Fujitsu's Human Centric Computing R&D Initiatives

March 31, 2010

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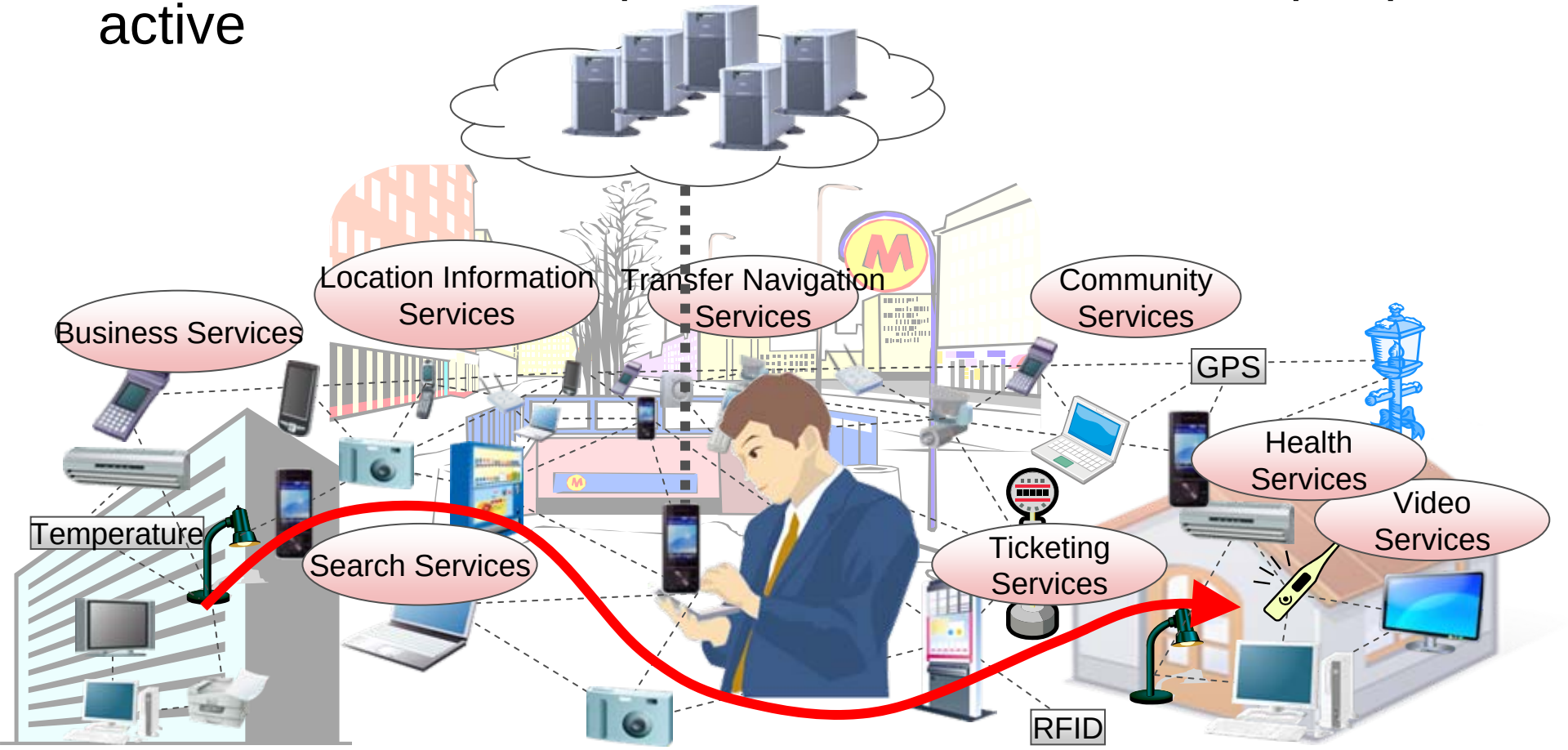
shaping tomorrow with you

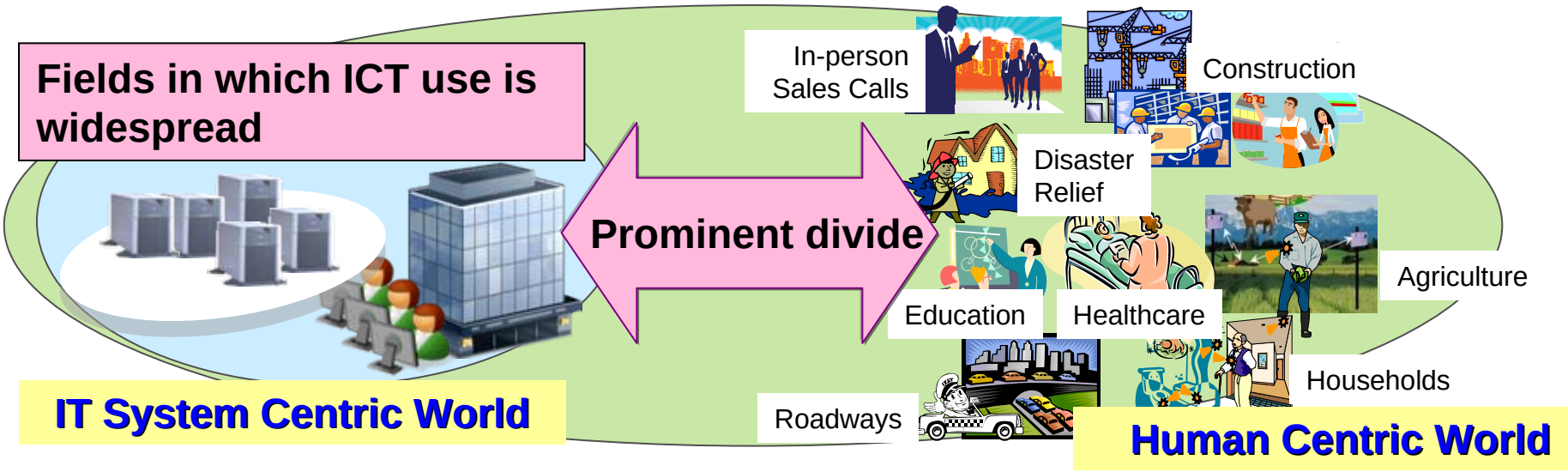
Aim of Human Centric Computing

- Paradigm shift from system centric to human centric solutions
- Provide tailored and precise services wherever people are active



Status of ICT in Society

- The spread of IT infrastructure has opened a divide between fields in which ICT* use is widespread, and fields where it is yet to be used widely.
- There are numerous real-life fields in which the application of ICT can be further leveraged.



*ICT: Information & Communication Technologies

- Fields where it is difficult to deploy networking and other hardware infrastructure (agriculture, construction, etc.)
- Businesses with people constantly moving around (hospitals, etc.)
- Businesses requiring frequent human interaction (retail, etc.)

Technical Background

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Cloud Computing

Various services delivered over the internet
Complicated processing can be handled anywhere

Network Evolution

High-speed, large-volume wireless broadband (LTE)
Accessible from anywhere at any time

Smartphone Evolution

Fusion of PCs and mobile phones
Ubiquitous terminals in true sense of the term

Significant technological revolutions are progressing simultaneously

Integration of these technologies

Fujitsu's strength lies in its command over all of these relevant technologies

Technological Challenges

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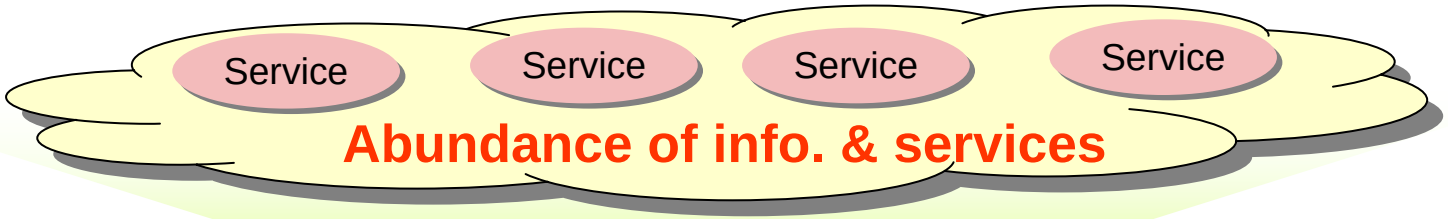
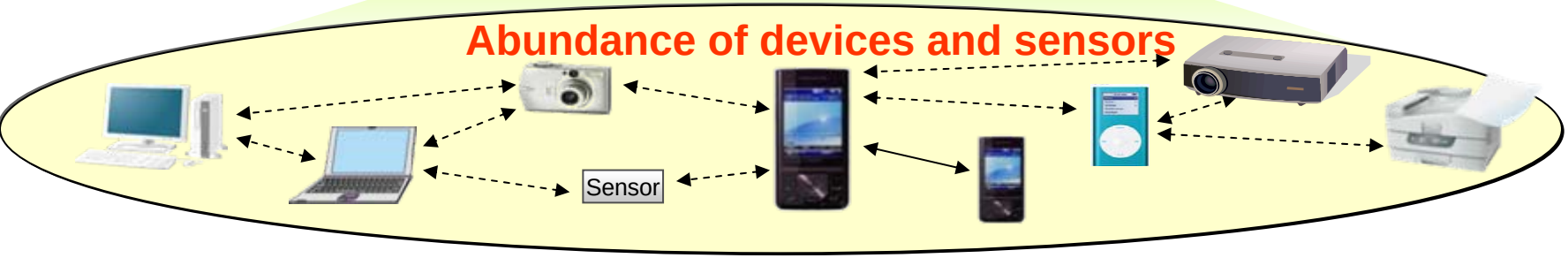
Technologies that integrate the world of ICT and the real world



Technologies to precisely provide services needed at front lines

Technologies to enable effortless use of services at front lines



Precisely Provide Services Needed at Front Lines

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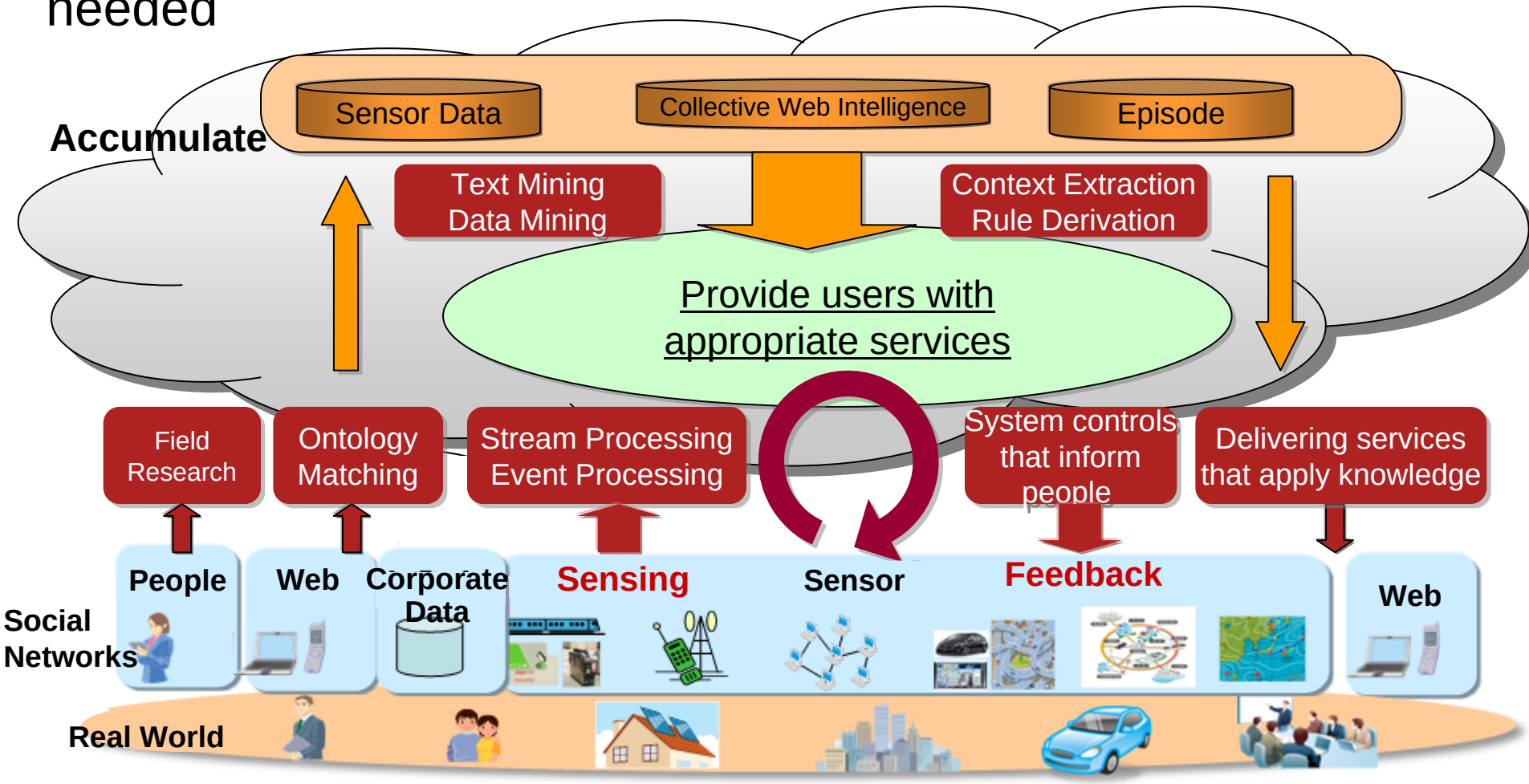
Analyze massive volume of sensor and web data

Proactively deliver necessary services where and when they are needed



Effortless Use of Services at Front Lines

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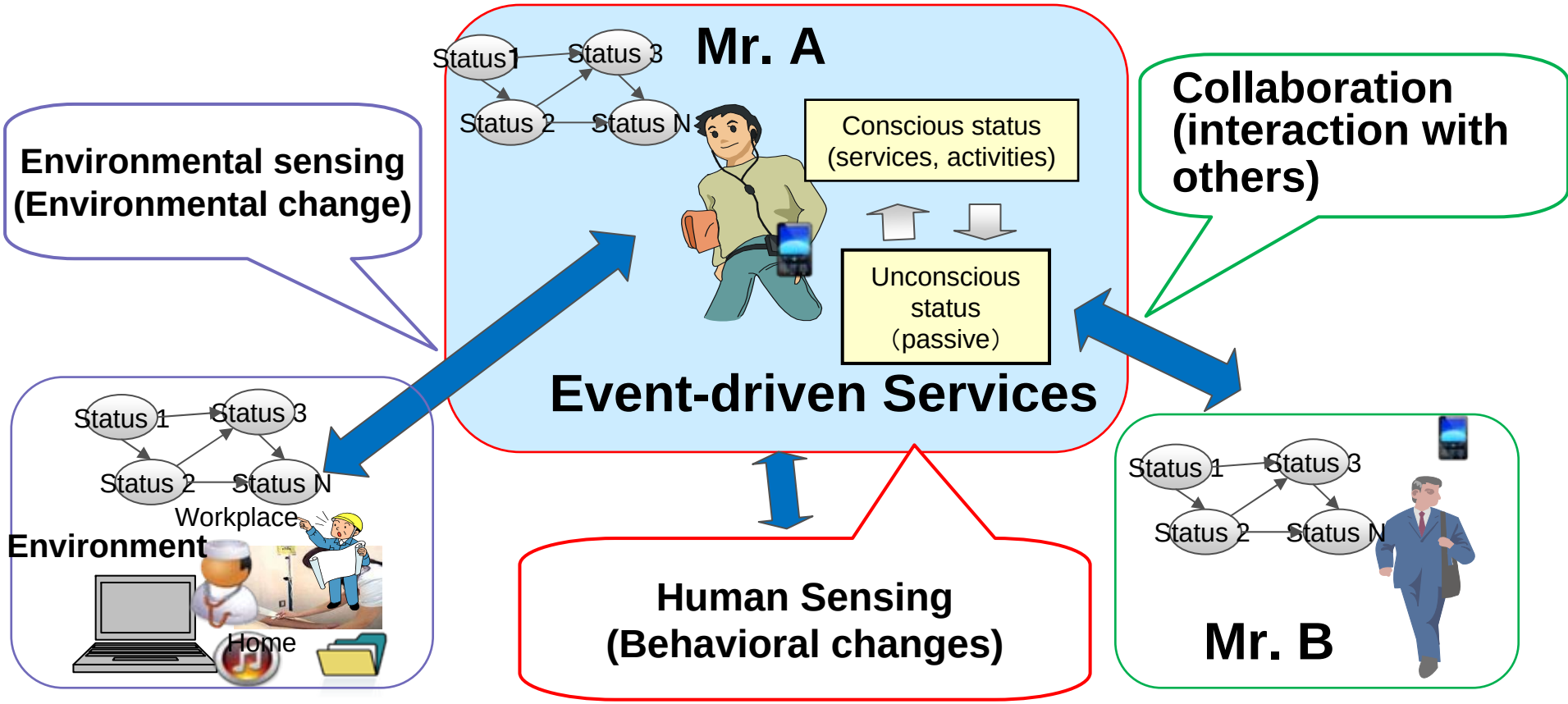
It is difficult to access services while working in the front line: provide event-driven services through the use of sensors



Human Centric Computing Case Studies

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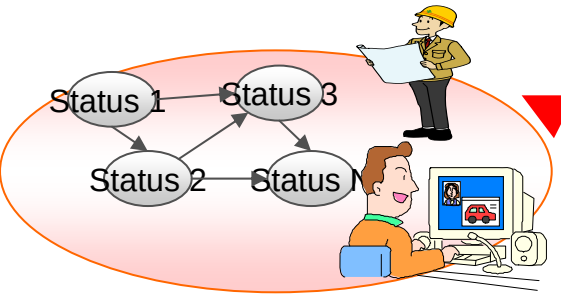
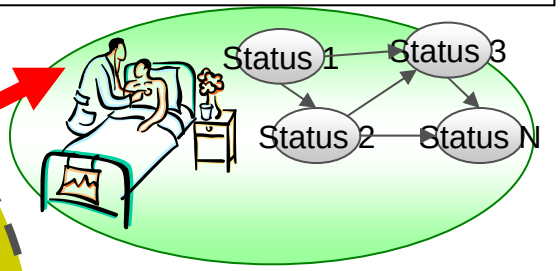
Striving towards a world where people, society and IT systems are in harmony with each other

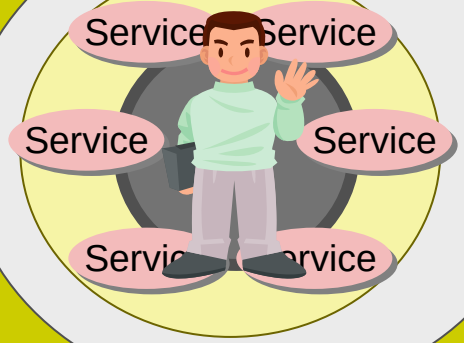
Collaboration between people and IT systems



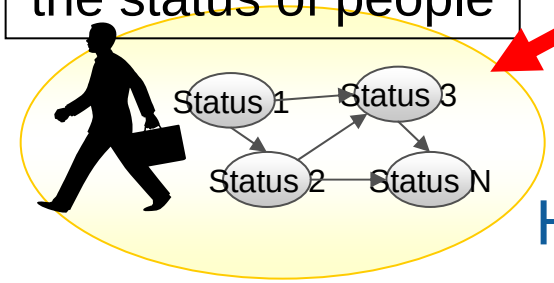
Natural interfaces between people and IT systems



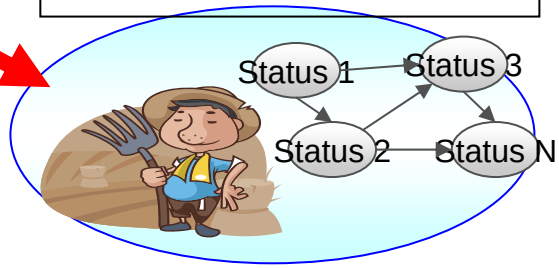
Cloud Environment



Behavioral sensing that comprehends the status of people



Environmental sensing that comprehends the real world



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Collaboration Between People and IT Systems

Systems that mediate between people who require services and people who provide such services

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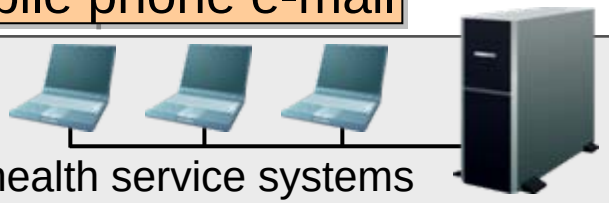
Metabolic diagnostic system that uses mobile phone e-mail

Healthcare insurance staff



Existing health service systems

Sends approval to user for use of service

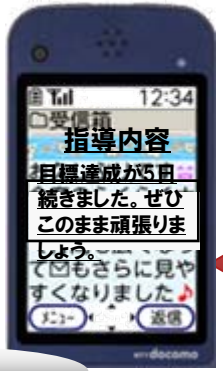
Referral

Report

User

Dietary Log

Exercise Log



Dietary/Exercise Report

Insurance System for Customized Support

Effective Advice

Nurse/Dietician

Healthcare center

Telecommuting (Home office)

Dietary diagnostic function

Patent Pending

Natural Interfaces Between People and IT Systems

Monitoring service using automated socially interactive robot

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Exhibit available

Next-generation human interface that blends into its environment

- Technologies for pursuing engaging interaction, such as eye contact
- Comprehends and monitors users' moods through face-to-face interaction
- Delivers services via a connected network based on users' status

Socially interactive robot

View from robot's perspective

Human face viewed through robot's eyes

Picks up on users' moods (status) depending on how they interact with the robot

Stimulates and promotes social engagement

Example: Service for Nursing Home Facilities

Motion Sensing: Analyzing Human Movements

Comprending a person's movements in order to provide health support, sports diagnostic services

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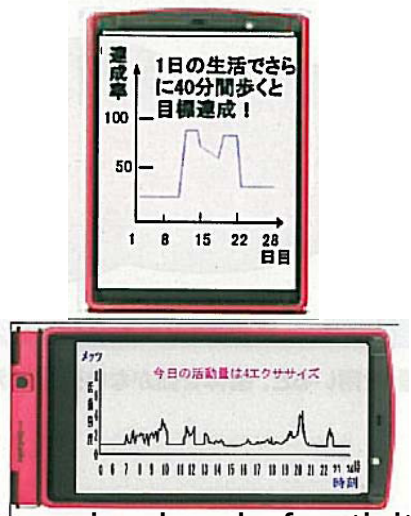
- Detecting human movements through acceleration sensors embedded in mobile phones
  - Pedometers and other devices for measuring level of activity (built into all Fujitsu mobile phones except those for children)
  - Estimates type of physical activity (creating technologies to detect walking, running, jumping, bowing, etc.)

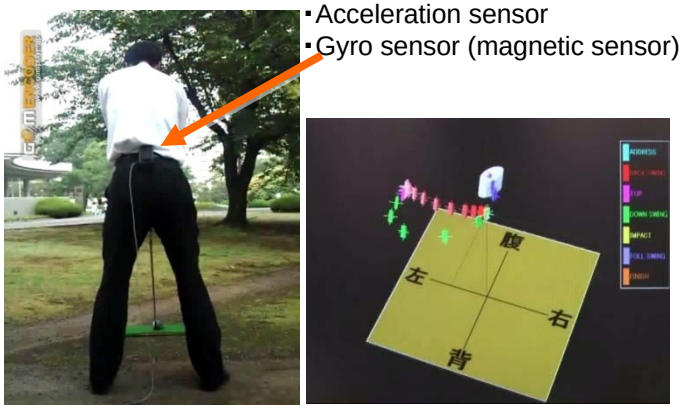
  Golf swing diagnostic application, experimental events held in Tokyo



Measuring level of activity

Movement sample for experimental event

Experimental event poster



Measuring waist rotation for a golf swing diagnostic app.

Motion Sensing Applications: Agricultural applications

Supporting efficiency and optimization of farming tasks without disrupting work

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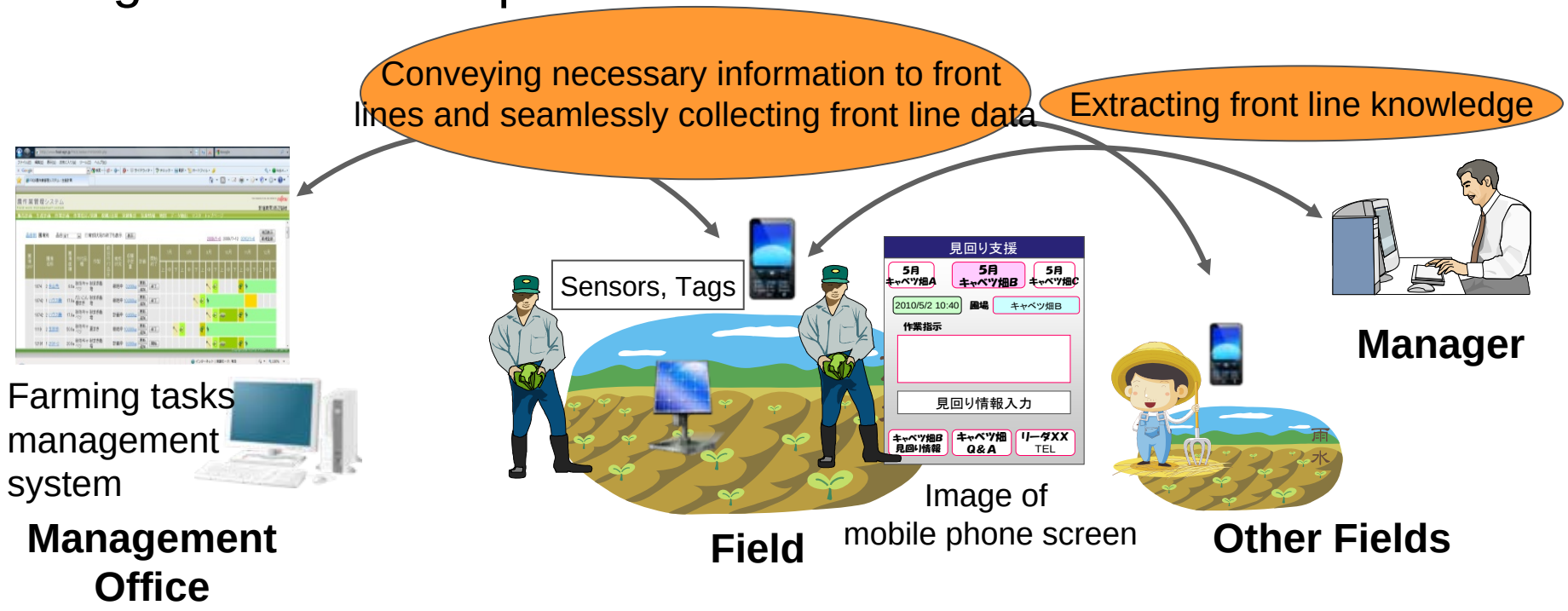
Exhibit available

- Realize visualization of farming tasks through simultaneous unobtrusive collection of field worker status data and sensor data, while tasks are being performed (no disruption)
- Fujitsu is performing operational trials in collaboration with agri-business corporations



Environmental Sensing: Visualization of Power Consumption

Optimization of power usage based on comprehension of behavioral patterns

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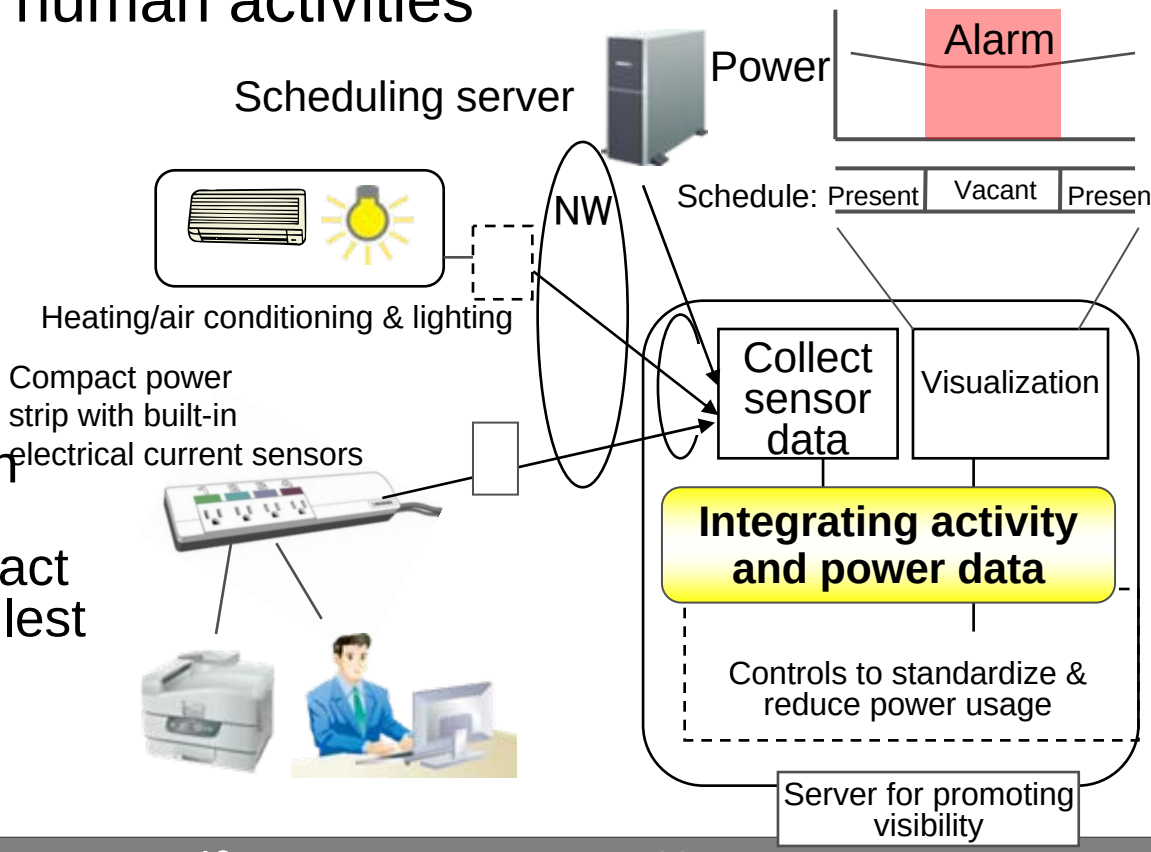
- Initiatives to utilize sensing technologies to reduce power consumption
- Visualization of power consumption per device through use of compact power strip with built-in electrical current sensors, and its correlation with human activities

Exhibit available

Key Features:

- Technology to visualize correlation between human activity and power consumption
- Power strips featuring built-in power sensors to provide precision, safety and compact form factor (industry's smallest on per-outlet basis)



Summary

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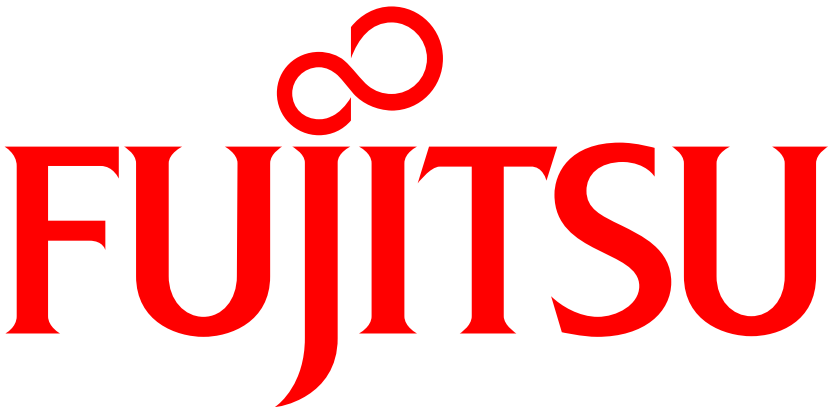
Human Centric Computing

- Paradigm shift from system centric to human centric solutions
- Applying ICT to fields where it is not yet fully leveraged
- Technologies that merge the real world with the world of ICT (synthesis of relevant technologies such as sensors, mobile devices, human interfaces, mining, ergonomics, etc.)
- Positioning human beings at the center of IT systems, to go beyond the mere promotion of power-saving and efficiencies, and enable ICT that leverage knowledge and expertise.

Building a new social infrastructure that brings people into harmony with computers



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