

---

# **New Middleware Approaches for Ubiquitous and Mobile Solutions**

**April 2, 2003.**

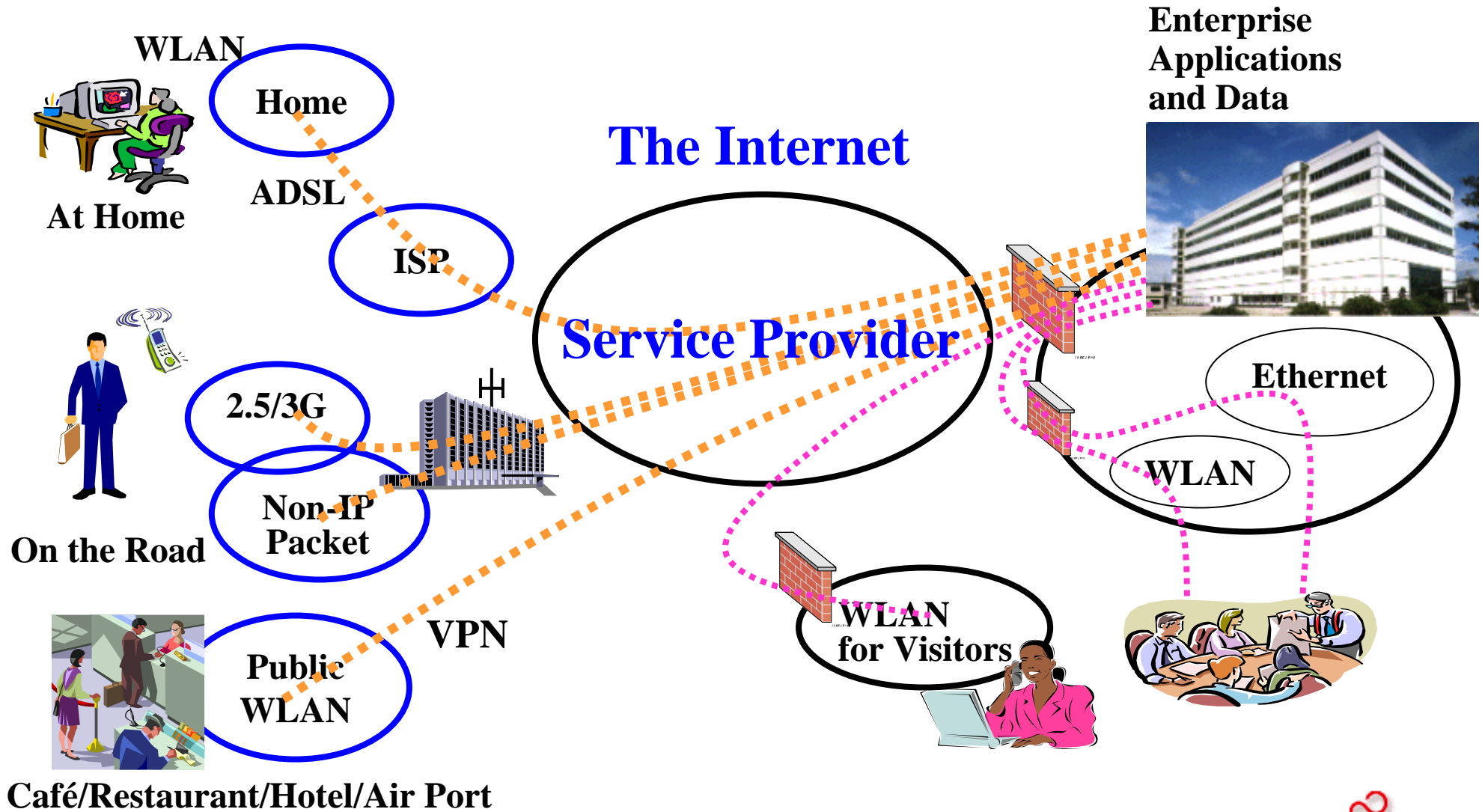
**Kazuo Asakawa**

**FUJITSU LABORATORIES, LTD.**

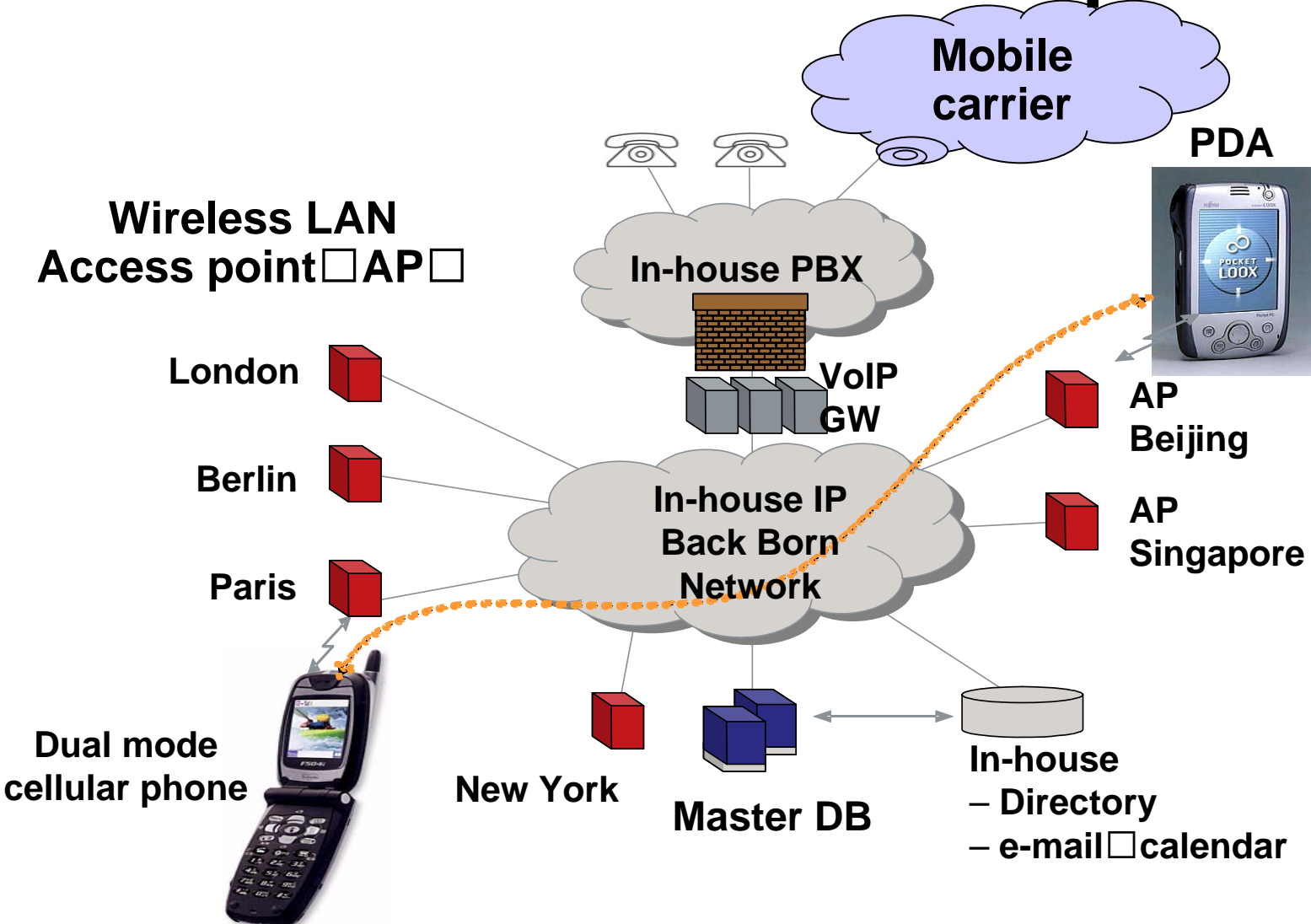
1

# Ubiquitous & Mobile Solutions

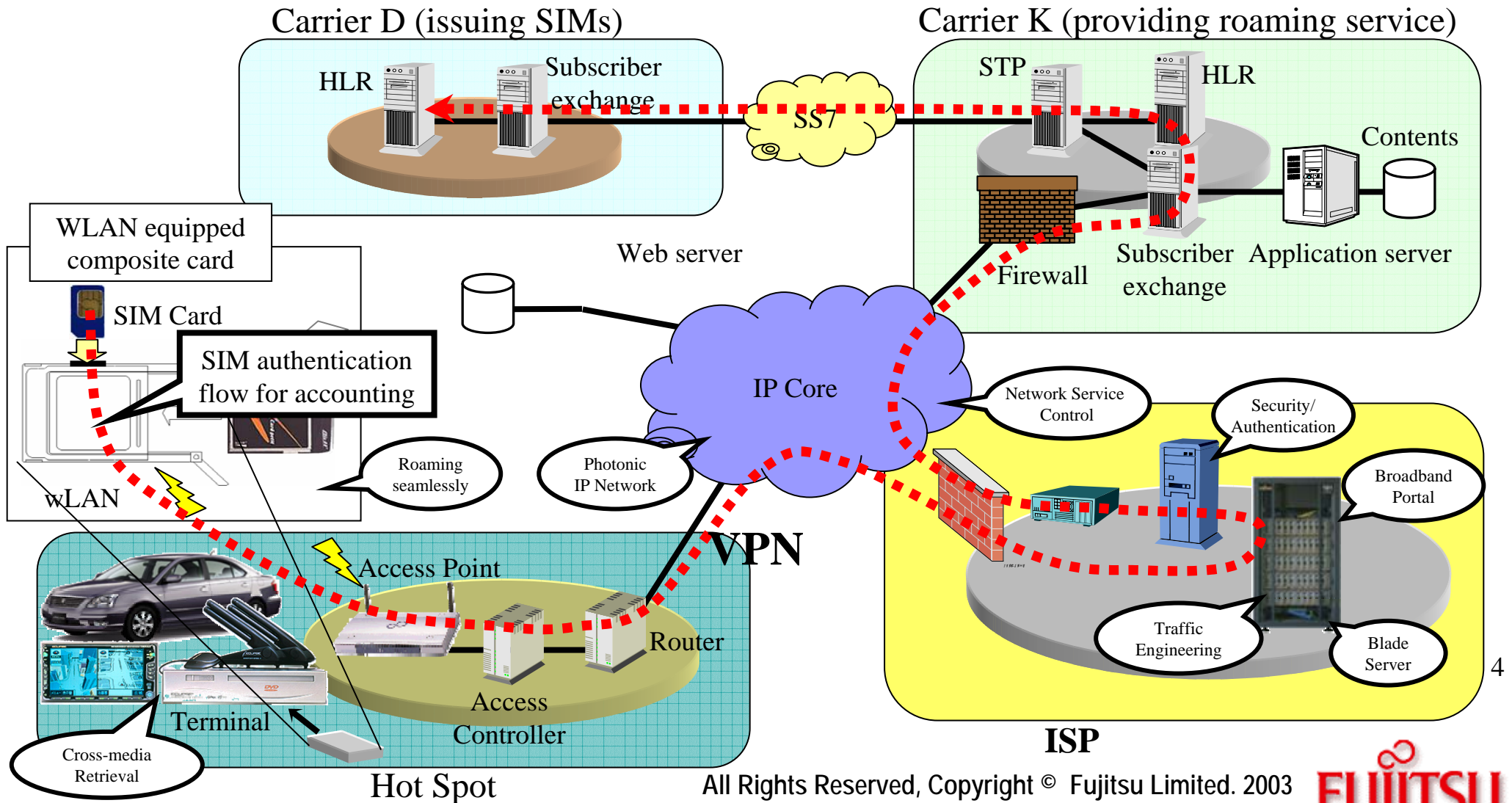
## Dynamic Secure IP Roaming between locations



# Roaming between Intranet WLAN and Cellular Phone 1<sup>st</sup> step



# Roaming between Public WLAN and Cellular Networks □2<sup>nd</sup> step□



# PCMCIA Type-2 Extended Card with a built-in IEEE802.11b Wireless LAN □ commercial product □



**Outward appearance**



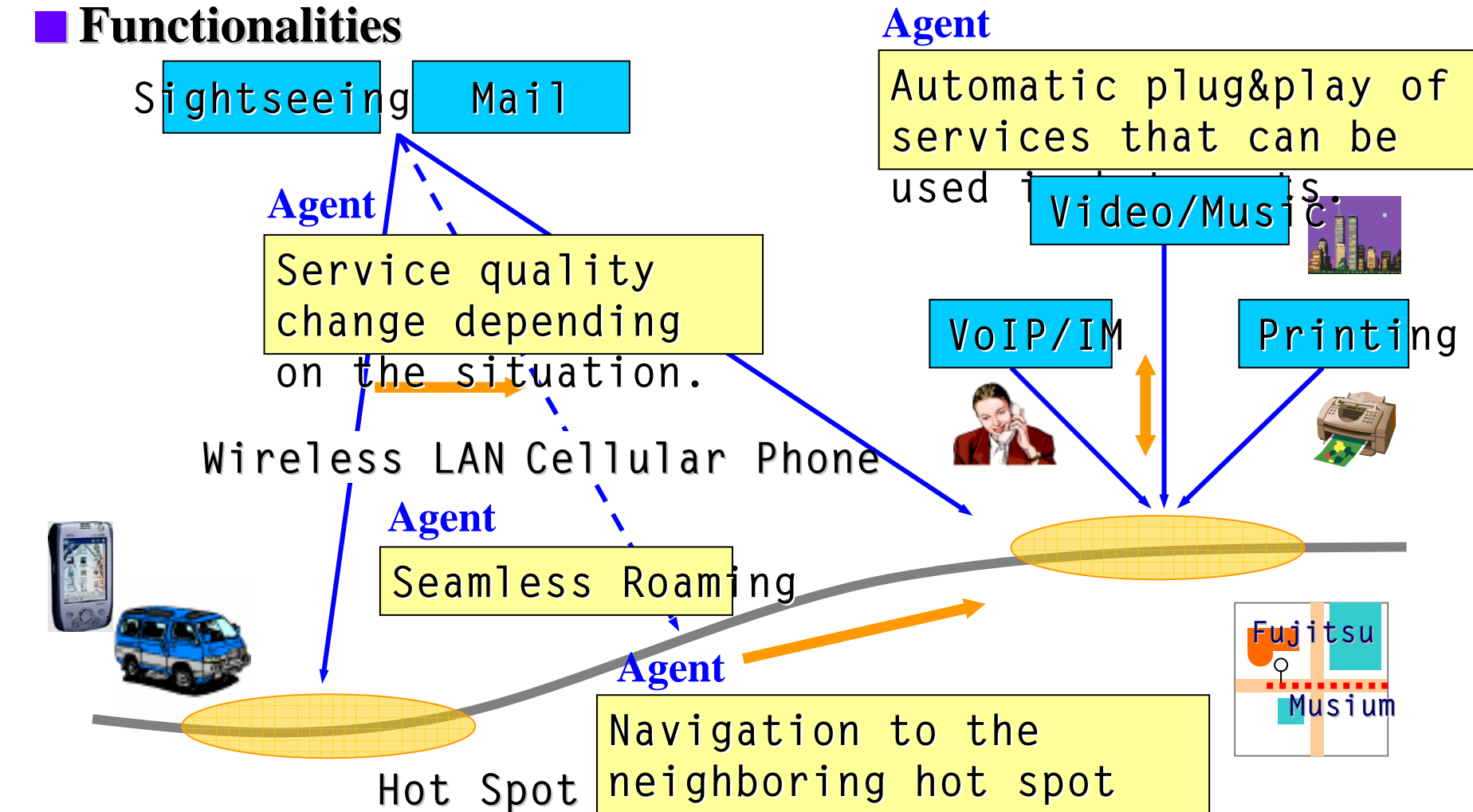
# Middleware for Ubiquitous deployment

- ◆ **Realizing secure environments enabling mobile businesses with privacy protections**
  - Hot spots coordination
  - Credit management services by Carriers and ISPs
  - SIM card incorporating a trusted engine
  - Attribute authentication using SIM cards
  - Contents protection by anti-tamper devices
  
- ◆ **Network independent ubiquitous services**
  - e.g. legacy mobile network v.s. IP network □
  - Seamless IP roaming, location-oriented services and ad hoc community formation by software agents
  - Intelligent web crawler on meta-data retrieval
  - Customized services based on the profile matching

6

# Seamless Service Coordination by Software Agents: **Interstage SeamlessLink**

## ■ Functionalities



**VoIP : Voice over IP    IM : Instant Message**

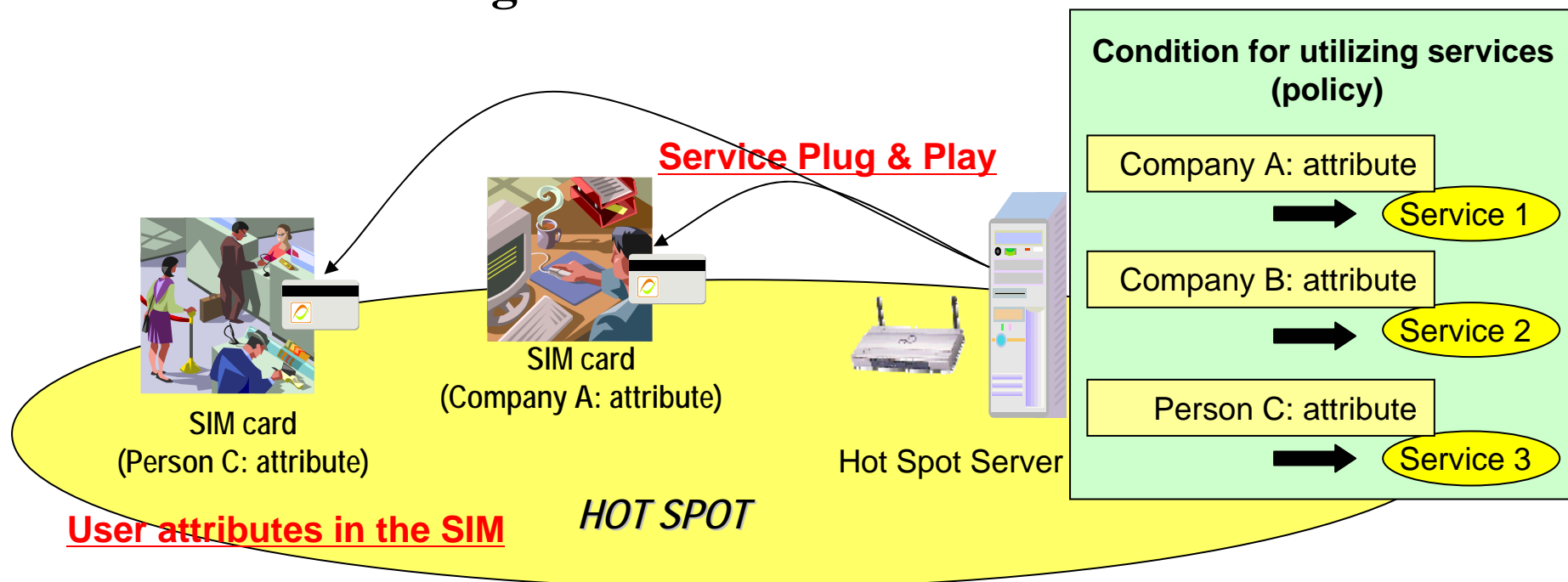
All Rights Reserved, Copyright © Fujitsu Limited. 2003

THE POSSIBILITIES ARE INFINITE **FUJITSU**

# Hot Spot's Services using SIM card

Offering available services corresponding to the user's attributes on the SIM card

- Defining what services are available for what attributes by the policy
- Providing automatic service plug-in & plug-out with software agents

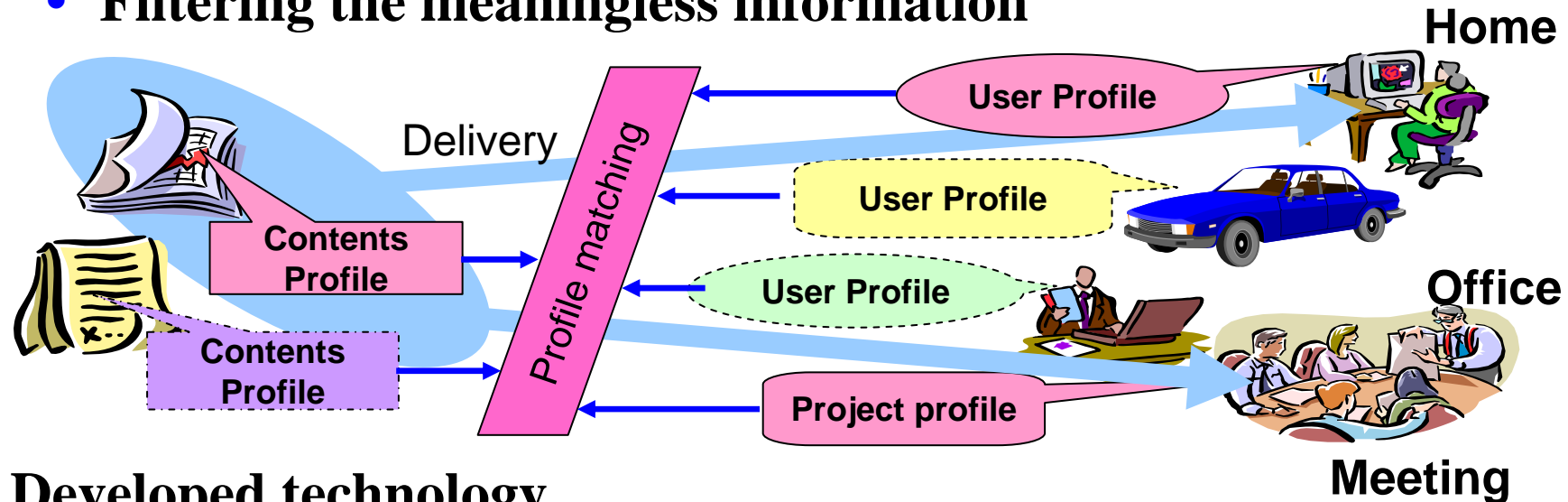




# Ubiquitous Solutions for Knowledge System

## ■ Profile matching on the Semantic web

- Providing the suitable knowledge to the occasion, place, etc.
- Filtering the meaningless information



## ■ Developed technology

### • Profile (metadata) extraction

User profiles: Keyword extraction from personal documents

Project profiles: Extract business categories

Contents profiles: Keyword extraction, automatic categorization

### • Profile matching: **Interstage Cradle**

### • Intelligent Web Crawler : **Interstage TerraCrawler**

All Rights Reserved, Copyright © Fujitsu Limited. 2003

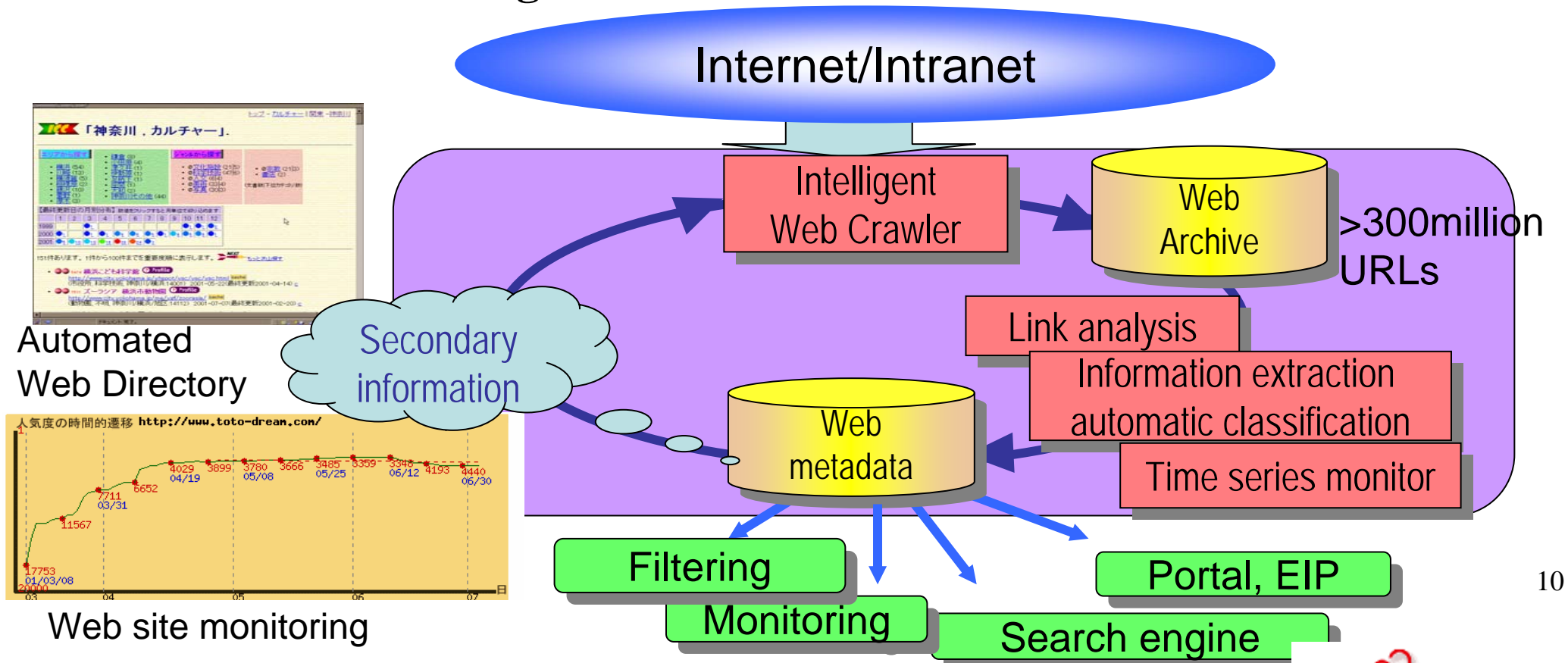
THE POSSIBILITIES ARE INFINITE **FUJITSU**

# Intelligent Web Crawler : TerraCrawler

A Web documents analysis environment for Internet contents services

Features: Automated Web Contents analysis technologies

Services: ValueContents □ Web/DB Contents Services □, BBS Watch □  
 □ Monitoring of Web BBS □



# CRADLE - CorReLation Discovery and Learning Engine -

## Feature of CRADLE

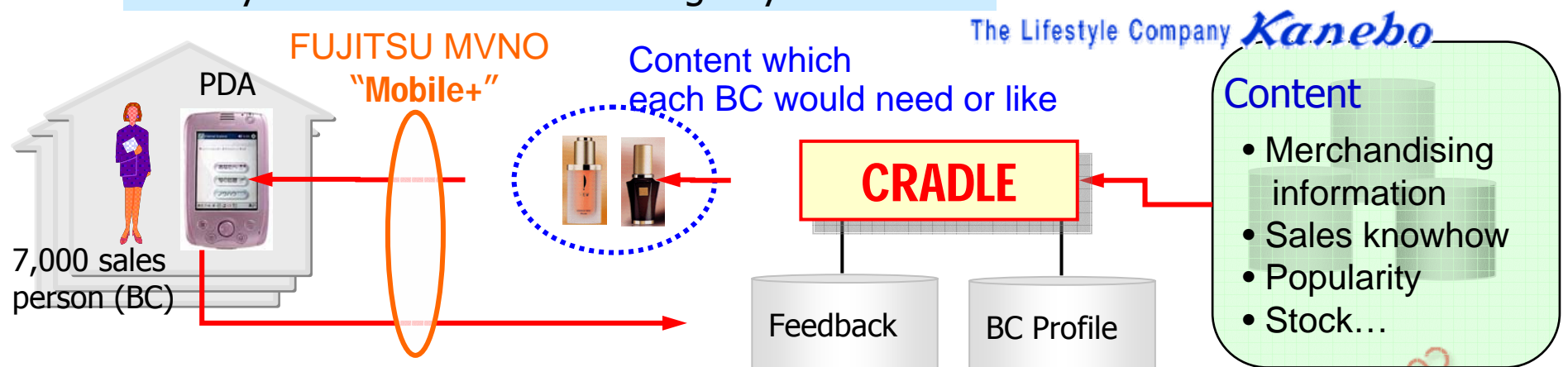
- Powerful recommendation
  - High performance and high accuracy by integrating profile matching and correlation matching technologies
- Useful decision support function
  - Presentation of reason why this content is recommended

## Commercial Product

Personalization engine: **Interstage Contentwiz** □ FUJITSU Middleware Product for Content Integration □

## Application Case

Beauty Counselor □ BC □ Knowledge System



All Rights Reserved, Copyright © Fujitsu Limited. 2003

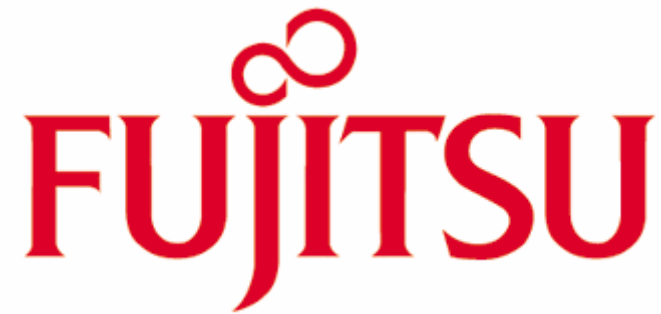
THE POSSIBILITIES ARE INFINITE

**FUJITSU**

# Summary

- **Heterogeneous environment, past and present not yet converging to a more simple, homogeneous set of assumptions**
  - Existing worldwide network and device diversity
  - Continual addition of a New Devices and OS platforms
  - New Devices even for non-IP networks
  
- **Fujitsu has ubiquitous & mobile products and solution experience, interested in extending Open Standards**
  - PCMCIA extended card with a built-in IEEE802.11b has been developed for seamless roaming between IP networks and cellular phone networks
  - A new middleware ‘**Interstage**’ with SeamlessLink, TerraCrawler and Cradle has been developed for intelligent services in ubiquitous environment

12



THE POSSIBILITIES ARE INFINITE