

Shared-Use Station Car Programs

Shared-Use, Station Car Summit

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University of California, Irvine

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Outline:

- basic shared vehicle system models**
- car sharing activities in Asia**
- car sharing activities in Europe**
- car sharing activities in North America**
- research and development issues**

Car Sharing, Station Cars:

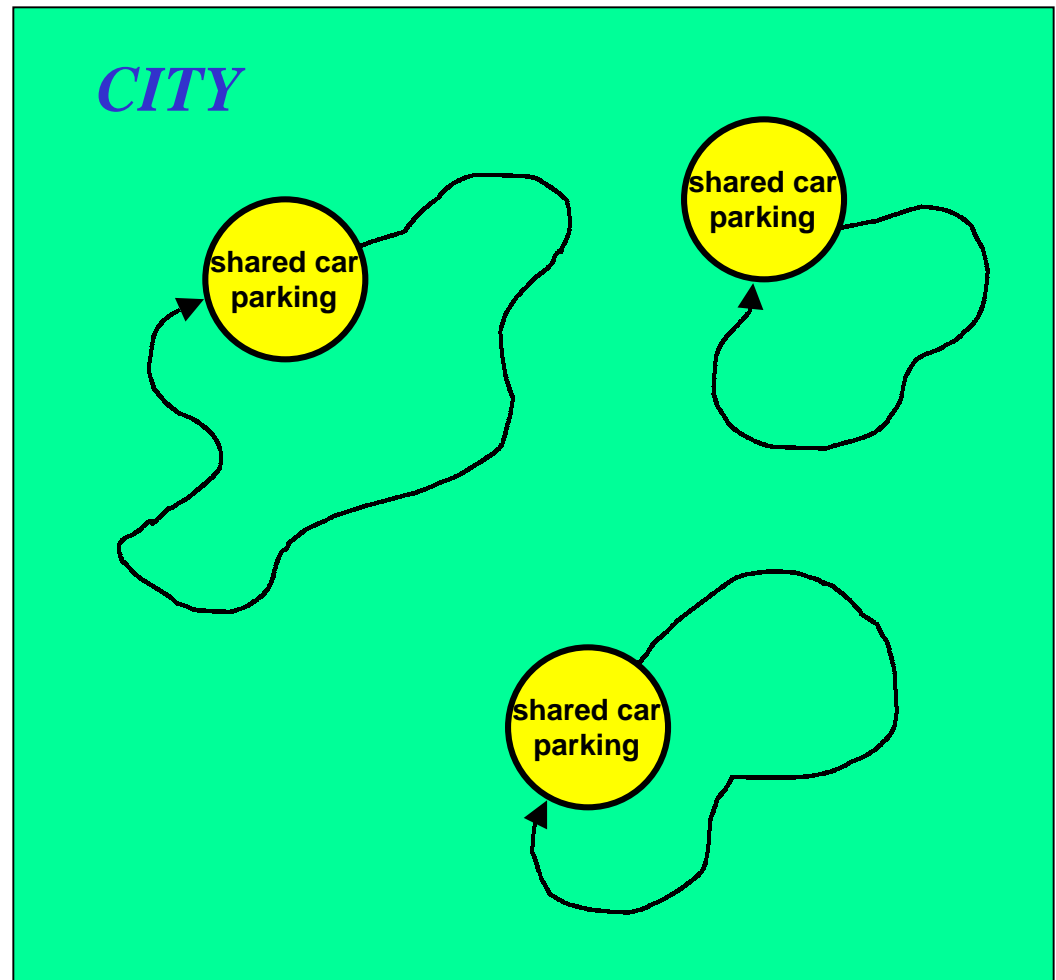
- **organized short-term car rental**
- **joint access to a fleet of vehicles**
- **vehicles are used multiple times by multiple users**
- **Electric Vehicles (EVs) are an excellent fit in these systems since range is not a large issue; environmental benefit**

Car Sharing Models

- **Car Sharing Organizations (CSOs)**
- **Station Cars**
- **Hybrid Systems**

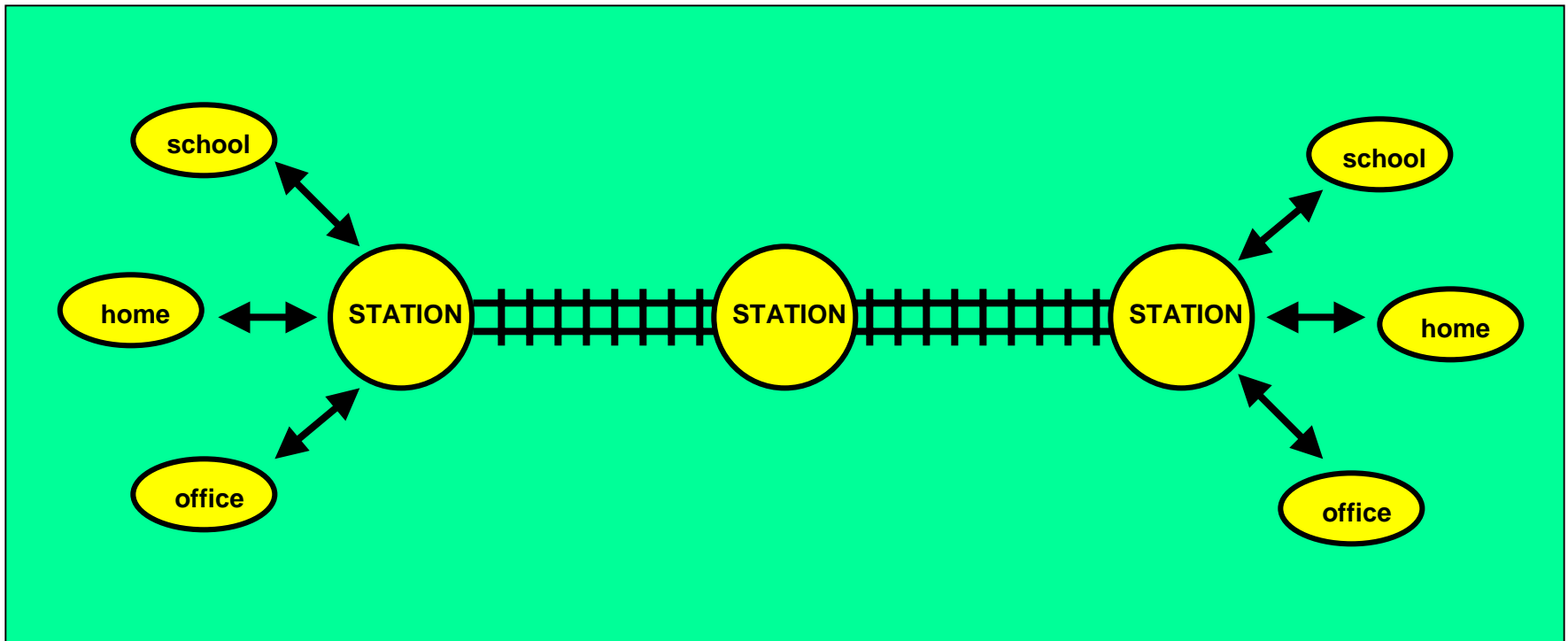
Car Sharing Organizations

- predominant model
- residential use
- urban use
- rural use



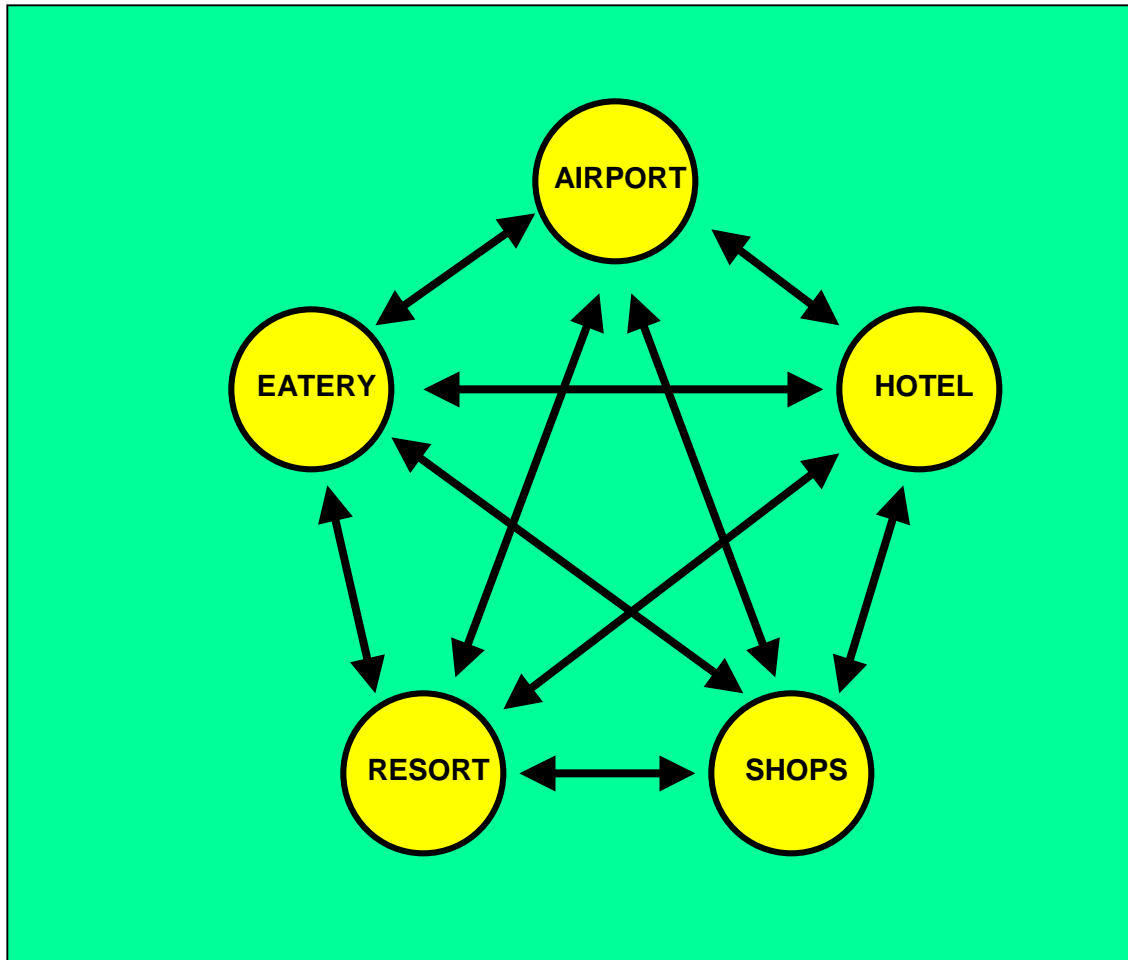
Station Cars

- linked to transit, commuting
- used at trip ends

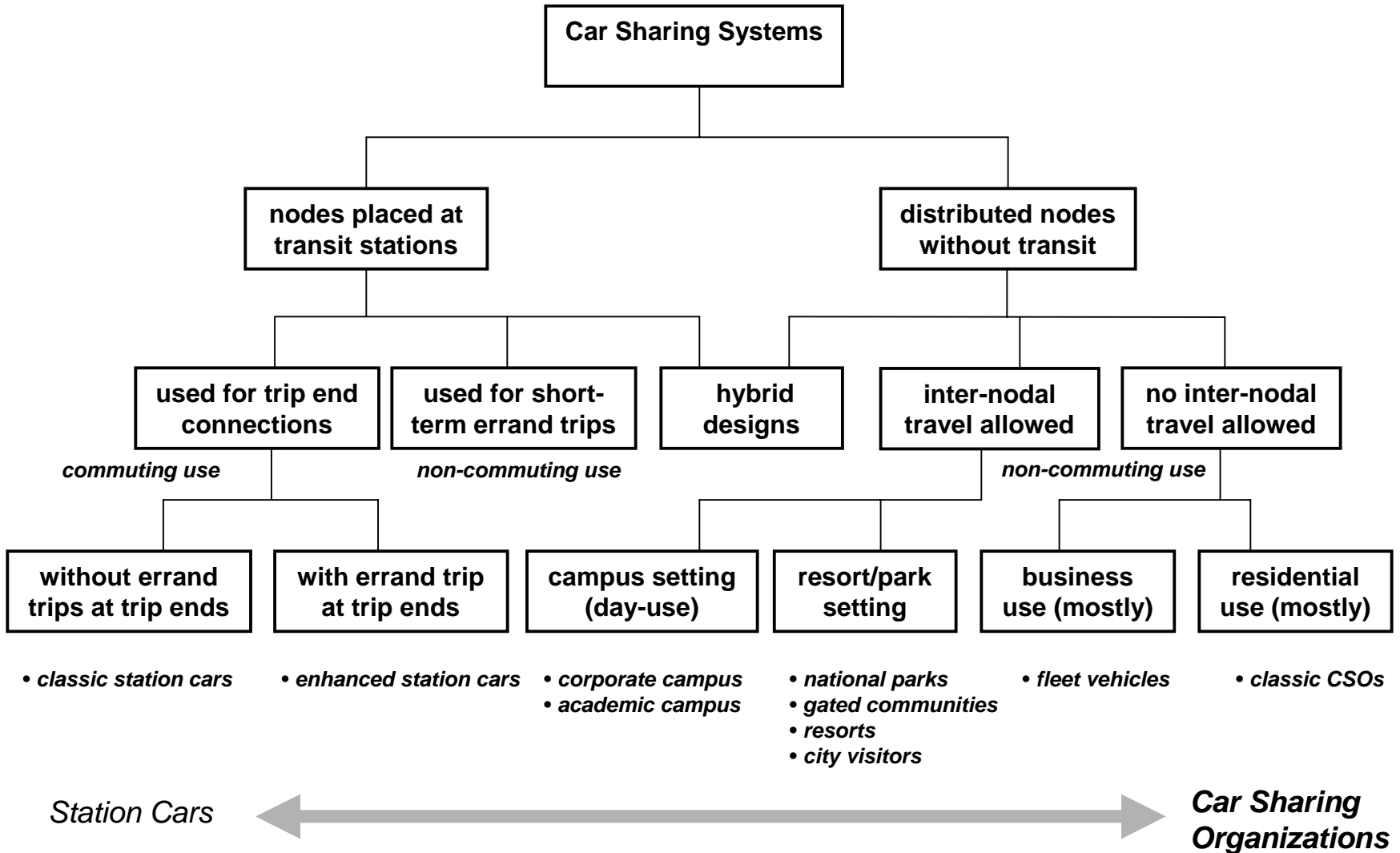


Multiple Station Car Systems

- placed at areas of high activity
- can move between locations



Car Sharing Taxonomy



Station Cars



Car Sharing Organizations

Car Sharing and Station Cars in Asia:

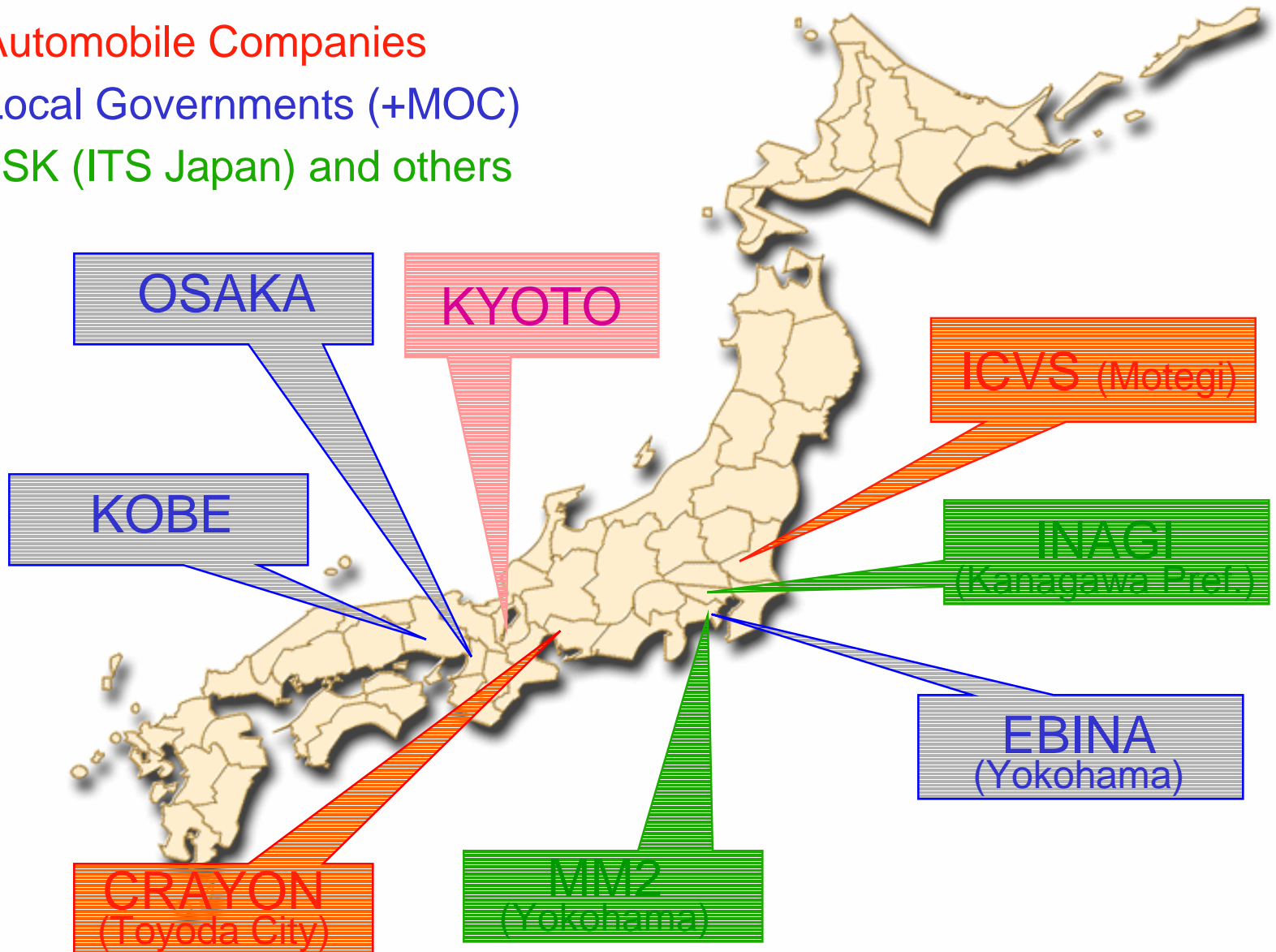
- many cities in Asia have high population densities, serious traffic congestion, and shortages of parking
- these cities typically have good transit systems (rail, subway, etc.)
- shared vehicle programs can improve these transportation systems
- car sharing (primarily station car systems) activities are most prevalent in Japan
- most of Japan's programs use electric vehicles

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- M. Takayama (JSK), M. Miyashita (JSK), others...

Car Sharing Programs in Japan:

- Automobile Companies
- Local Governments (+MOC)
- JSK (ITS Japan) and others



HONDA ICVS (Intelligent Community Vehicle System)



- ICVS concept was announced in 1994
- main demo setup at Motegi twin ring race center; includes hotel, museum, etc. (from 1998)



ICVS Citypal



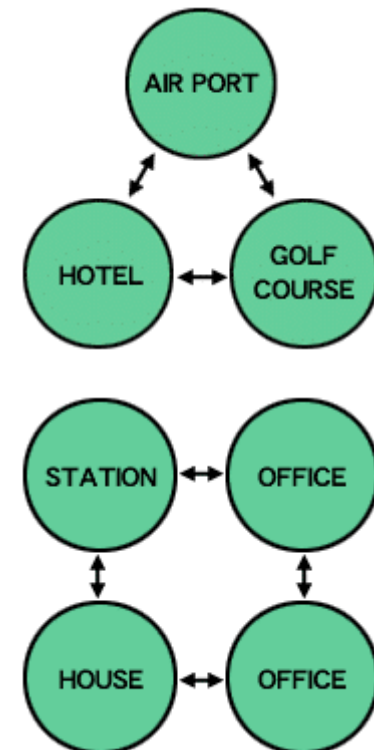
ICVS Stepdeck



ICVS Monpal



ICVS Racoon



ICVS Port Terminal



ICVS (Special) IC-Card



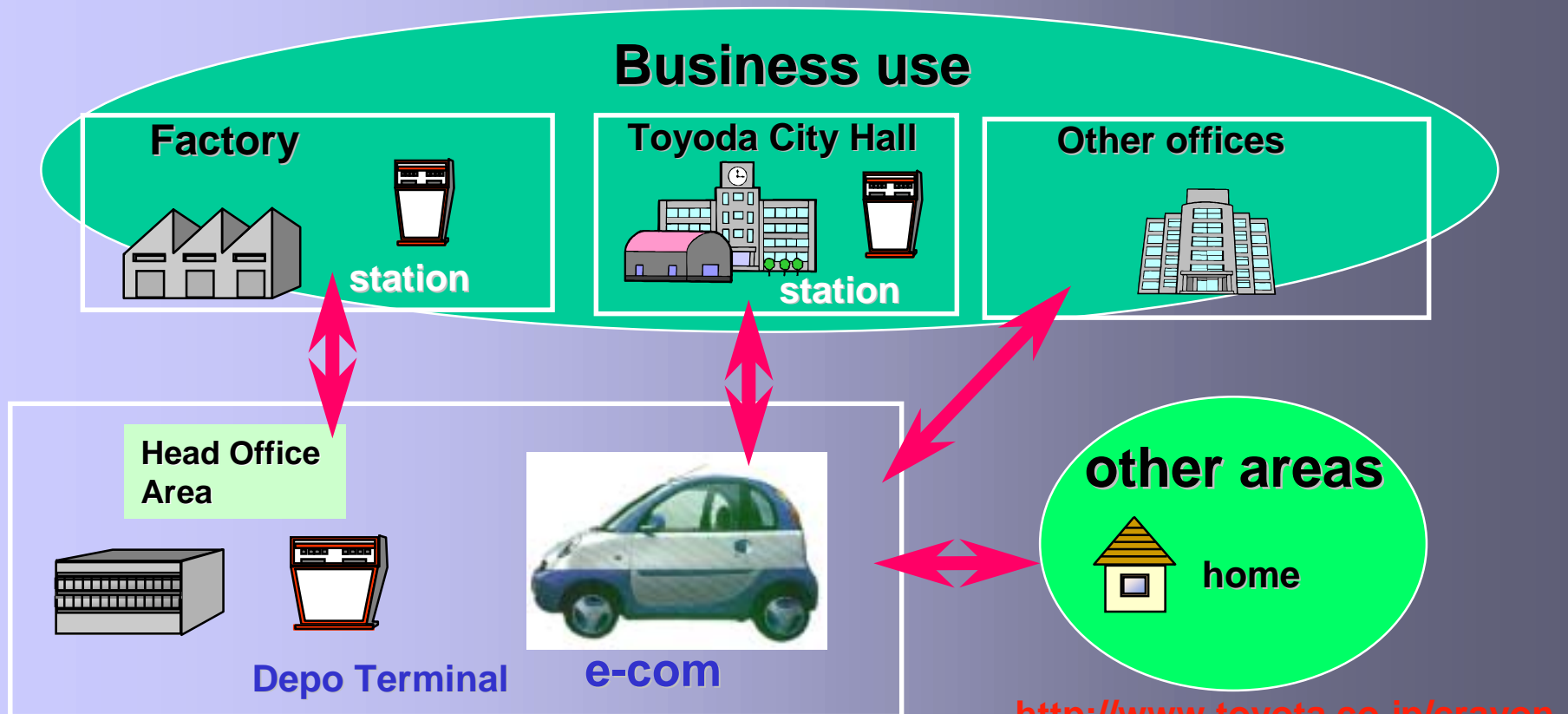
ICVS-City Pal, Platoon Drive (unmanned driving) from a station to another station



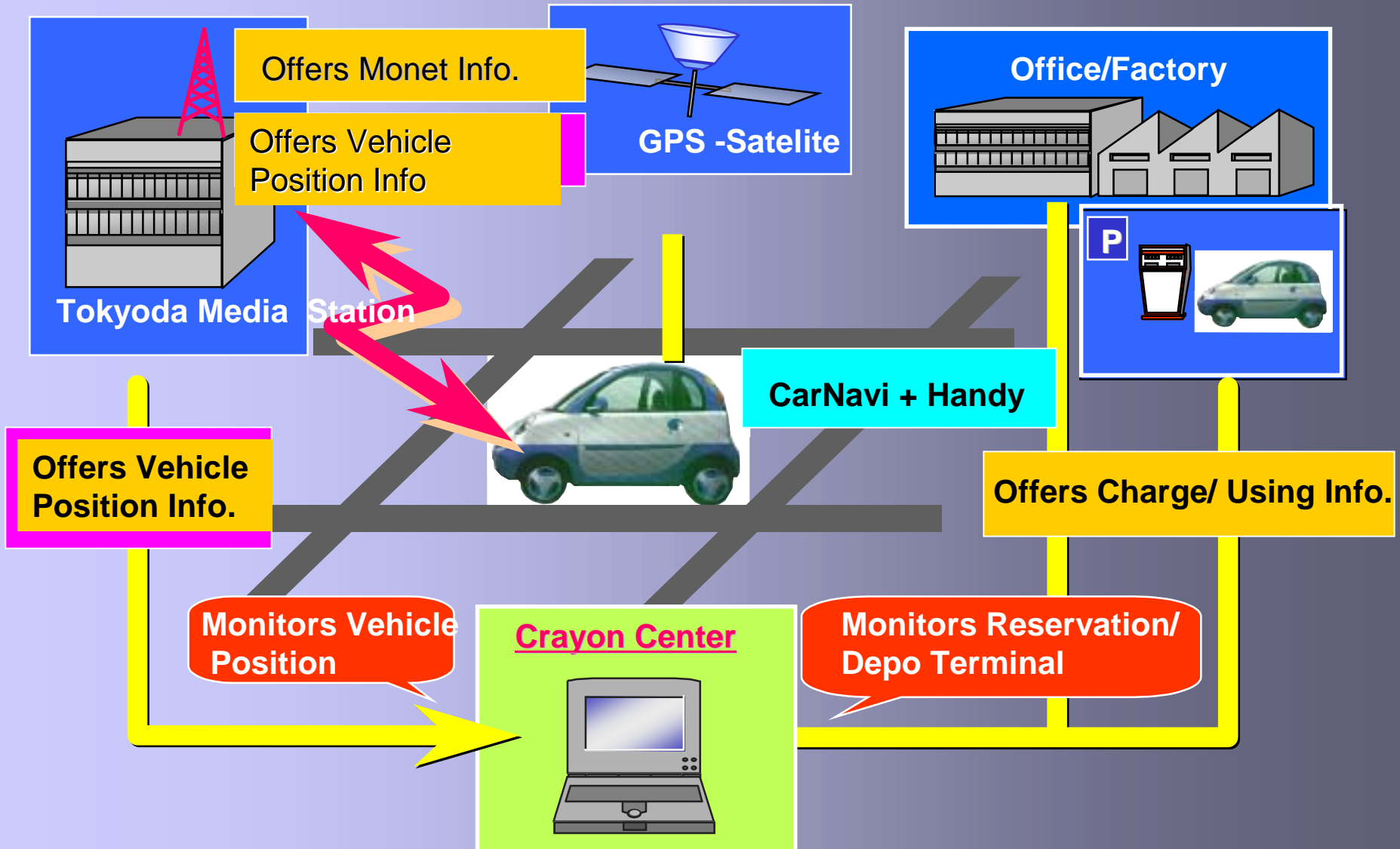
ICVS-City Pal Automatic Charge Terminal with unmanned parking

Toyota EV CRAYON System

Objective: Experiment - common use of small two-seated EV: e-com
Service: daytime: business use
morning/evening: commuting between company and home
Setup: 50 vehicles, 13 stations, 700 members



Crayon System Composition



INAGI ITS SYSTEM FOR SECOND CAR SYSTEM IN RESIDENTIAL AREA

concept

System: EV-CarSharing, Single Port

**To study second car in
the residential area**

Term: Sep.-Dec.99 (First stage)

Organization: MITI, Orix-rentacar (Japan)

Housing Corp., Toyota, Daihatsu, Nissan...

Vehicle: Daihatsu Alto EV, (2000, e-com)

5 Stations, 27 Vehicles, 250 members

**Monitoring&Communication: battery, EV-
sensor, telephone, car-navigation**

Reservation: telephone, Internet

ServiceTime: 8:00AM – 8:00PM

Key: IC-card

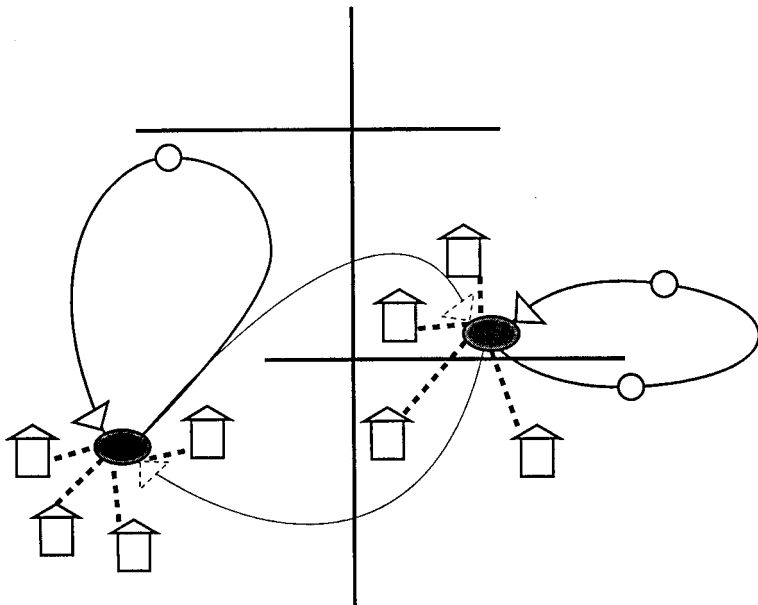
Chargers: 16 + 14

Fare : free

住宅地セカンドカーシステム

稲城市

<概要図>



Yokohama Minato-Mirai 21 MM21

- research project of the JSK (Japan association of electronic technology for automobile traffic and driving)
- Location: urban area of Yokohama
- 50 EVs, 11 stations, 447 people
- EVs: Hypermini, Alto EV, Every EV
- high degree of ITS technology to increase system efficiency:
 - wireless key fobs
 - short range communications
 - vehicle management system
 - internet reservations
- primary use: business trips during weekday, tourists and hotel guests use on weekends

海老名

エコ・パーク アンド ライド社会実験

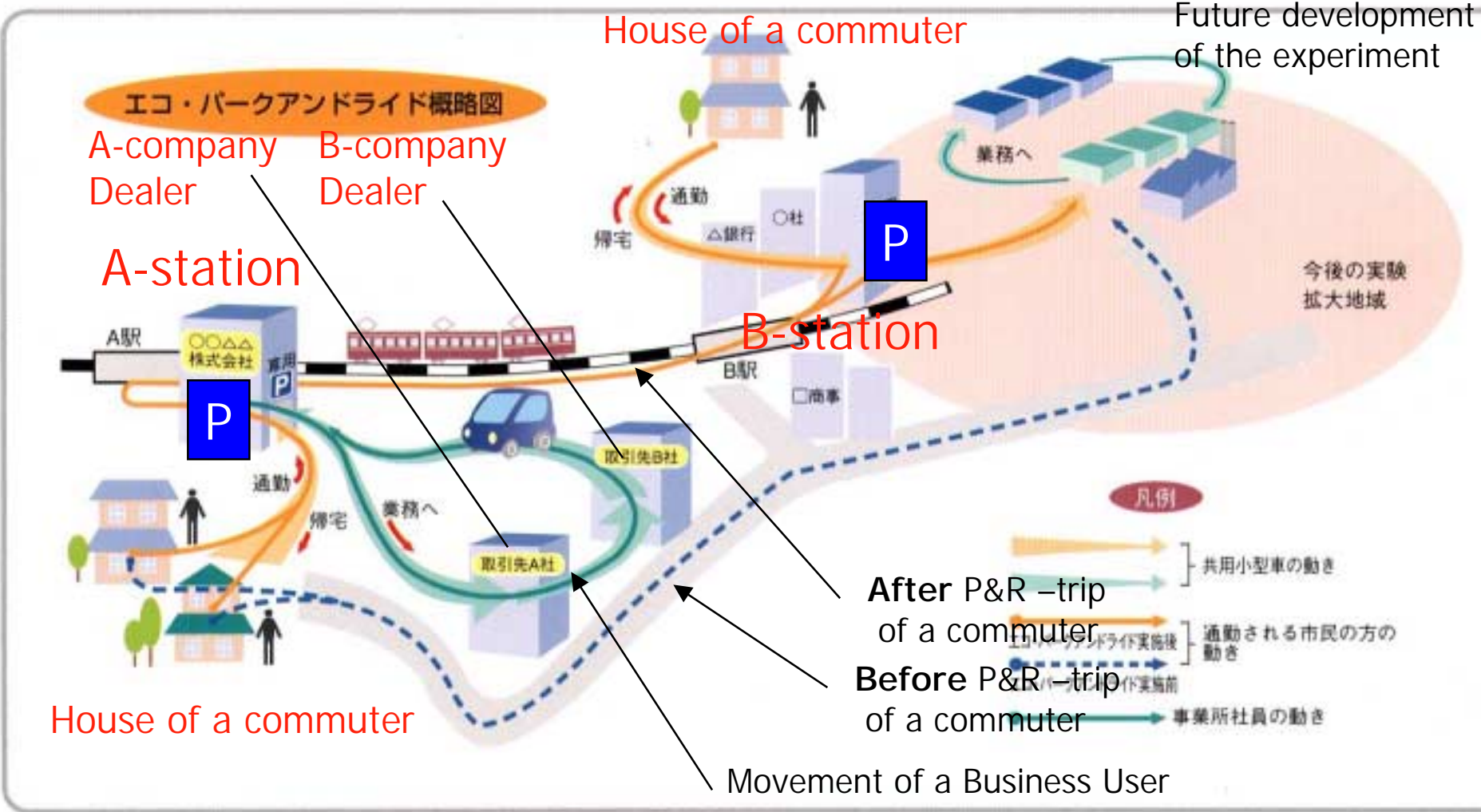
Ebina Eco-Park and Ride with car sharing system

EBINA ECO Park and Ride

- sponsor: local government and Nissan
- Location: Ebina station, 20 km from Yokohama
- 15 vehicles, 1 station (Ebina city hall)
- members: 10 car commuters; 300 potential day users
- combines commute patterns and day use
- <http://www.ebina.mlit.go.jp/road/demopro/index.htm>



Concept of EBINA Eco Park + Ride System



Other key car sharing systems in Japan:

– **Kyoto System**

- recently launched
- 20 e-coms, 15 hyperminis
- 7 stations
- eventual goal of demonstration is business
- <http://www.toshikotsu.or.jp>

– **ICEV Car Sharing**

- operated by Ecomo foundation
- located in section of Tokyo
- similar to Switzerland's Mobility System
- 5 EVs, 75 members
- 3-month demo starts in September, 2001

– **Kobe**

– **Osaka**

Asian car sharing systems outside of Japan:

- **Singapore Car Cooperative**
 - traditional car sharing organization
 - 11 car sharing sites
 - uses standard ICE vehicles
 - www.carcoop.com.sg
- **Honda ICVS in Singapore**
 - station car system to operate in Singapore

Conclusion:

- shared vehicle systems are becoming more and more prevalent in Asia, primarily in Japan
- make use of a lot of intelligent transportation system technology