9th World Congress on ITS
Chicago, 2002
Discussion Session DS4
"Evaluating and Managing the Security of Transportation Networks"

Emerging ITS Initiatives for Safe and Smooth Flow of Passengers

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Katsuhiro Yamaguchi

Policy Research Institute for Land, Infrastructure and Transport
Government of Japan

Prologue

- Congestion causes various problems, sometimes leading to serious accidents.
- This is not only true on the roads.
- I’d like to explore ways to utilize ITS technologies to facilitate safe and smooth flow of people “off the road.”

Disaster in Akashi, July 2001

警備手薄 橋に3000人

明石・将棋倒し10人死亡

人波う回路誘導できず

県警の責任問う声も

父、他

圧迫、体守りきれず

祭り関係者 各地で警戒

幼い子らに被害集中

小競り合い、発

Ten lives lost and one hundred wounded in a pedestrian domino accident. Over-crowded overpass to fire-works event site causes tragedy.

Mission of this Presentation

Mission of this Presentation

I Revisit Major Functions of ITS Technologies

II Identify Emerging ITS Technologies that would Improve Safe and Smooth flow of Passengers

III Introduce Initiatives in Japan

IV Conclusion

Major Functions of ITS Technologies

Ⅰ How do ITS technologies function in transportation sector ?

Back to Basics（1）

- Transportation-

- **Provide safe, smooth and seamless operation of vehicles etc.**

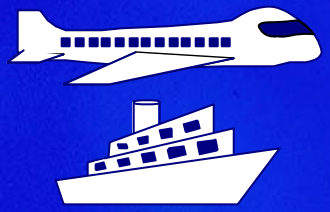
- Passengers -

- **Need for safe, smooth and seamless transportation**

Back to Basics（1）

Major Areas in which ITS Technologies are deployed in Operation of Vehicles etc.

Aviation,Maritime Transport

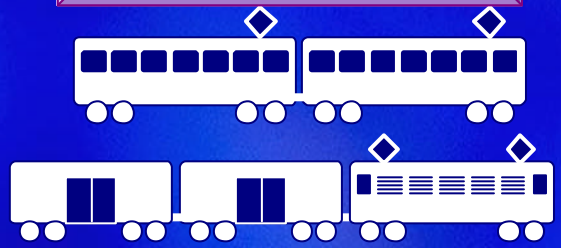


- C Communication
- N Navigation
- S Surveillance
- O Operation

FANS, WAAS

ITS at SEA

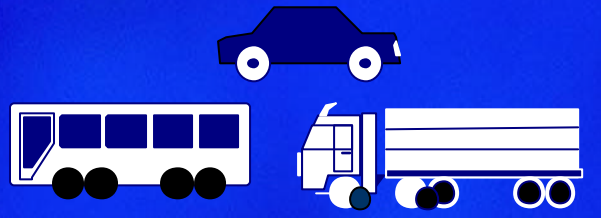
Railway



- C Communication
- O Operation

Advanced Railway Controlling System

Automobile



- C Communication
- N Navigation
- S Surveillance
- O Operation

Advanced Safety Vehicle
Advanced Cruise-Assist Highway Systems

I T S

Back to Basics（2）

- Transportation-

- Provide safe, smooth and seamless transportation

- **Capacity and yield management, safe and smooth flow of passengers**

- Passengers -

- Need for safe, smooth and seamless transportation

- **Need for reasonable, safe and smooth transportation**

II Identify Emerging ITS Technologies that would Improve Safe and Smooth flow of Passengers

Interactive Technology

ITS Technologies that Improve Interaction Between Passengers and Providers of Transportation

Planning

Checking timetable, tariff, routes, etc Transaction

Consulting booklets

Calling up travel agents

Easy, fast

Retrieve and compare

Information Prior to action

PCs, mobile phones connected to Internet

Action

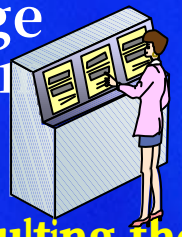
Delay due to accidents, etc.

Learn about it after arriving at the terminal

Smooth, reliable

mobile

Purchasing tickets, extra charge settle

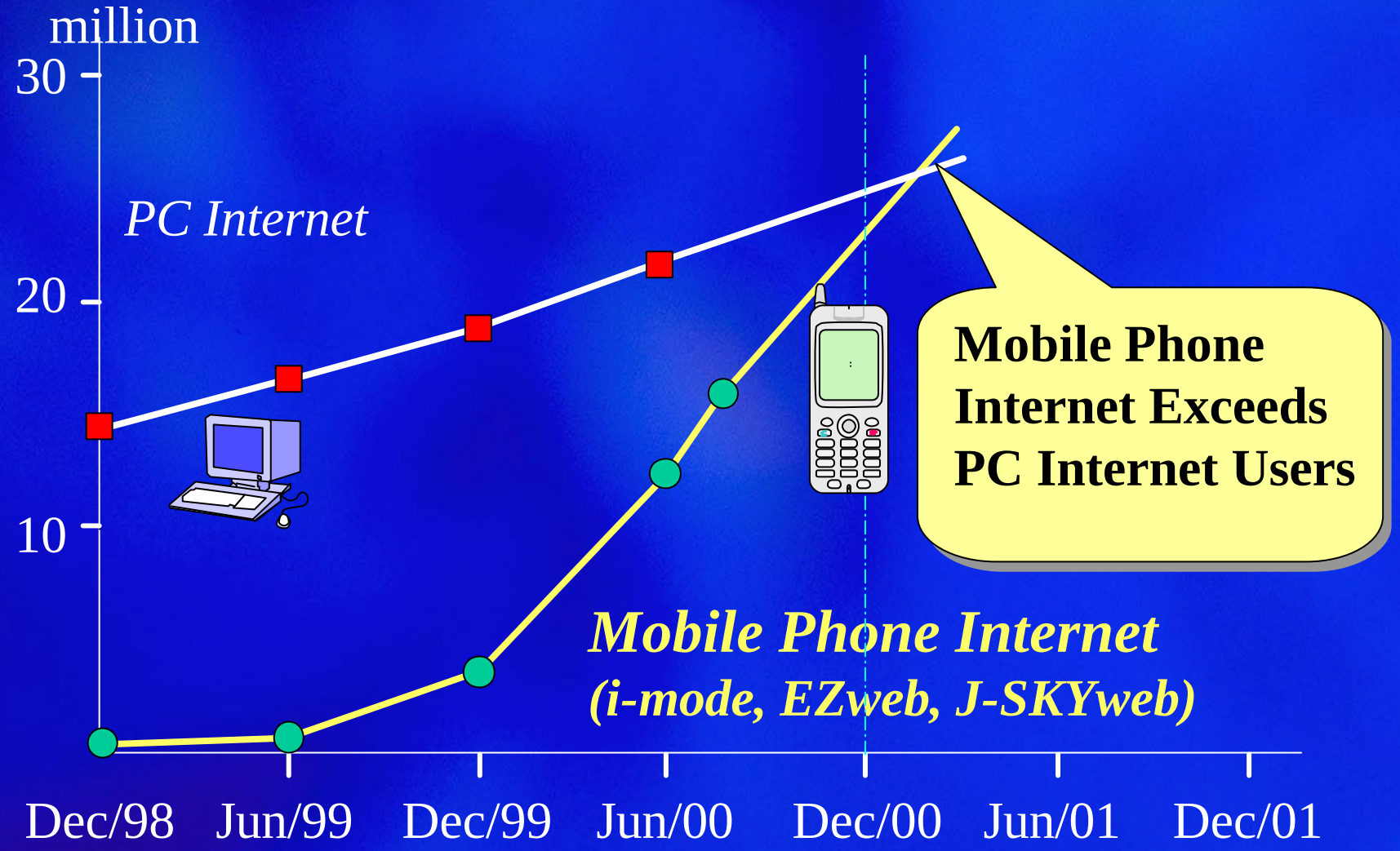


Consulting the fare table and buying a ticket Extra cash payment

convenient

Smart card

Mobile Phone Internet in Japan



EKI-TAN “Ekimae-Tanken Club” meaning “Station-area Expedition Club”

■乗り換え案内
六本木–成田空港間の経路
01/10/01 14:00発

---

[1] 1 時間 15 分 3100円
●日比谷線 普通
六本木 14 :13
-銀座 △14 :22
●丸の内線 普通 160円
銀座 14:25
-東京 △14 :28
●成田エクスプレス25号
東京 14 :33
-成田空港 15 :28

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[2] 1 時間 40 分 1540円
●大江戸線 普通
六本木 14 :01
-門前仲町 #14:17
●営団東西線 快速 370円
門前中町 14 :21
西船橋 ↓
●東葉高速鉄道 快速 610円
西船橋 ↓
東葉勝田台 △ 15 :02
●徒歩 3分
東葉勝田台
勝田台
●京成本線エアポート快特 560円
勝田台 15 :11
成田空港 △ 15:41

Screen Size

★検索結果
六本木 –
成田空港
01/10/01 14:00発

---

[1] 1時間15分
=合計=3100円
*日比谷線 普通
六本木 14 :13
銀座 #14 :22
*丸の内線 普通
銀座 14:25
東京 #14 :28
--小計—160円
*成田エクス25号
東京 14 :33
成田空港 15 :28
--小計—2940円

---

[2]1時間40分
=合計=1540円
*大江戸線 普通
六本木 14 :01
門前仲町 #14:17
*営団東西線 快速

PC

Toshiba

PDA

Mobile Phone

EKI-TAN "Ekimae-tantei Club" meaning "Station-area Expedition Club"

Mobile Phone *EKI-TAN*

Screen Size on the Mobile Phone

★検索結果
六本木 –
成田空港
01/10/01 14:00発
---
[1] 1時間15分
=合計=3100円
*日比谷線　普通
六本木　　14 :13
銀座　　#14 :22
*丸の内線　普通
銀座　　14:25
東京　　#14 :28
--小計—160円
*成田エクス25号
東京　　14 :33
成田空港　15 :28
--小計—2940円

Designated by using the key-board on the phone

translation

★Retrieval Results
Roppongi –
Narita Airport
01/10/01 14:00 Dep
---
[1] 1h15min
=fare=3100 yen
*Hibiya Line　(sub)
Roppongi　　14 :13
Ginza　　#14 :22
*Marunouchi Line
Ginza　　14:25
Tokyo　　#14 :28
--sub total-160yen
*Narita Express#25
Tokyo　　14 :33
Narita　　15 :28
--sub total-2940yen

Toshiba

EKI-TAN Route Guide Map

PC

★行き方Map
行き先:東芝
最寄駅:浜松町
約7分,375m

驕東京ガス
ご利用上の注意(必読)

文字Map
ラリーMap
周辺Map
乗り換え案内
駅リモコン

各種Mapについて

行き方地図TOP
首都圏駅探TOP
(C)TOSHIBA
2001

PDA

Screen Size

★文字Map
▼浜松町駅南口から[1]東京ガスの見える方向に道なりに130m進む
▼5叉路の右から二番目の道を220m進む
★左が目的地

0.戻る

行き方地図TOP
首都圏駅探TOP
(C)TOSHIBA
2001

mobile Phone

Toshiba

Dynamic Railway Irregularity Information System

On site

Before (analogue)

Information

Analogue info

Operation command

Railway operation centers

news release to the media

Emergency operation plan

From now (digital)

XML format data

Internet news

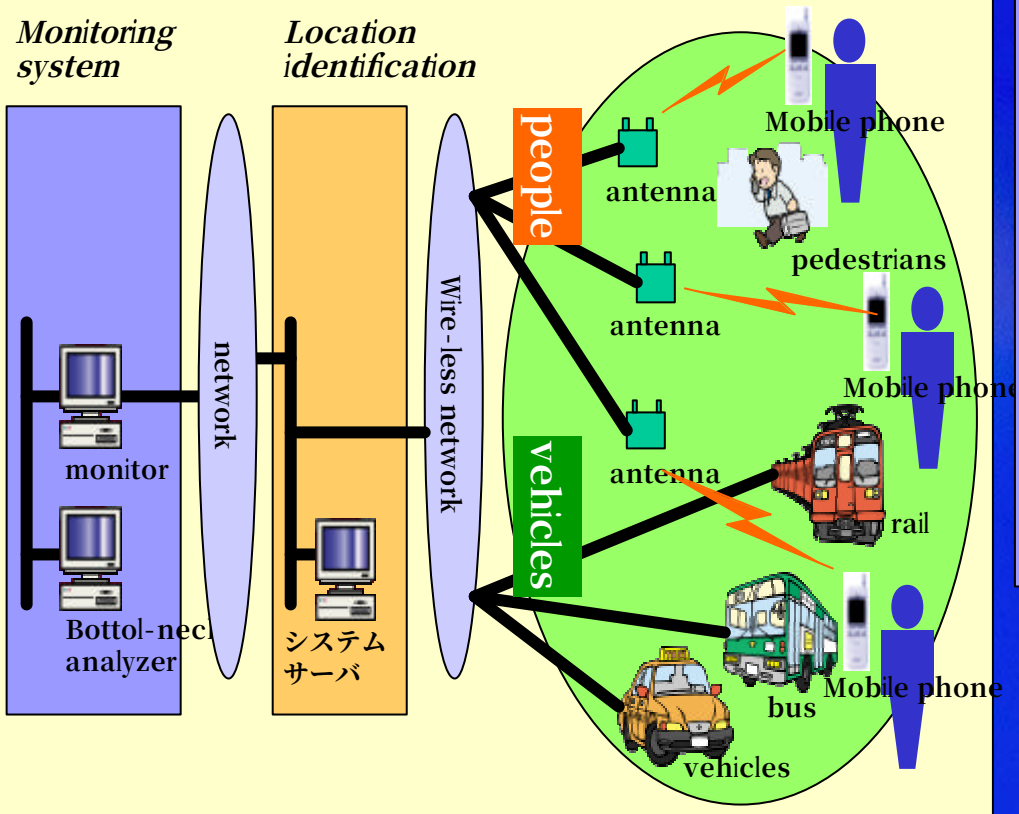
- •display at stations
- • information to other railway companies
- •digital broadcasting
- •internet provider
- •mobile phone info service

Ⅲ Initiatives in Japan to Utilize Mobile Phone for Safe and Smooth Transport - Show Case during 2002 FIFA World Cup Finals -

ITS Pilot Projects for 2002 FIFA World Cup at Sapporo

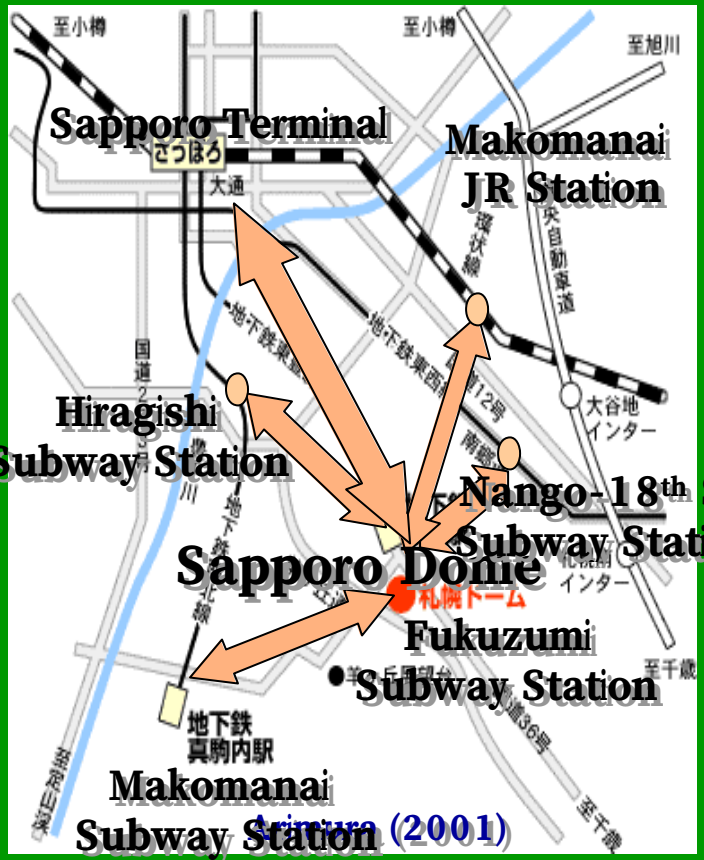
Dynamic Tracking Information System

- ◆Probing Passengers by mobile phones
- ◆Mapping Information on GIS
- ◆Identifying Bottle-necks



Field of the Project

＜Sapporo Dome＞
One of ten venues for the 2002 FIFA World Cup Finals (June 1st & 3rd)

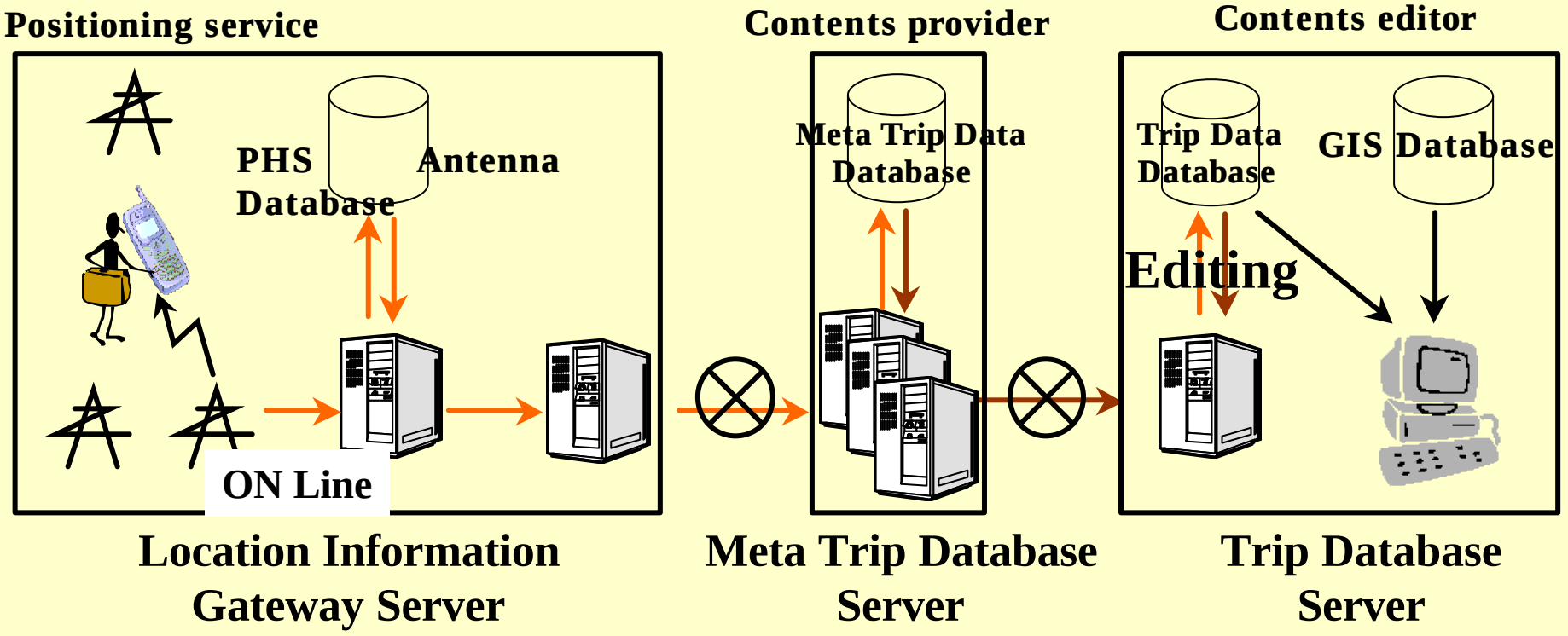


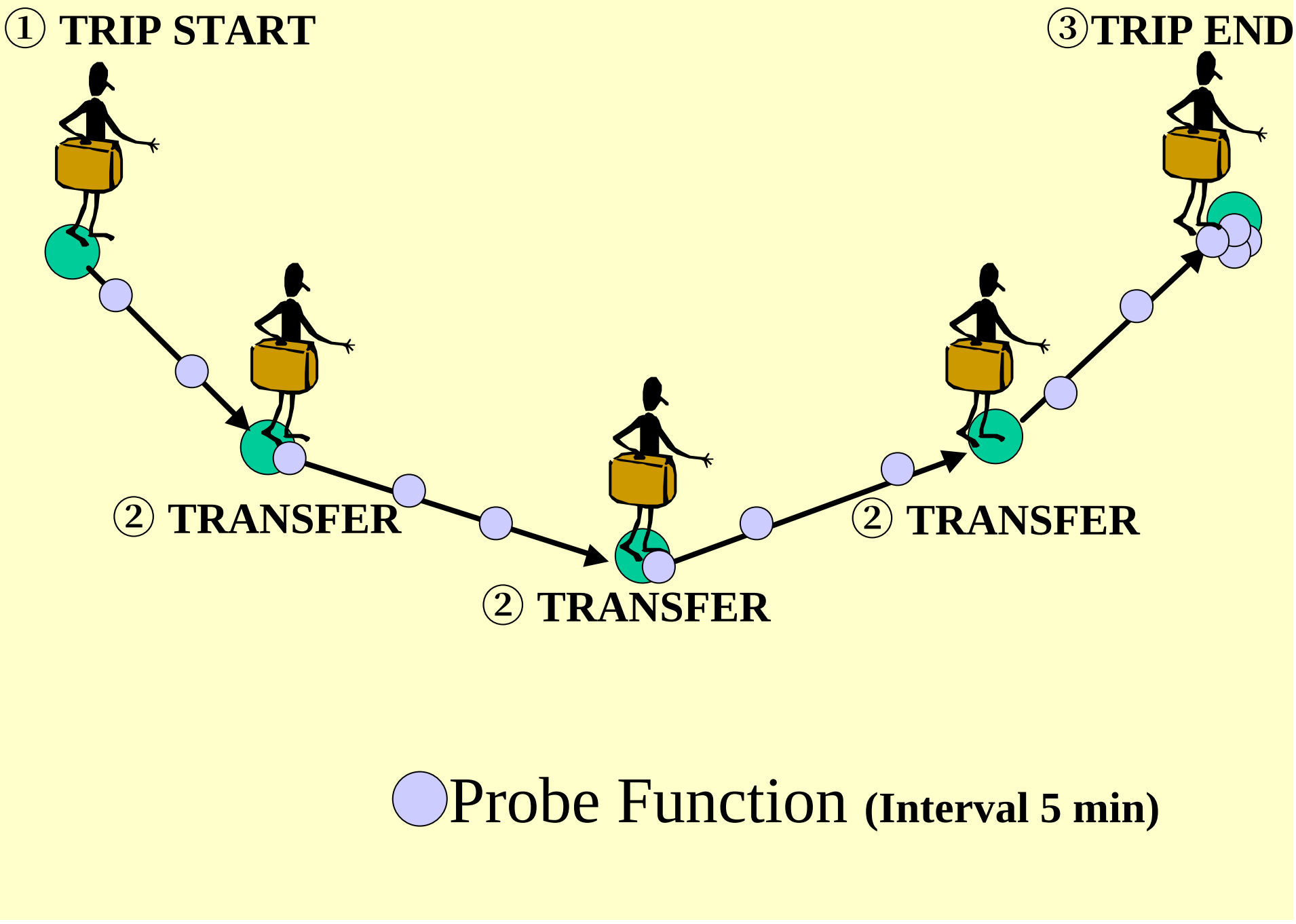
Inside the Stadium


Arimura (2001)

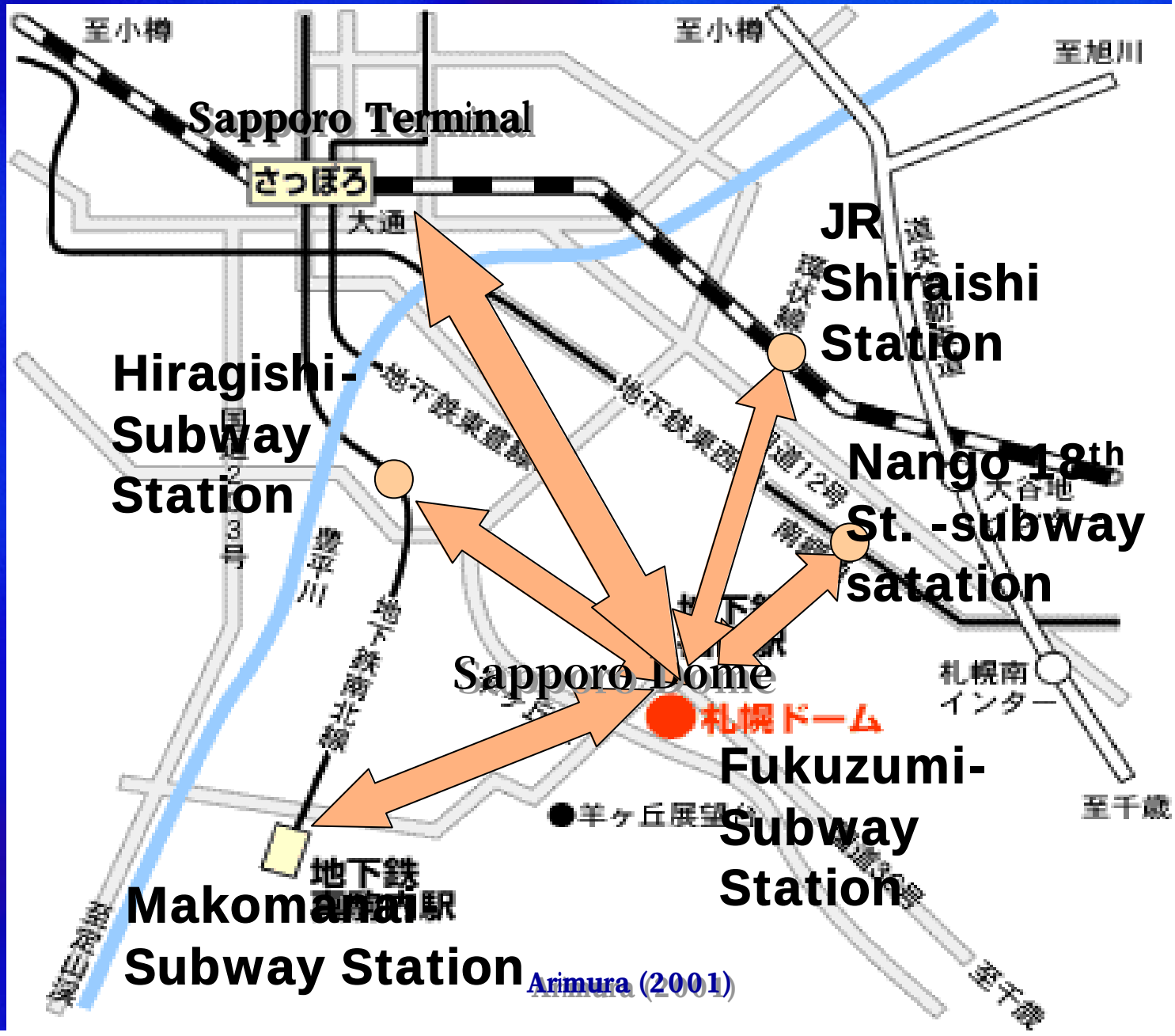
Dynamic Probe Information System using Mobile Phone

Mobile Phone (PHS: Personal Handy-phone System)

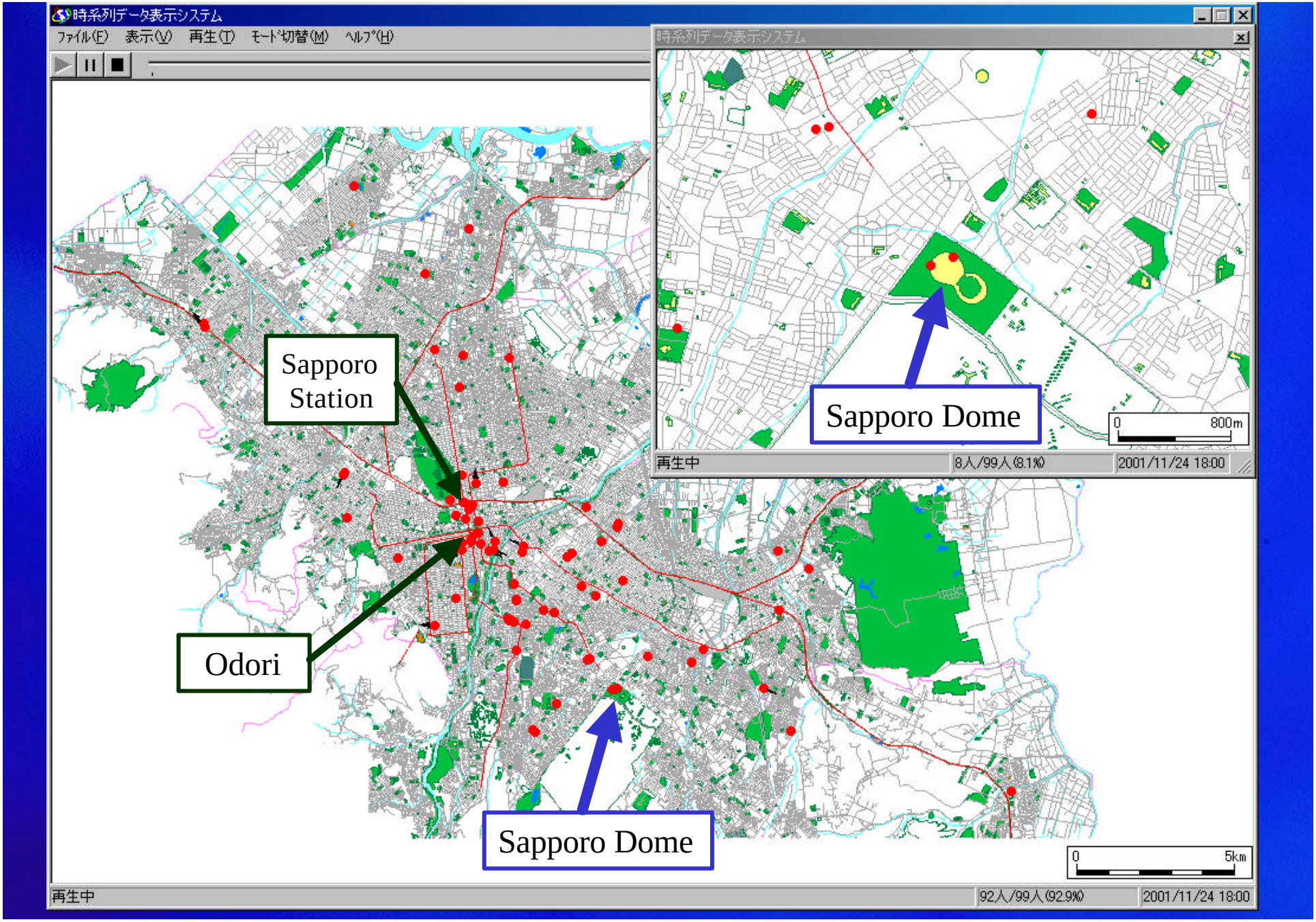



① TRIP START
③TRIP END
② TRANSFER
② TRANSFER
② TRANSFER
Probe Function (Interval 5 min)

Access to “Sapporo Dome”



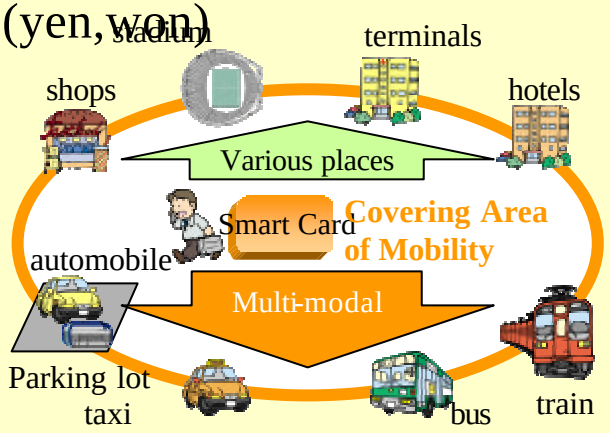
Probe Information Plotted on GIS (in 15minutes interval)



ITS Demonstration Projects for 2002 FIFA World Cup at Sapporo

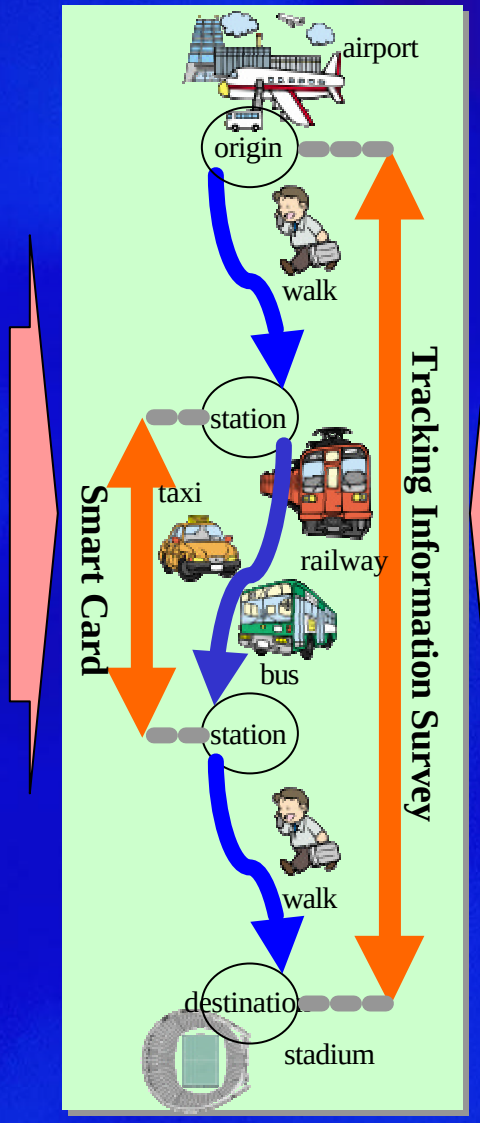
Multiple Application Smart Card

- ◆Transport and Purchasing Activities by single Smart Card
- ◆Multiple Currency (yen,won)



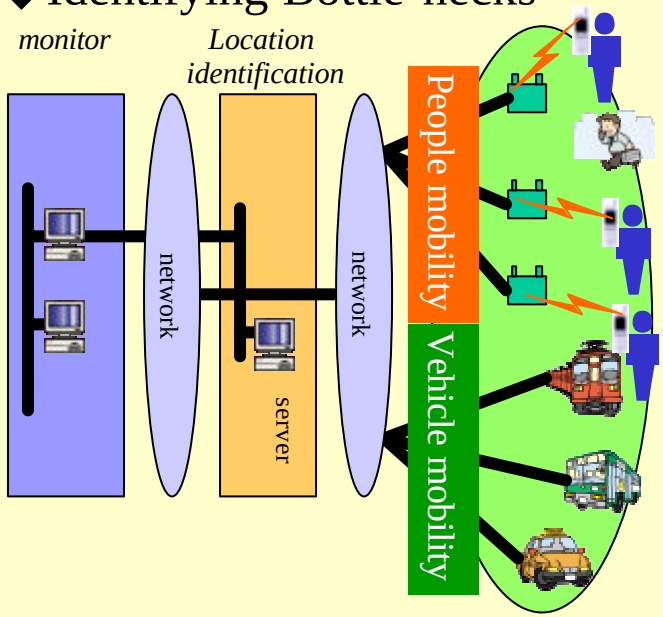
Multi-functional Transaction

Smooth Transportation



Dynamic Tracking Information System

- ◆Location tracking by PHS
- ◆Mapping Information on GIS
- ◆Identifying Bottle-necks



Improved Mobility in Large Events

Demonstration Projects during 2002 World Cup

Advanced Transport Forum in Japan

Forum composed of key members from industry, universities and administration

Forum Started September 2001

- Share Common Goal & Strategy
- Foster Various Demonstration Projects

＜theme＞

◇ITS initiatives for CRM in Urban Transport

◇Information technology for Traffic Demand Management in access to large event sites

International Cooperation

ITS World Conference

IV CONCLUSION

Conclusion（1）

Mission

Growing need for ITS Technologies to Facilitate Safe and Smooth Flow of Passengers

Strategy

Probe Technology has the Potential of Addressing Broad Range of Issues

Dynamic Probe System using Mobile Phones

- DynamicProbe System can be Utilized for a Number of Purposes
  - ⇒ To Identify and Analyze Bottle-necks in Access Routes in Large Events
  - ⇒ To Automatically Data Accumulation for Statistics
  - ⇒ An Alternative Research Tool Supplementing or Replacing Conventional Paper-based Questionnaires
  - ⇒ To Identify Location in case of Emergency (the "May-Day System")
- Issues to be Addressed
  - ⇒ Privacy Control, i.e., Technology to Mask Private Information when Necessary, Legal Rules for Data Use

Conclusion （2）

Mission

Need for a Systematic Scheme for Identifying Mobility of Passengers

Strategy

Seek Possibility of Institutionalizing Probe Technology as Multi-modal Information Platform

Conclusion （3）

Mission

Seek Feasible Business Model for Dynamic Probing System

Strategy

Conduct Pilot Programs to Boost up the Project and find Hidden Agenda

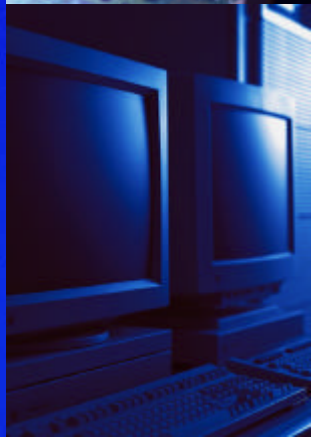
Project Coming-up !

Tokyo Area Airport Access

Utilizing Dynamic Probe Information System to Facilitate Smooth Flow of Airport Access

Thank You for Your Attention

ITS



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