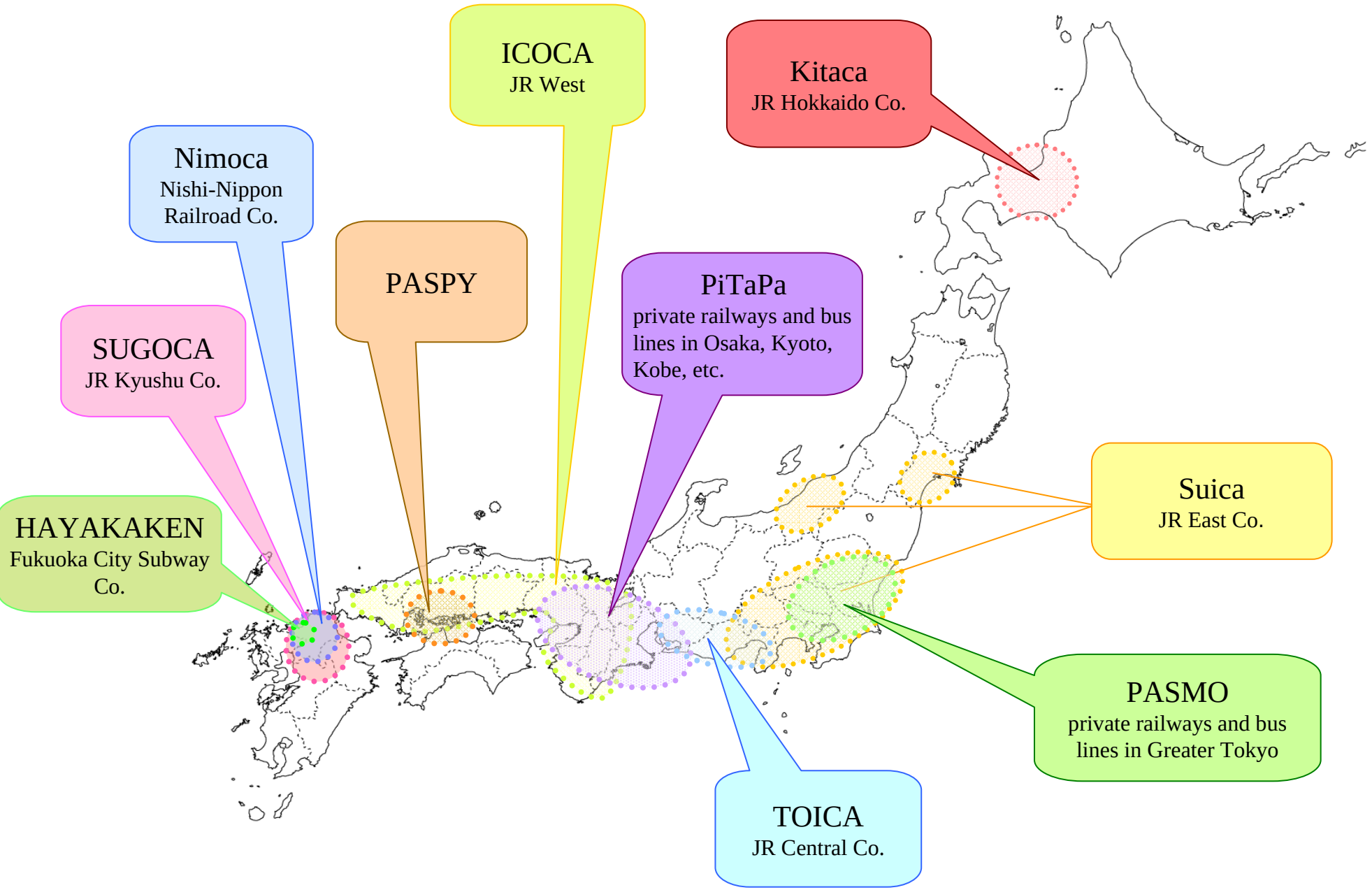
Overview of transport smart cards in Asia

(Reference 1)

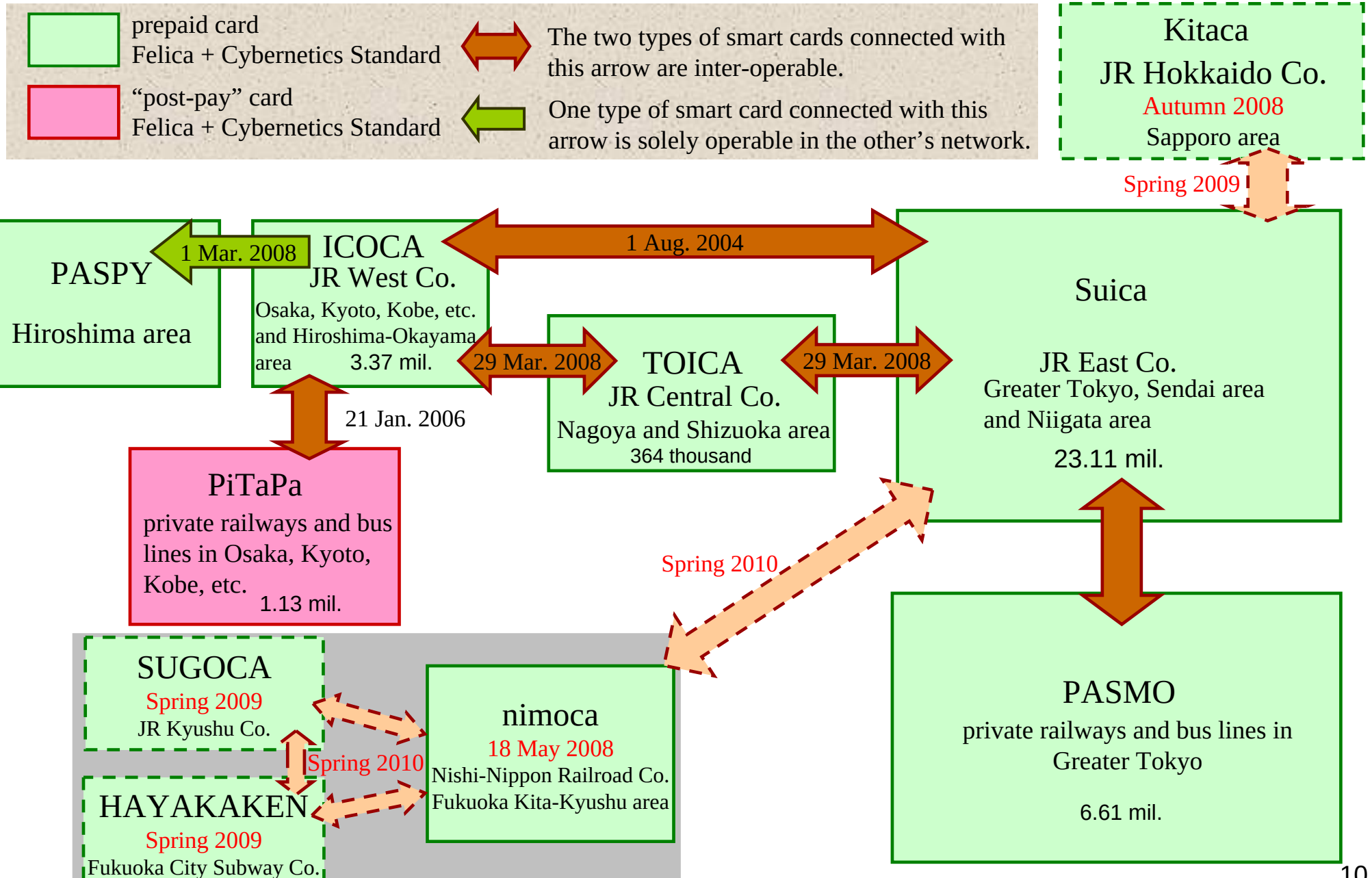


Overview of transport smart cards in Japan

(Reference 2-1)



Inter-operable transport smart cards in Japan (Reference 2-2)



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