

IBM Ubiquitous Computing Laboratory

# Collaborative Enterprise Embedded Platform

Lee, KangYoon ([keylee@kr.ibm.com](mailto:keylee@kr.ibm.com))

2008. June

The IBM logo is displayed in white on a dark blue rectangular background. The logo consists of the letters 'IBM' in a bold, sans-serif font, with horizontal lines through the letters.

# Agenda

---

**1 Celadon – Device Collaboration**

**2 DRIVE – RFID/Sensor Solution Development Framework**

**3 Century – Interoperable Health Information Framework**

**4 TOPAZ – Open platform for Service Provider**

# Celadon Overview

## ■ Celadon

- A project code name for the implementation of software middleware for a ubiquitous environment
- To provide the user-centric context-aware service using by intelligent collaboration between heterogeneous devices
- A novel infrastructure for providing user-centric service based on context awareness by collaborating functionalities between user mobile device (MD) & service facility device (FD)

## ■ Mission

- Construction of seamless device collaboration environment enhanced by context-awareness
- Deployment of service model based on Celadon

## ■ Celadon in Next 5 in 5

**IBM**  
Next 5 in 5

**Developing Supportive Technologies**

**PIE (Personal Information Environments)**

- People have a disparate, unconnected array of computing devices: desktops, laptops, tablets, PDAs, cell phones
- Shift to working in a single, heterogeneous collection of computing devices
- Shared "grocery list" automatically appears on all computing devices, including cell phone

**Celadon**

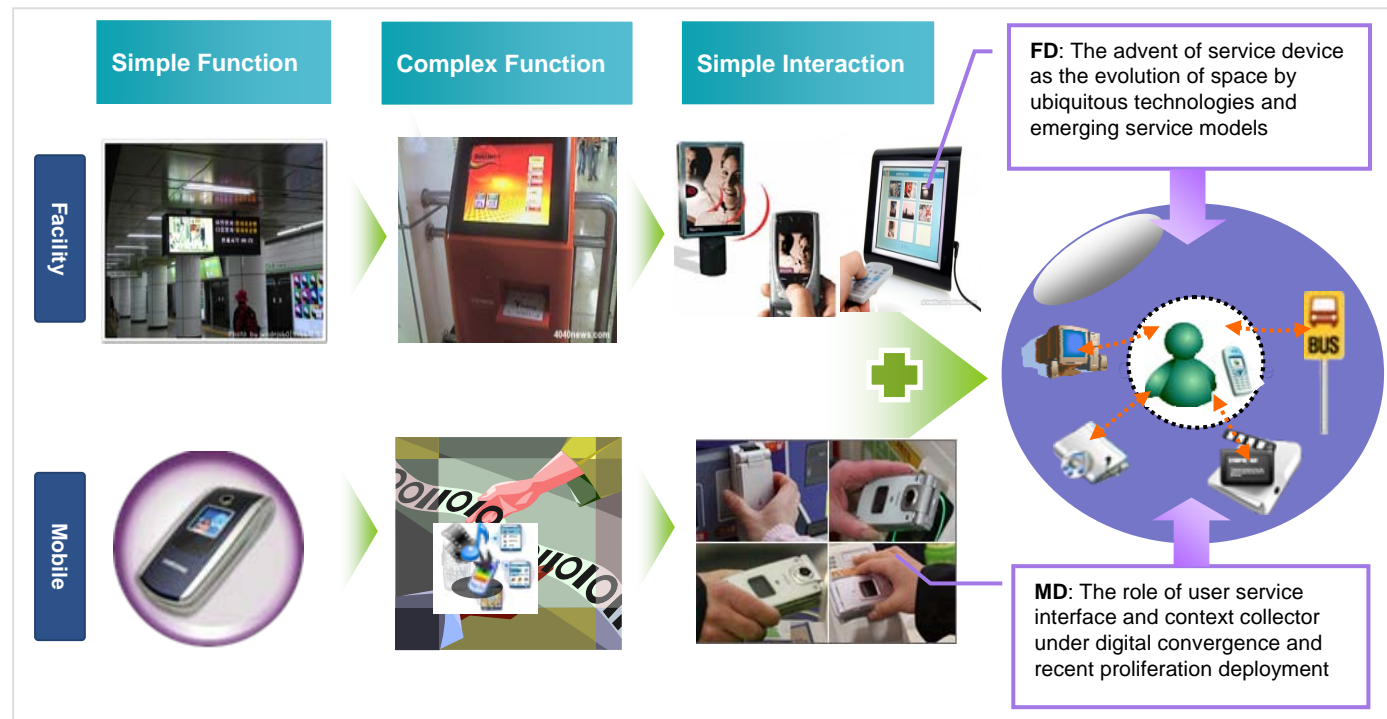
- Product-locating technology creates new paradigm for shopping
- No more gathering information from a variety of sources to compare
- Simply enter item into mCommerce-enabled phone and be directed to the most convenient stores with the best prices

## ■ Core Technology

- Dynamic Discovery & Zone Configuration System
- Context-driven Business Process & Modeling
- User-centric Context Inference System
- Seamless Device Interaction Framework

## ■ Target Domain

- Next Generation Device Platform Market
- Telco System based on User Context Oriented Service
- Next Retail Operation & Service System
- Ubiquitous City Service Infrastructure

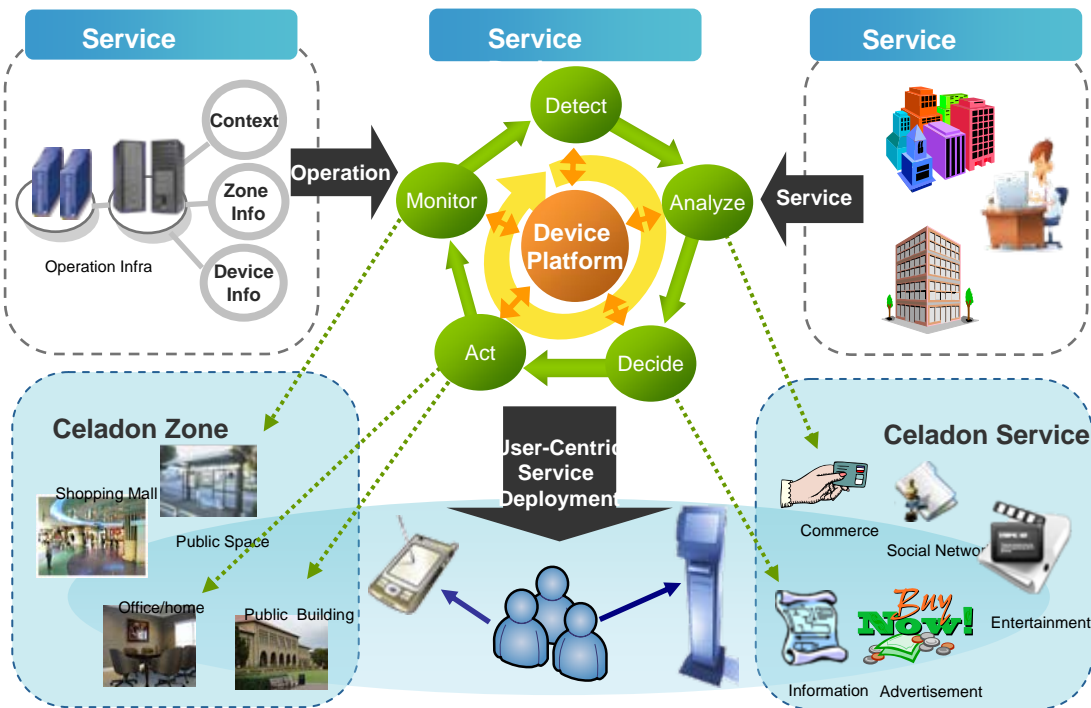


# Celadon Infrastructure

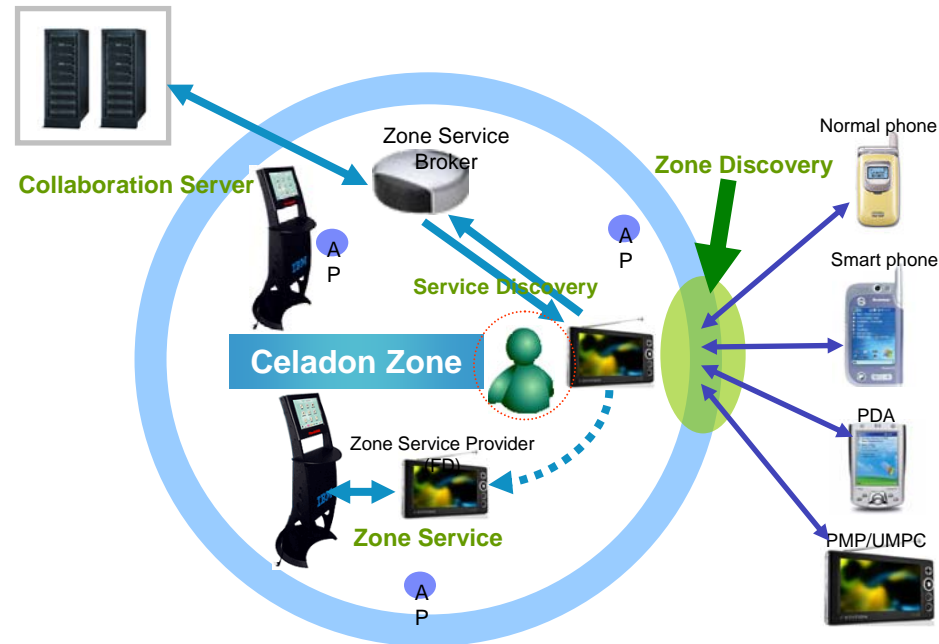
## ▪ Celadon is composed of 3-tier structure : MD/FD, ZSB and ZCS

- MD : User mobile device as service interface
- FD : Facility device as final service provider
- ZSB : Broker system for device discovery, service registration and context inference within zone
- ZCS : Management system between zones for seamless collaboration

## ▪ Celadon Service Image



## ▪ Celadon H/W Configuration



# SOA Enable Ubiquitous Retail Solution: u-Retail

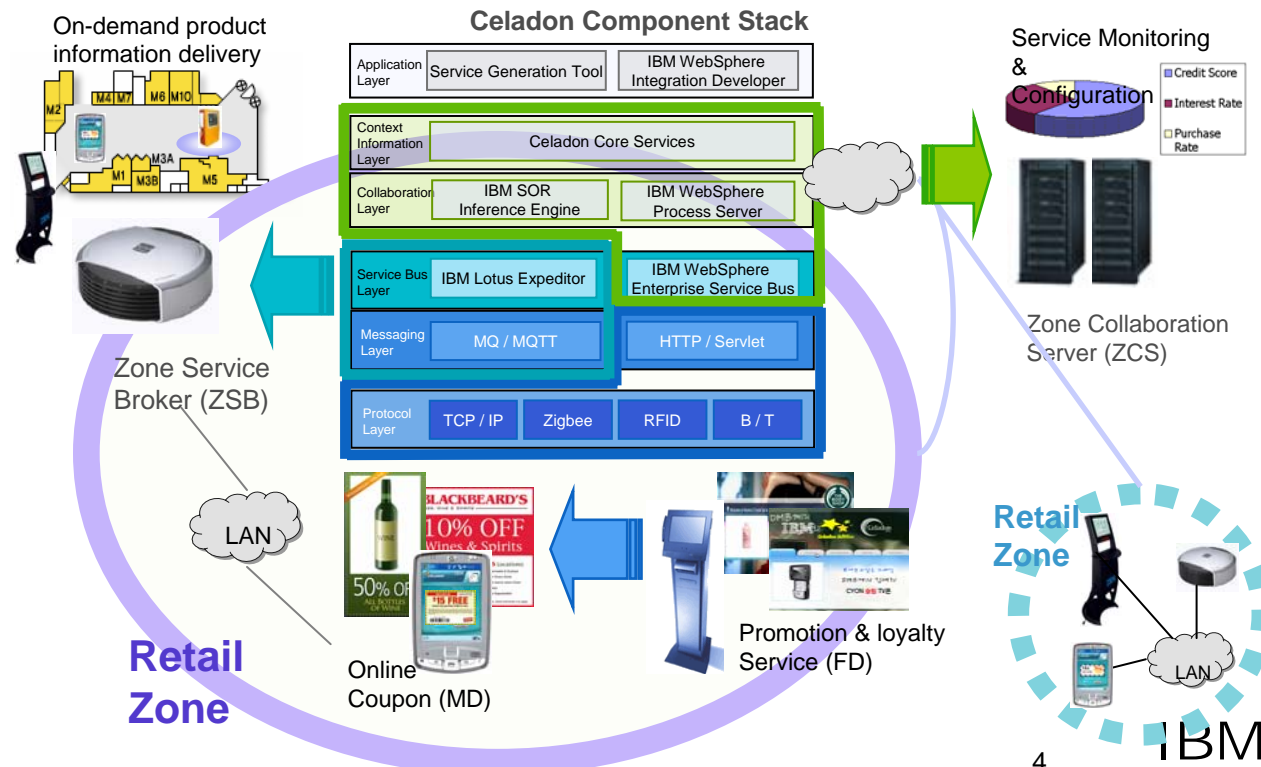
## u-Retail Solution

- We propose "u-Retail Solution" as SOA vertical configuration
- Focusing the user-centric service model based on mutual interactions between customer and retailer/consumer product companies

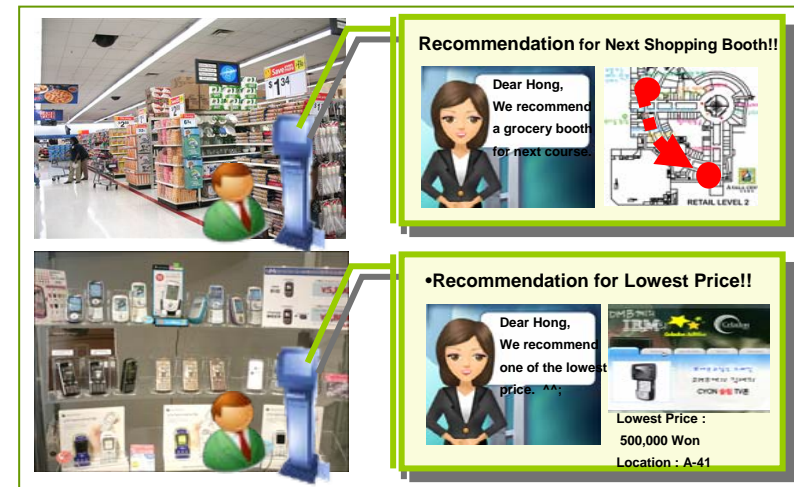
## Target Domain in Retail

- On-demand product information delivery & product review system including user mobile device
- Promotion & loyalty program management system including user mobile device and store facility device
- Service monitoring and configuration system in retail store

## SOA Enable Ubiquitous Retail Solution Structure



## One Click!! Retail Concierge Service



# DRIVE - Distributed Responsive Infra Virtualization Environment

Applying SOA and MDD methodology, DRIVE provides an integrated environment to reduce the **time**, **skill**, and **labor** involved in supporting the lifecycle of Sensor and Actuator Solutions.

## Goals:

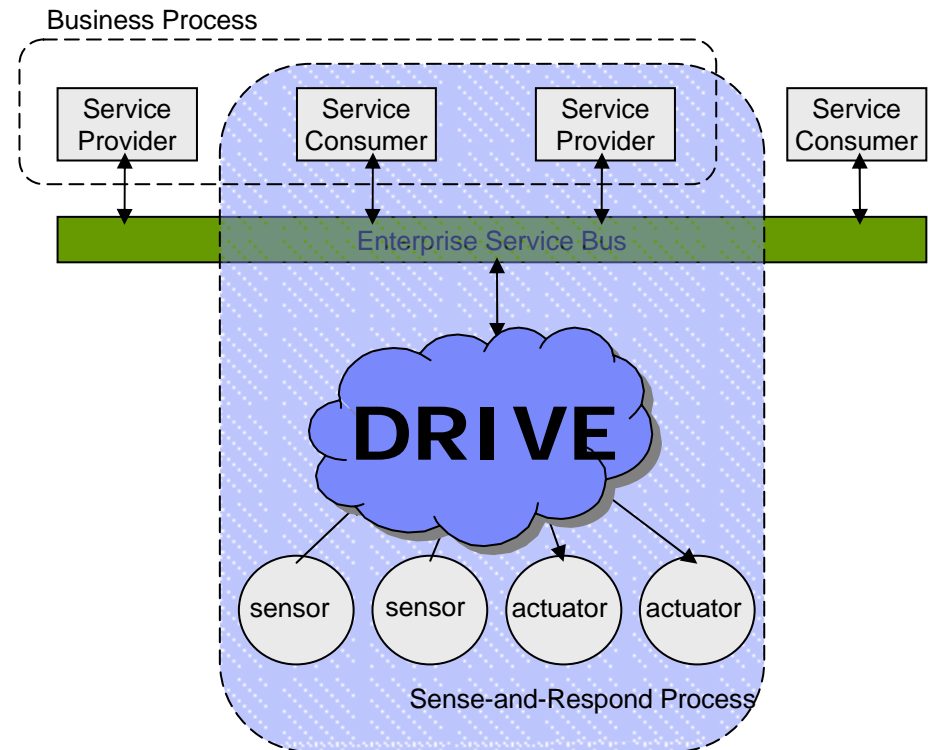
**Supporting flexible deployment architecture choices**

**Providing a unified and simplified programming model**

**Allowing development efforts to focus on business logic**

**Enabling separation of concerns and ecosystem collaboration**

**Integrated tooling for solution lifecycle support and reuse**



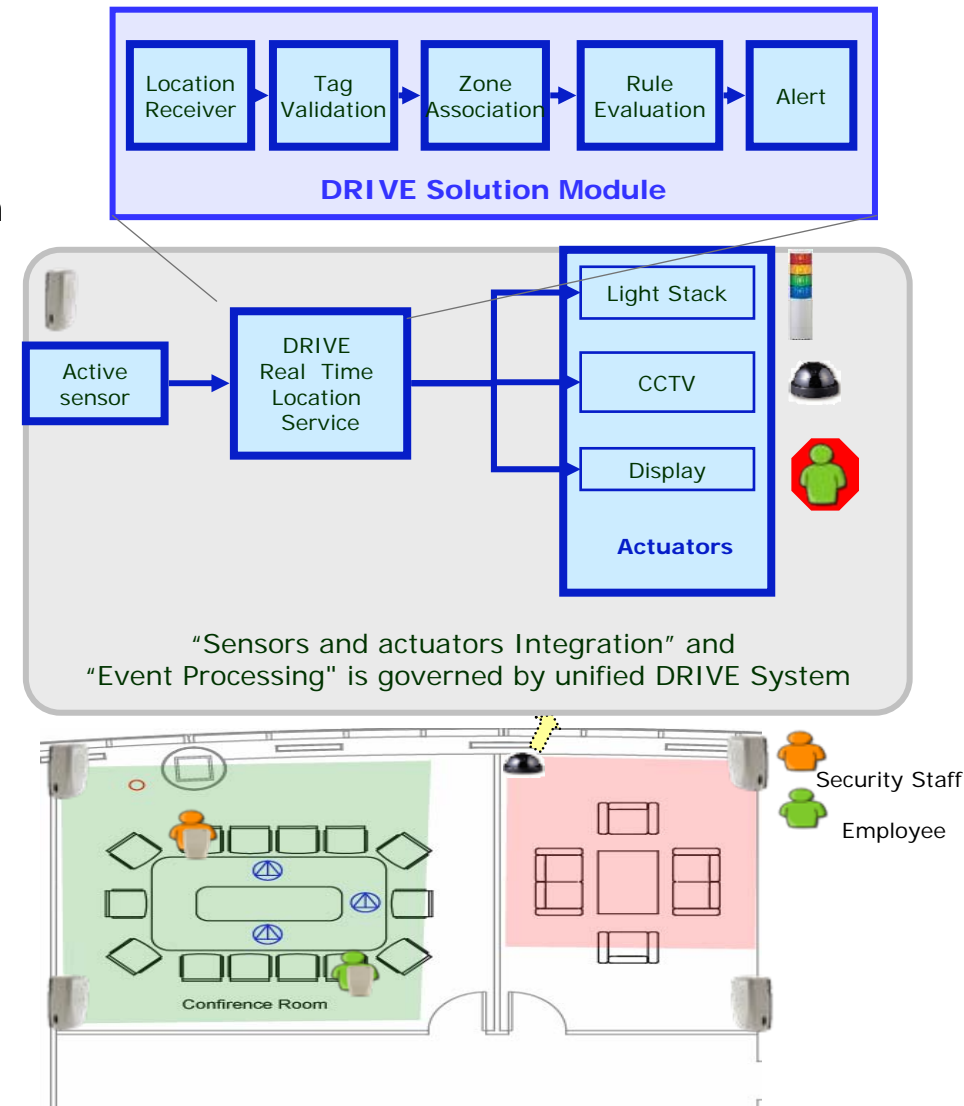
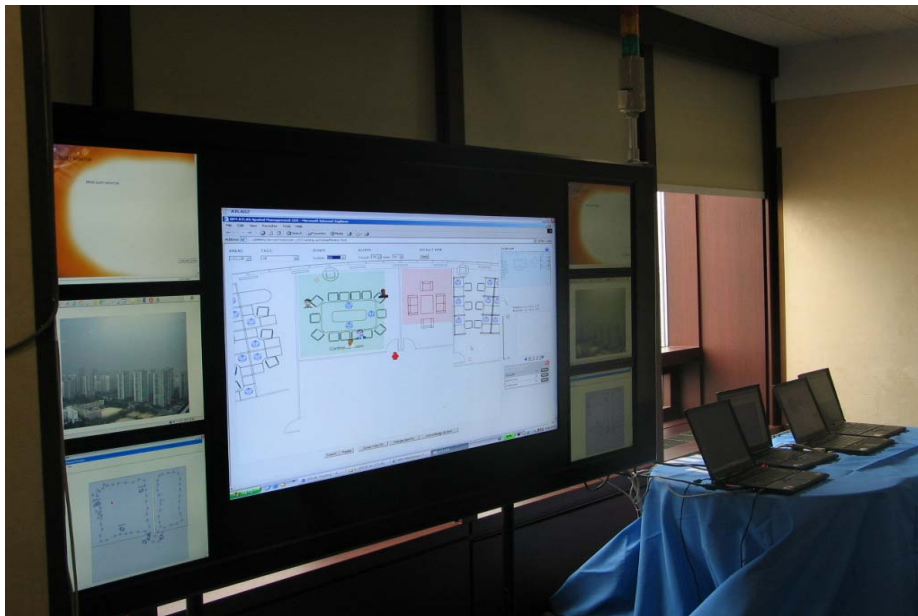
# DRIVE - Location Awareness Service Scenario Support

## Demonstrated the capability of DRIVE as a unified programming model and platform for supporting device integration and event processing

provides a platform for hosting the solution module which acquires the active sensor event and do the computation for the zone association and rule evaluation based on the configuration in the database

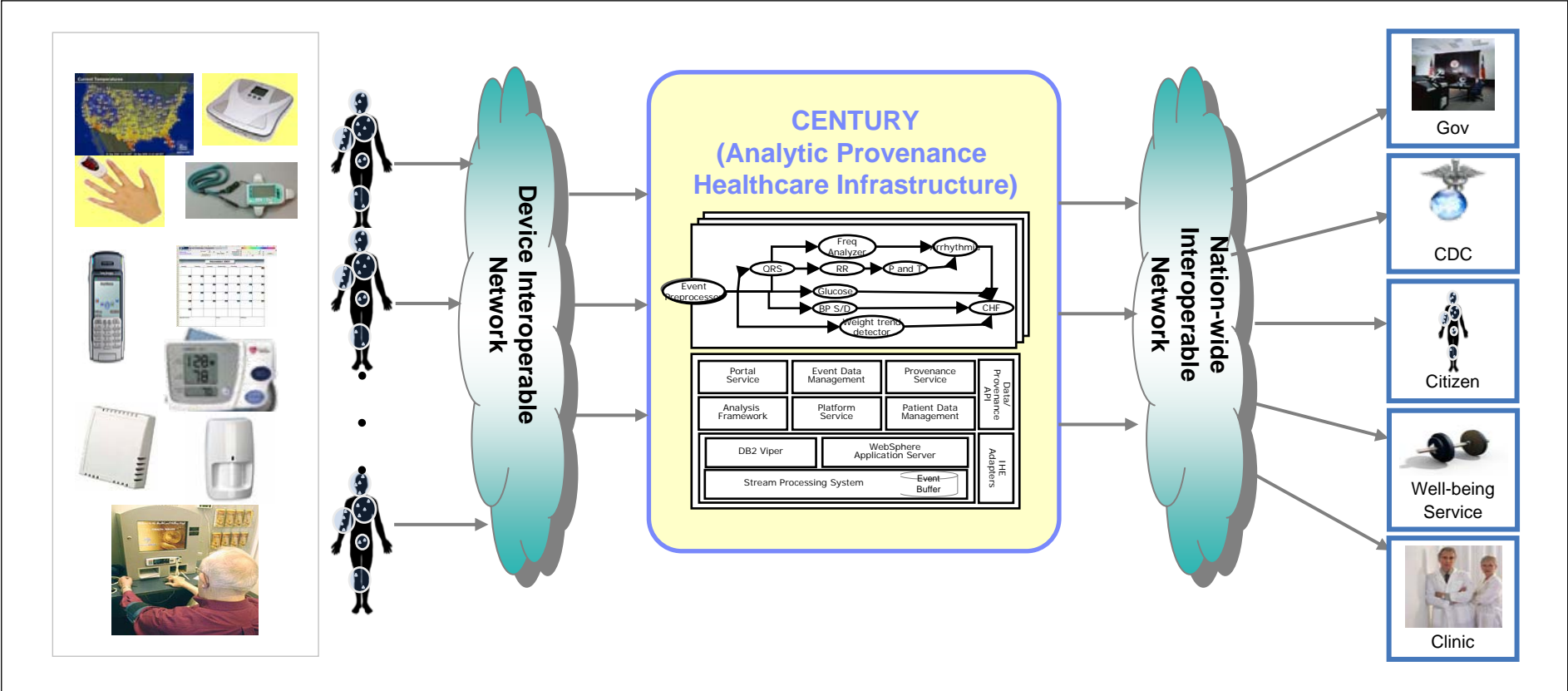
easy to customize the behavior of solution

demonstrated the feasibility of the DRIVE as kernel by interacting with the ATLAS Tracking GUI

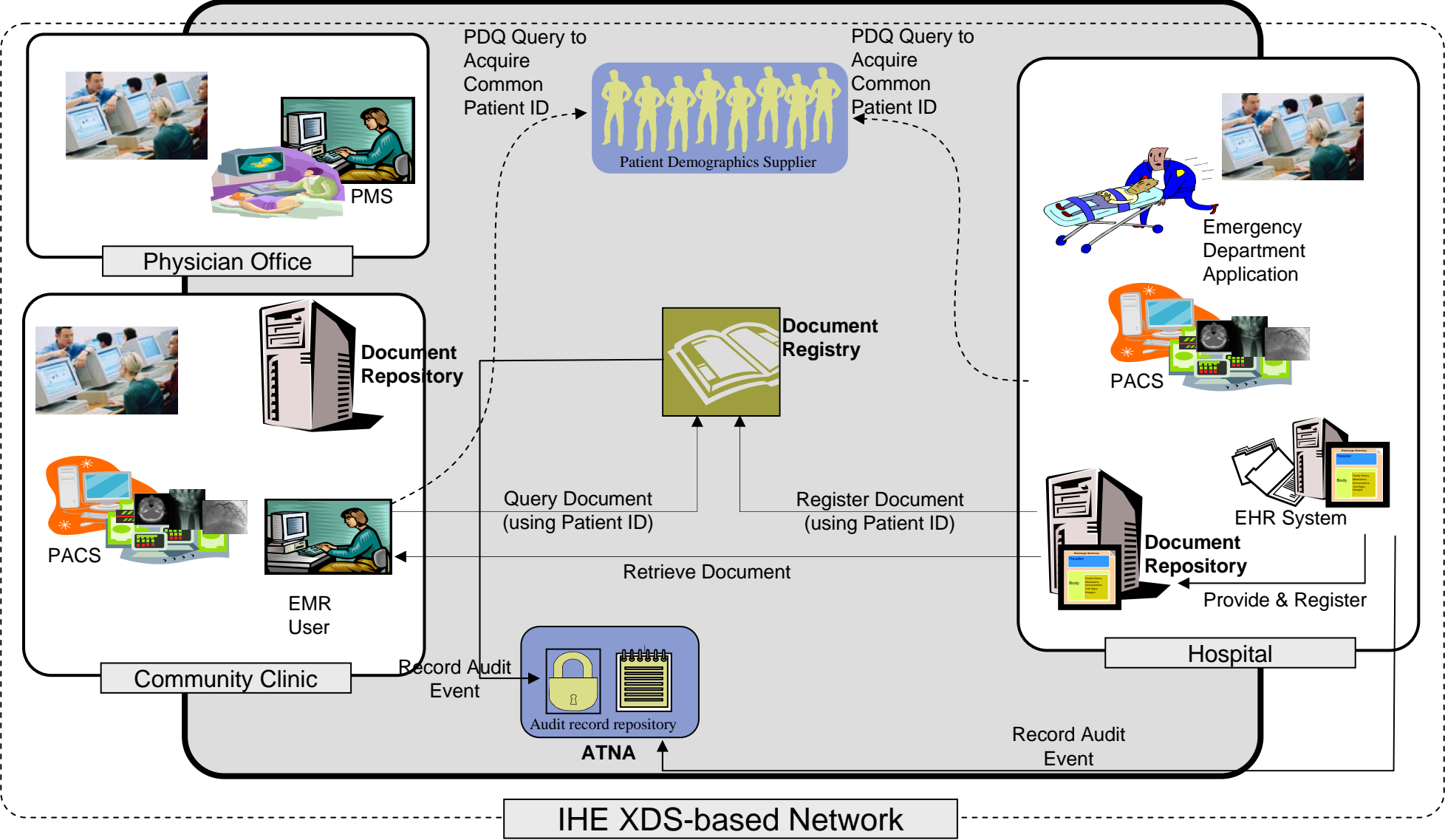


# CENTURY Infrastructure

The goal of CENTURY is to provide an IT infrastructure that extends the delivery of healthcare services outside of medical institutions by providing a scalable and open framework for the monitoring and analysis of citizens data and the discovery information for stakeholders in general.



# Century : Using IHE Profiles To Deploy An HIE Network



# CENTURY Use Cases

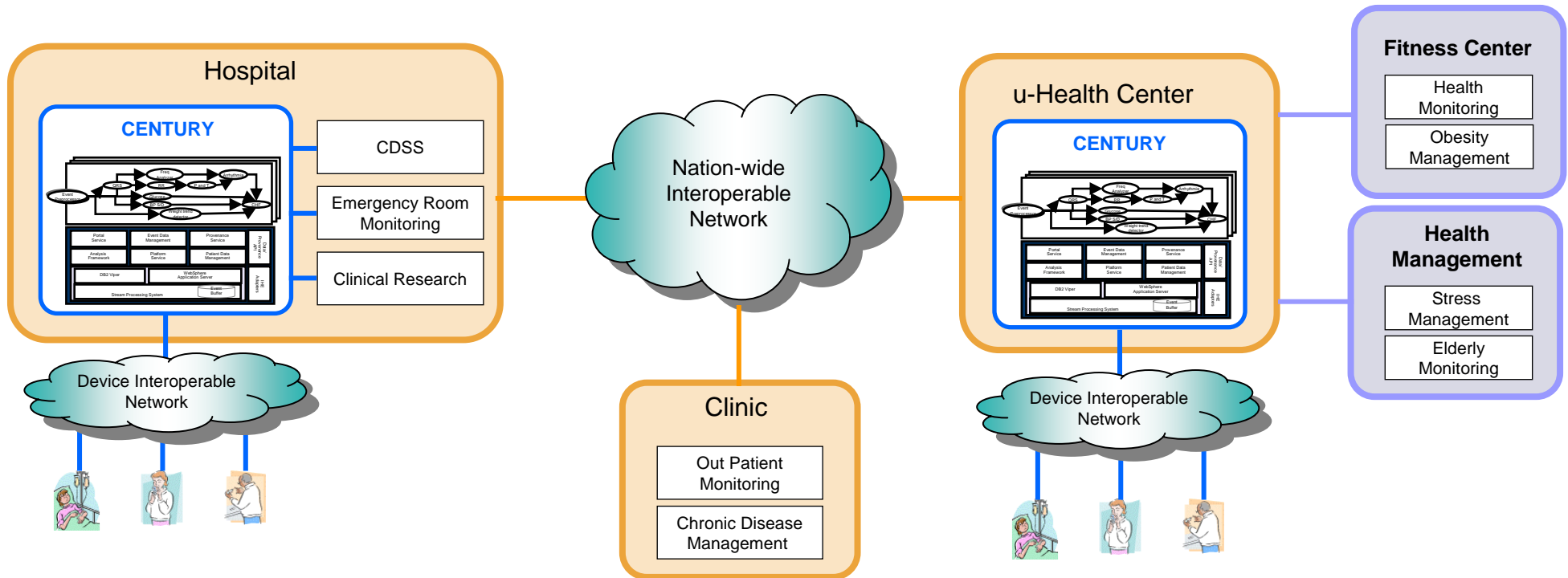
## CENTURY can be used as:

A u-Health center server platform for various health services and users

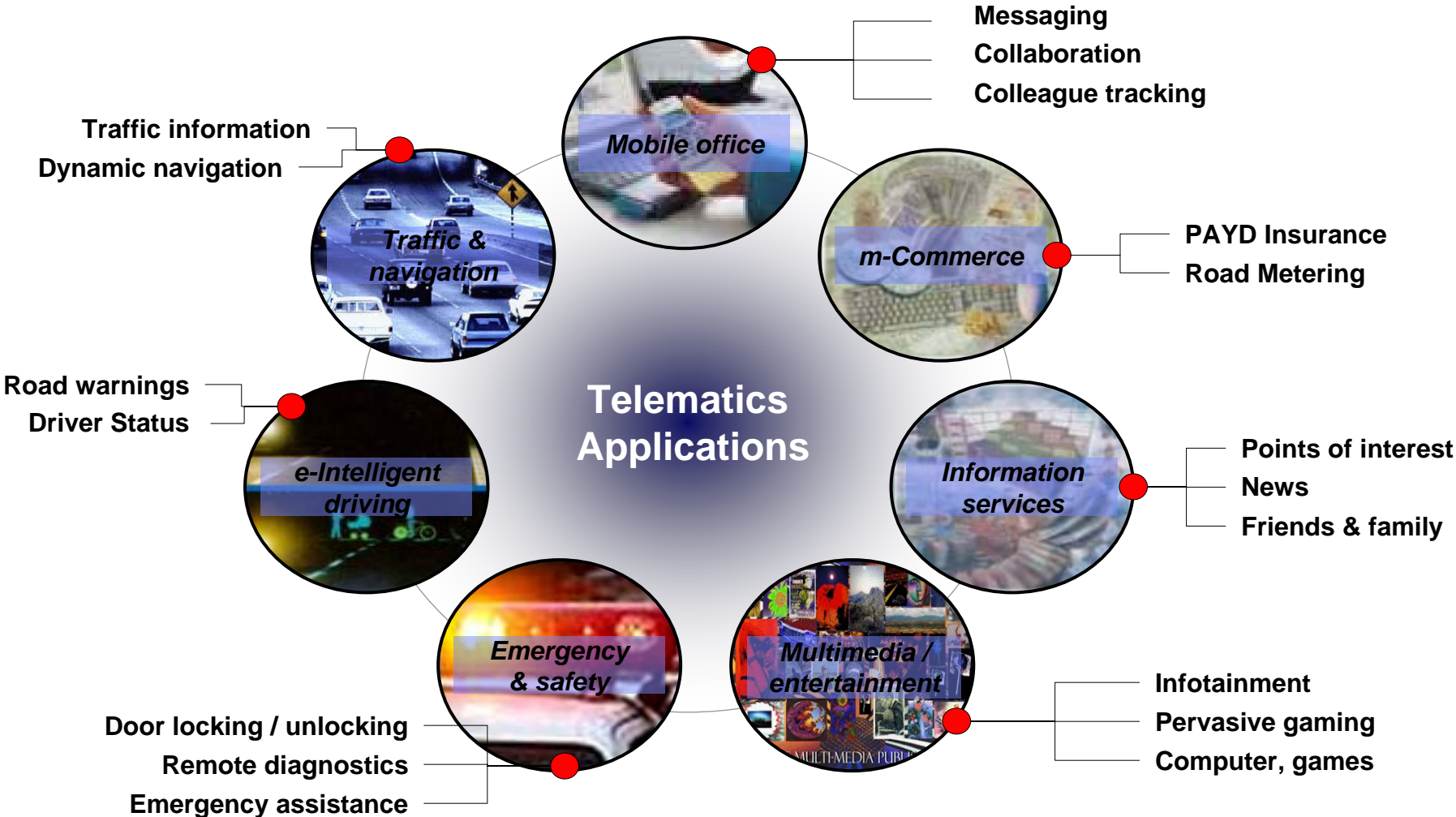
A well-being service framework to support high-level & large scale fitness service and personal health monitoring service

A remote healthcare system platform for chronic disease management service & elderly monitoring service

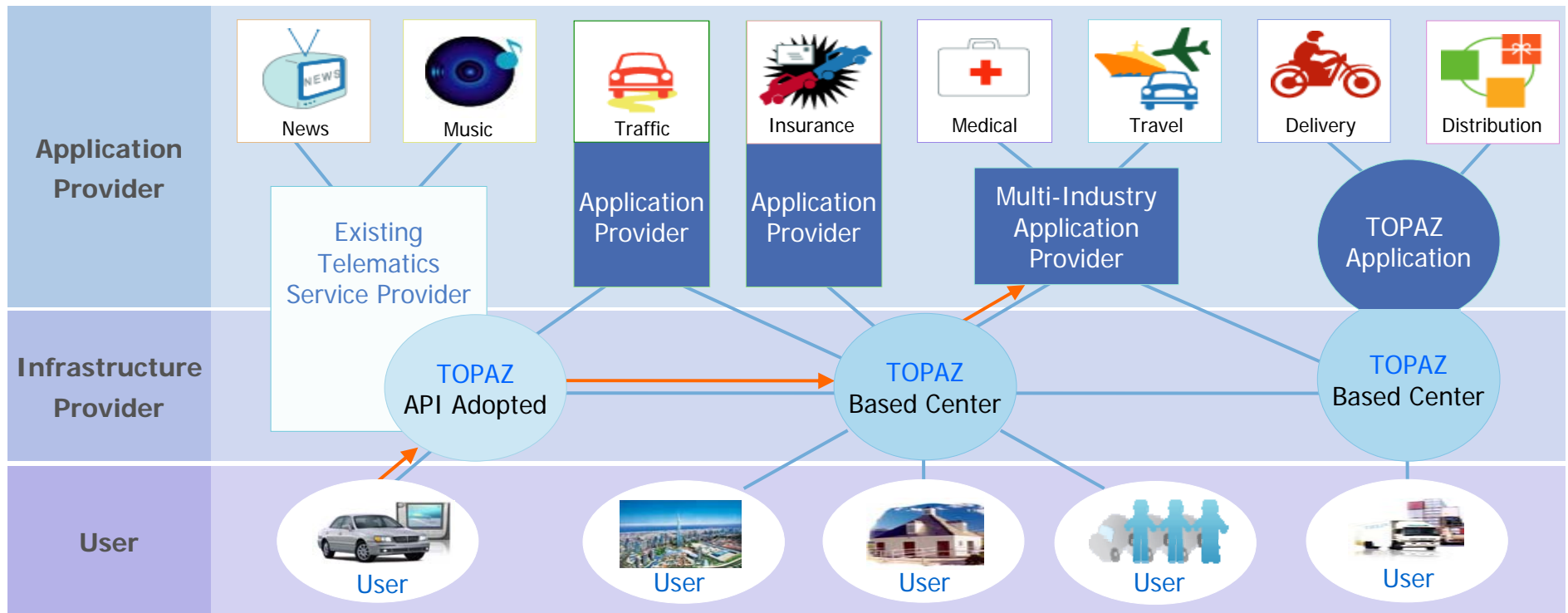
A clinical system platform for CDS (Clinical Decision Support) solutions, clinical research and emergency room monitoring



# TOPAZ : Many Valuable Telematics Applications



# TOPAZ Marketplace Vision



Using TOPAZ, Telematics Infrastructure Providers factor out the telematics-intensive parts of telematics and ubiquitous applications, and offer them as services to any application provider.

**Infrastructure providers and application providers** are independent business entities. Applications are separated from the platform operated by the infrastructure provider, and operate independently from the platform and from each other. TOPAZ platform services are accessed via Web-service interfaces. One platform operator serves many application providers. Cost of infrastructure is shared by many apps; app providers can enter the marketplace at low cost. A range of specific business models are possible within this basic model.

# TOPAZ : Open Platform for Service Providers

IBM Open Platform for Telematics is consisted of IBM SOA Foundation and TOPAZ which provides differentiated Telematics-intensive functions such as context awareness, telemetry, contents push and so on. It can do collecting, analyzing and distributing wide scale infrastructure information, and integrating whole functions and services by efficient operation and management.

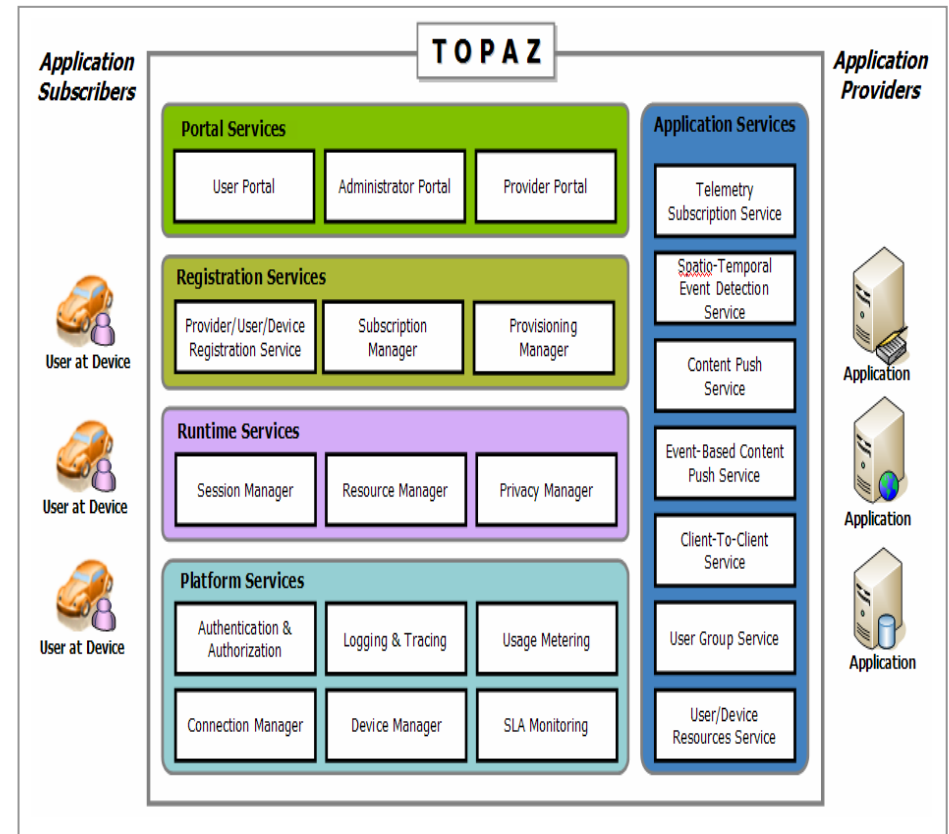
## Highlights

- **Applicable**
  - Telematics Service Center, Ubiquitous Traffic Information Center, Distribution/Logistics Center
- **Features**
  - Provide core Telematics functions such as context awareness, telemetry, contents push and utility computing by TOPAZ
  - Provide service flexibility and expandability based on SOA which can make combine and separate each service module
  - Open integrated architecture based on industry standard
  - Provide new ubiquitous service to citizen by creating convergent high value information
- **References** : IFEZ (Incheon Free Economy Zone) Pilot, NIA Test-Bed Project

## Expected Benefits

- Reduce total implementation cost by using the platform
- Provide real time service to citizen at anytime, anywhere
- Easy to interface and connect with the other Telematics Center
- Establish the scalable Telematics Service model
- Mitigate risk to construction of large scale infrastructure project by using stable and flexible open platform

## Solution Concept



---

THANK YOU