

# **Fujitsu Laboratories' R&D Strategies**

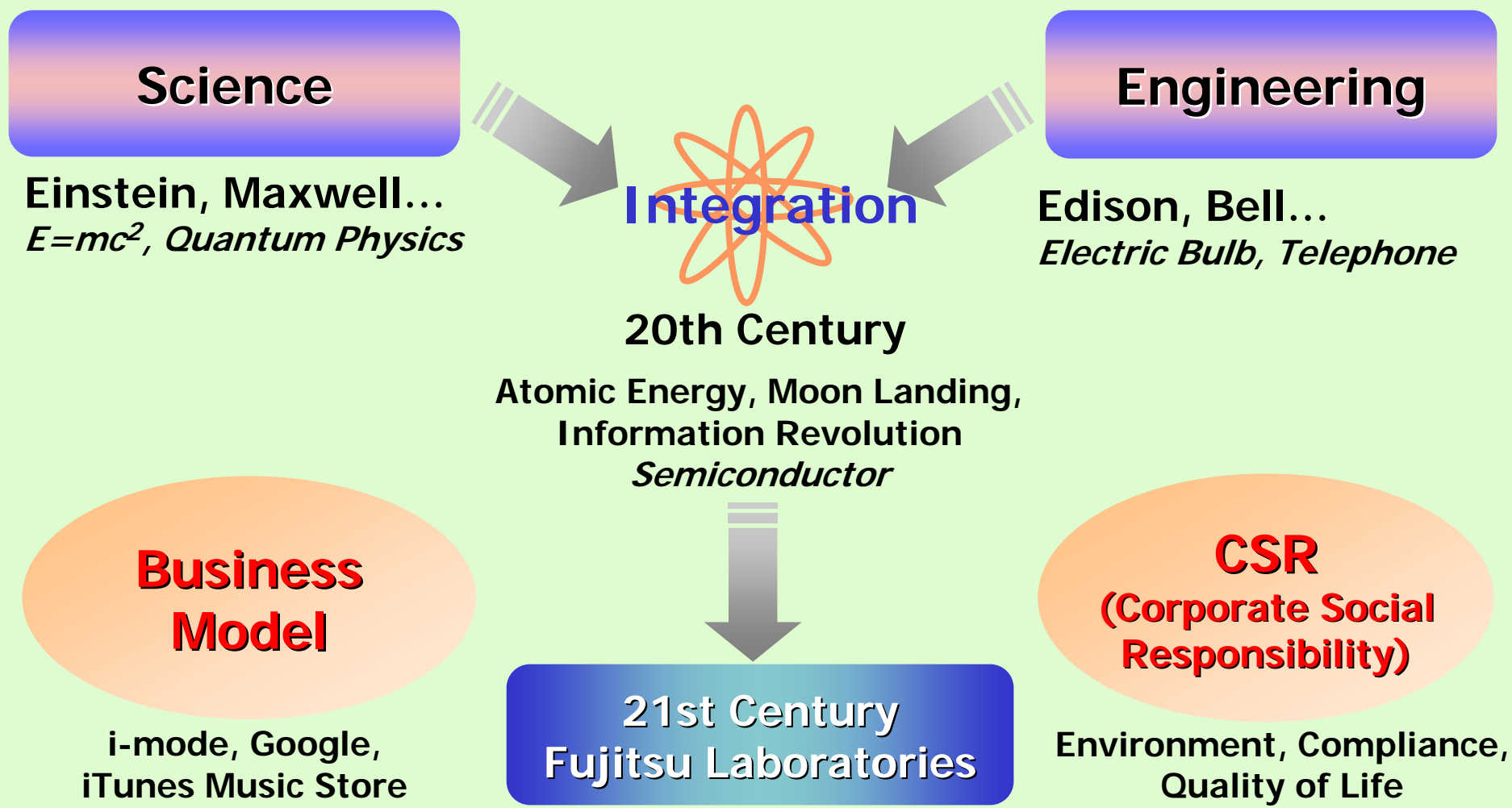
**March 31, 2010**

**Kazuo Murano, Ph.D.  
President**

**FUJITSU LABORATORIES LTD.**

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# 21st Century R&D Laboratory Model



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# Human Centric Networked Society



**Agriculture**



**Cities**



**Retail**



**Education**



**Government**



**Healthcare**



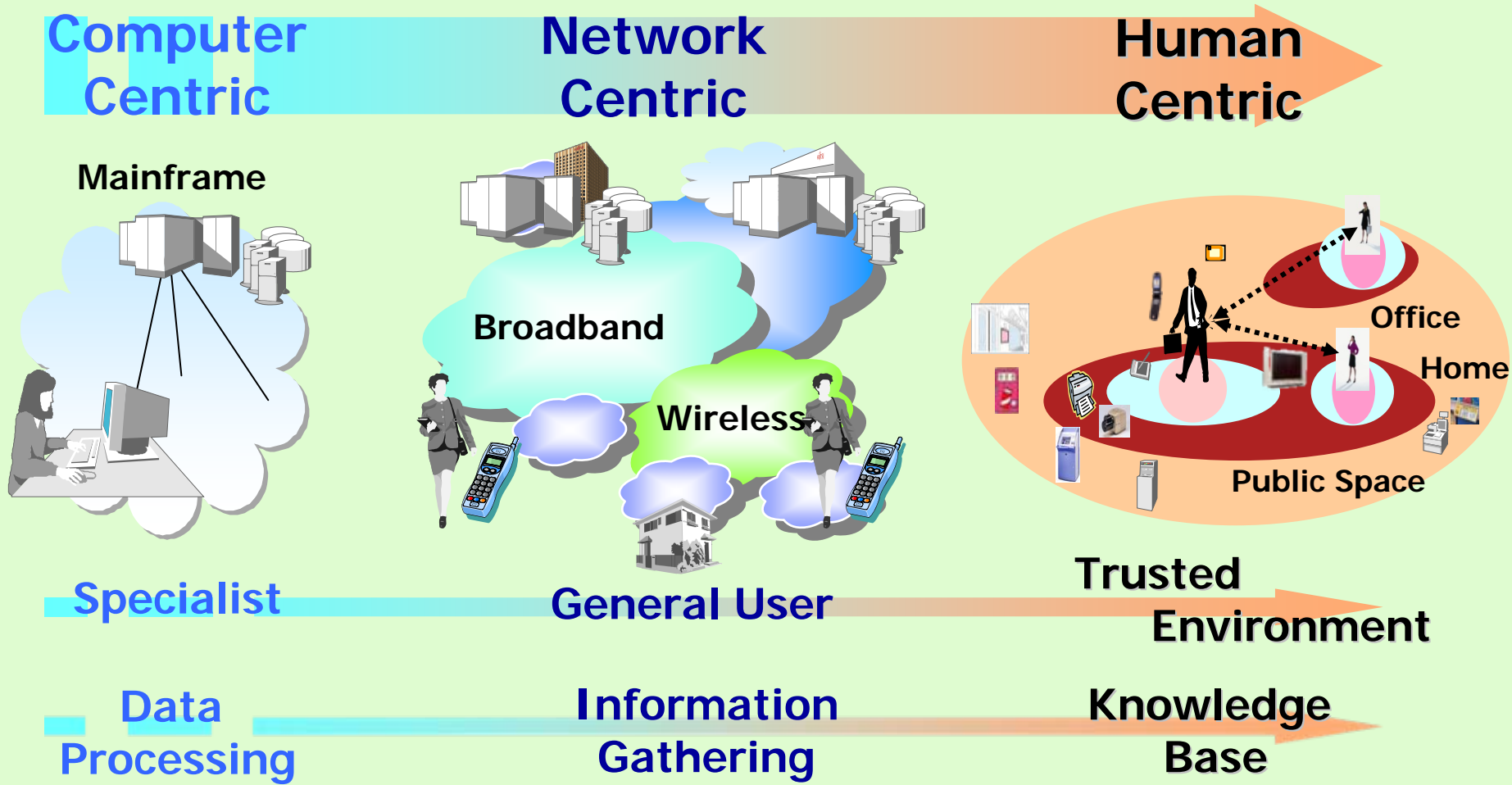
**Transportation**



**Manufacturing**

*By connecting with our surroundings, we create a "human centric" networked society, delivering value through experience, discovery, reliability and growth.*

# Paradigm Shift in ICT Systems

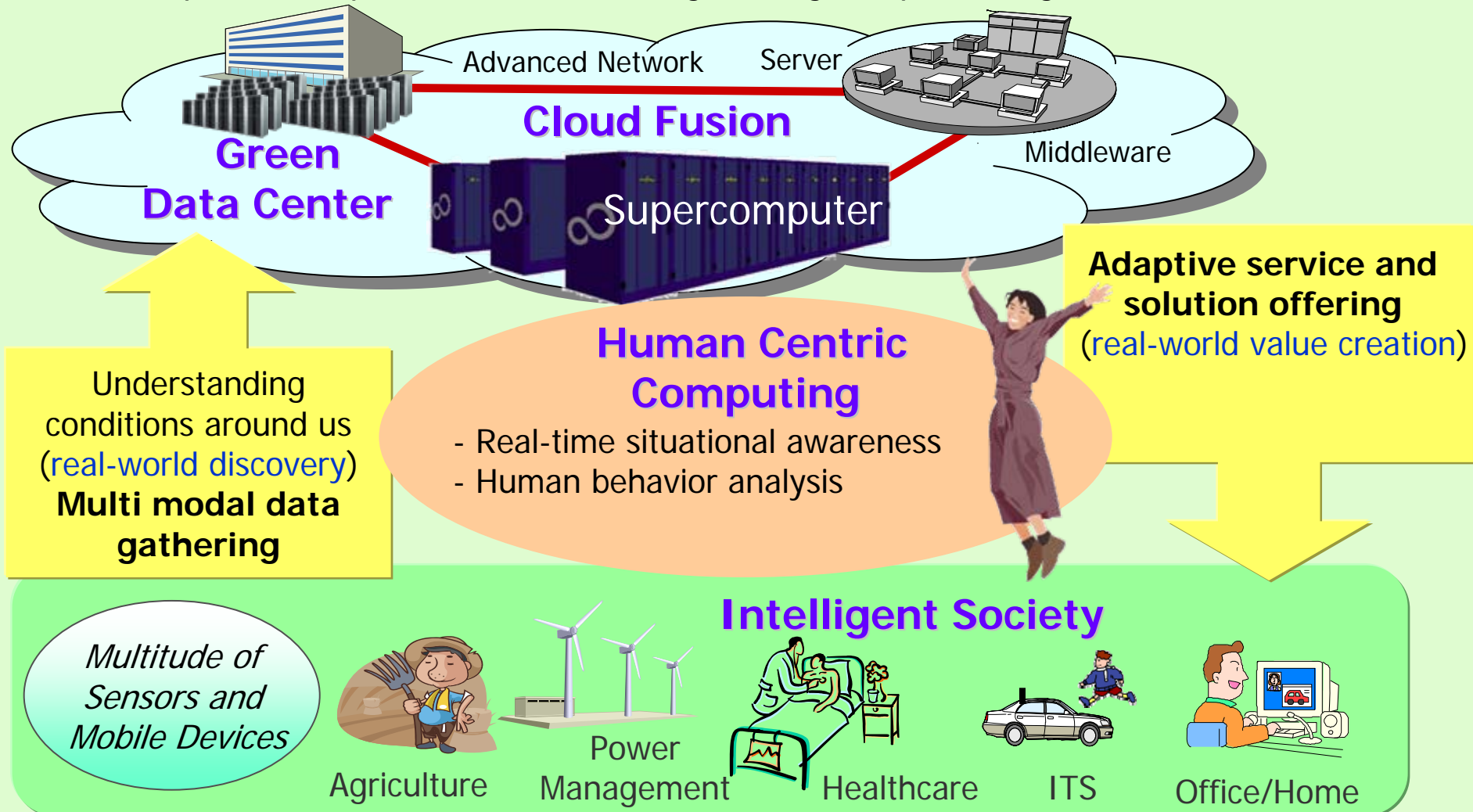


*From "Technology Centric" to "Human Centric"*

*Through ICT we create greater value by connecting to the real world*

# Enabling a Human Centric Networked Society

ICT platform capable of communicating, storing and processing massive amounts of data

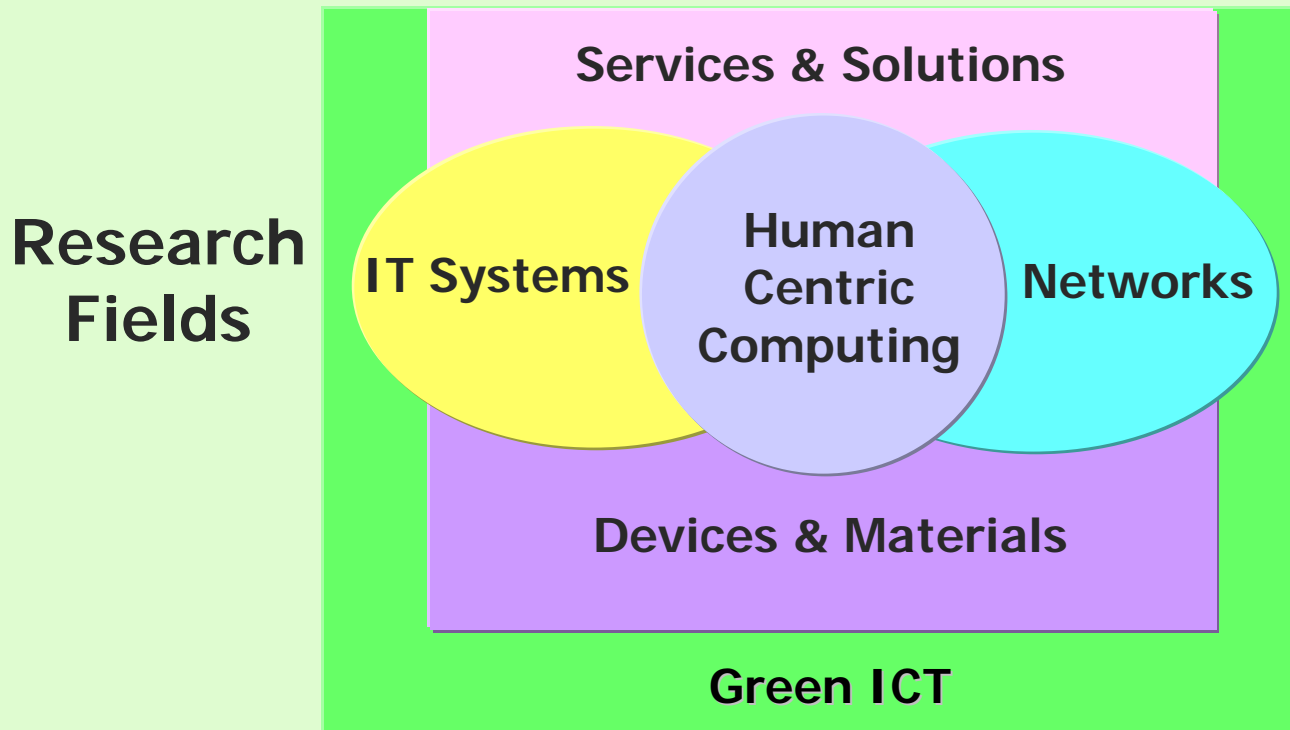


**Building a society that empowers people through ICT**

# FUJITSU Laboratories Ltd.



- **Capital:** \$55M (¥5B)
- **Budget:** \$380M (¥35B)
- **Employees:** 1,300 in Japan  
200 at overseas labs (US, China, Europe)



# FY2009 R&D Results - Core Technology -

## ■ Research contributions to core technology business

### ■ IA Server

- ⇒ Improved energy efficiency through dynamic power management and virtualization in PRIMERGY BX900 blade server
- ⇒ Industry leading energy efficient blade server w/10G Ethernet switch **Exhibit**

### ■ Cloud/Security

- ⇒ System failure management technology for cloud computing **Exhibit**
- ⇒ Inter-cloud technology international standards leadership (board position)
- ⇒ Email attachment traceability technology for data leak prevention **Exhibit**
- ⇒ Paper encryption technology with mobile phone reader **Exhibit**

### ■ LTE Development

- ⇒ Interference canceller MIMO repeater for wider area coverage
- ⇒ Algorithm to lower interference between base stations, with 20% improvement in throughput rate at cell border

### ■ Platform Device

- ⇒ Small size frequency synthesizer for digital TV mobile devices



# FY2009 R&D Results - Emerging Technology -

## R&D contributions in emerging technology areas

### ■ Human Centric Computing

- ⇒ Socially interactive robot (teddy bear) with human-friendly interface **Exhibit**
- ⇒ Field solutions using mobile devices and sensors **Exhibit**

### ■ Green Technologies

- ⇒ Gallium nitride HEMT for energy-saving power supply **Exhibit**
- ⇒ Evaluating CO2 emissions reduction potential at the R&D stage **Exhibit**
- ⇒ Small, sensitive chemical sensors for environmental monitoring **Exhibit**

### ■ Nanotechnology => Carbon nanotube and graphene applications **Exhibit**

### ■ E-paper Technology

- ⇒ Roll-to-roll mass production technology for e-paper panels
- ⇒ Patient guidance healthcare solution **Exhibit**

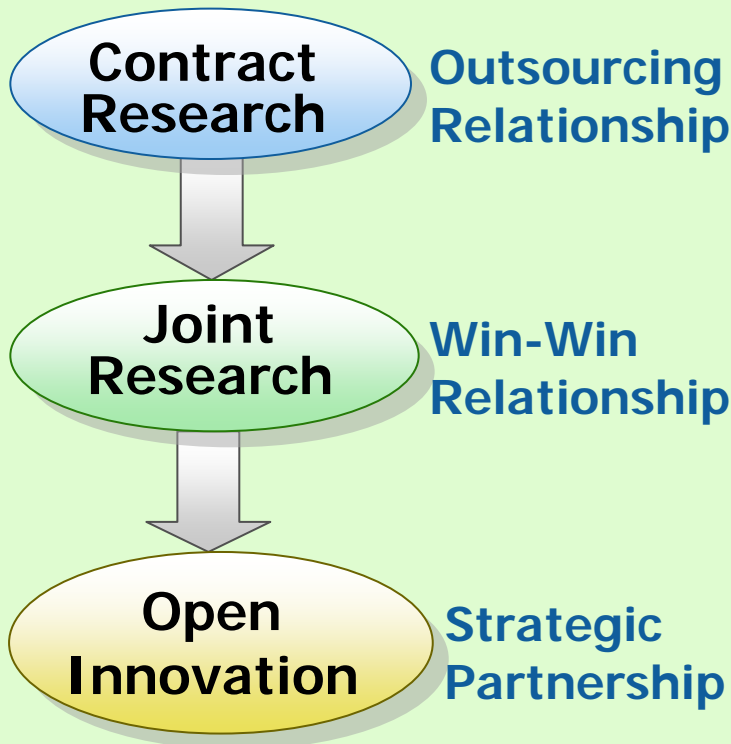
### ■ ITS => 40% improvement in car navigation display energy efficiency

## ■ Today's press releases (available in Japanese only)

- Office energy use measurement & visualization **Press Release & Exhibit**
- Automatic video summarization technology **Press Release & Exhibit**



# Open Innovation & Global Reach



## Universities

EU: Oxford University,  
University of Technology Munich

N.A.: MIT, Stanford University,  
University of Toronto  
University of California/Berkeley

China: Peking University, Tsinghua University

Japan: Tokyo Institute of Technology,  
University of Tokyo

Others: Technion-Israel Institute of Technology etc.

## Research Institutes

EU/N.A.: IMEC (EU), Fraunhofer Institutes, PARC

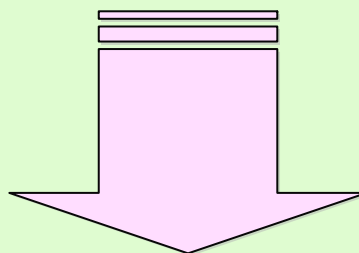
Asia: A★STAR (Singapore), AIST(Japan),  
Suzhou Industrial Park (China), etc.

- **QD Laser, Inc. spin out from university and government collaboration:**  
Commercialized world's first green quantum dot laser
- **A★Star Institute of High Performance Computing R&D partnership:**  
Joint software development on Asia's fastest HPC provided by Fujitsu
- **Collaboration office at China's Suzhou Industrial Park with Jiangsu Feng Yun Network Service CO., Ltd.:**  
Started trial collaboration for development of inter-cloud technology

## ■ Areas to Strengthen

- Strategic R&D to support the future of the Fujitsu Group
- Alignment of lab R&D strategy to business group needs
- Resource shift to respond to changes in the business portfolio

Framework Change



**Reinforce**

## Global Perspective to Optimize the Fujitsu R&D

- ◆ Top-down strategic R&D resource allocation and decision-making
- ◆ Three classifications to clarify each R&D theme

## Core Future Technology R&D

### Large-boned Themes (Core Strategic)

- Core research projects focused on important themes for the future technology of Fujitsu Group
- Medium- to long-term technology development

## Core Business R&D

### Business Strategic Themes

- Strategic business projects with commitment from internal business segments for commercialization
- Short- to medium-term technology development

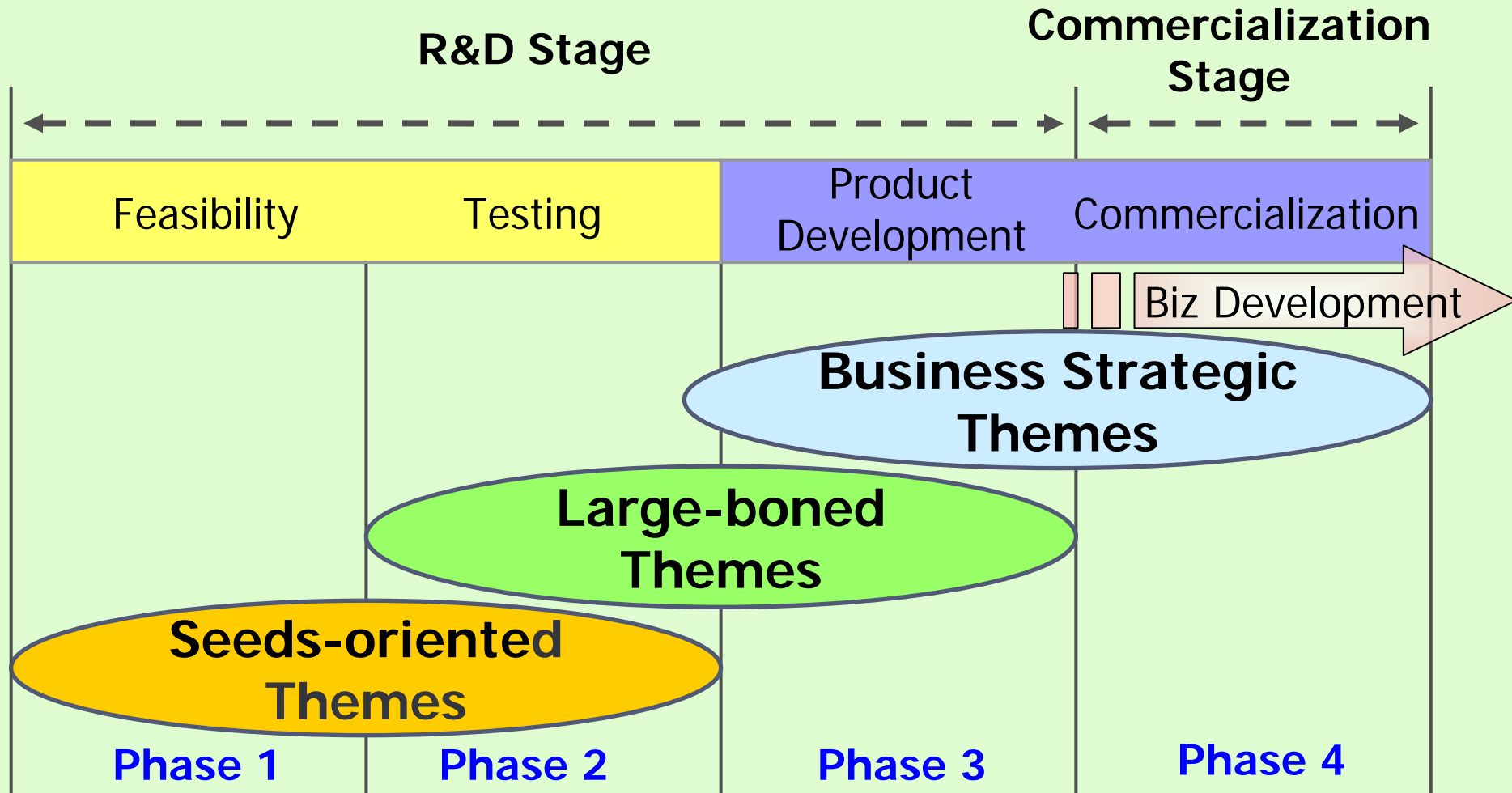
## Future Technology R&D

### Seeds-oriented Themes

- New research areas for growth of future emerging technology seeds
- Long-term technology development

# R&D Process

## - Positioning of Research Themes -



## Enabling a Human Centric Networked Society

### Human Centric Computing

Integration of ubiquitous devices with cloud infrastructure to create new technology solutions and services in healthcare, energy management and other human centered activities

### Intelligent Society

Responding to societal needs across industry verticals to create new social infrastructure, solutions, and services business

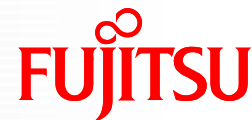
### Cloud Fusion

Unified operation and quality management as well as service distribution and load balancing over multiple clouds and existing systems

### Next Generation Green Data Center

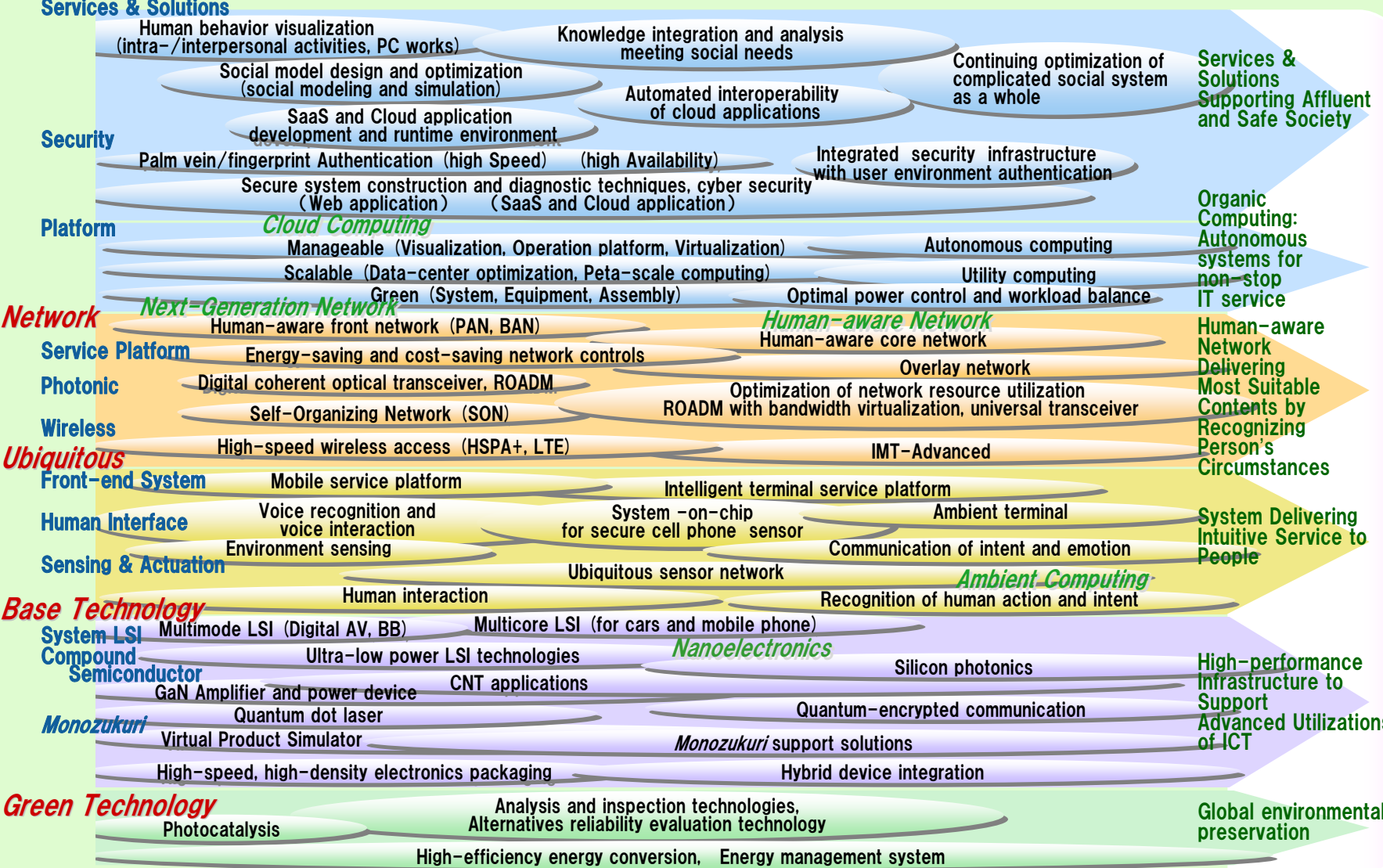
Optimizing new energy saving and cooling technologies, and utilizing optical networks to realize next-generation, low-power, and high cost-performance green data center

# R&D Roadmap FY2010

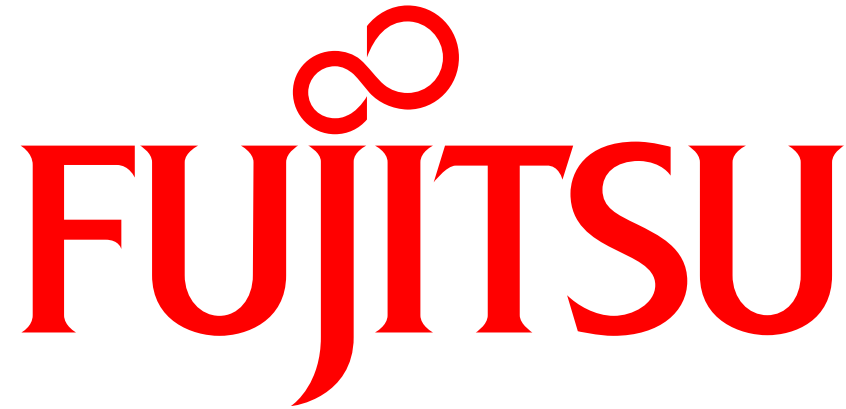


2010 • • • • 2015 2020(FY)

## IT Systems/Services



Human Centric Networked Society



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# Cautionary Statement

These presentation materials and other information on our meeting may contain forward-looking statements that are based on management's current views and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in such statements. Words such as "anticipates," "believes," "expects," "estimates," "intends," "plans," "projects," and similar expressions which indicate future events and trends identify forward-looking statements. Actual results may differ materially from those projected or implied in the forward-looking statements due to, without limitation, the following factors:

- general economic and market conditions in the major geographic markets for Fujitsu's services and products, which are the United States, EU, Japan and elsewhere in Asia, particularly as such conditions may effect customer spending;
- rapid technological change, fluctuations in customer demand and intensifying price competition in the IT, telecommunications, and microelectronics markets in which Fujitsu competes;
- Fujitsu's ability to dispose of non-core businesses and related assets through strategic alliances and sales on commercially reasonable terms, and the effect of realization of losses which may result from such transactions;
- uncertainty as to Fujitsu's access to, or protection for, certain intellectual property rights;
- uncertainty as to the performance of Fujitsu's strategic business partners;
- declines in the market prices of Japanese and foreign equity securities held by Fujitsu which could cause Fujitsu to recognize significant losses in the value of its holdings and require Fujitsu to make significant additional contributions to its pension funds in order to make up shortfalls in minimum reserve requirements resulting from such declines;
- poor operating results, inability to access financing on commercially reasonable terms, insolvency or bankruptcy of Fujitsu's customers, any of which factors could adversely affect or preclude these customers' ability to timely pay accounts receivables owed to Fujitsu; and
- fluctuations in rates of exchange for the yen and other currencies in which Fujitsu makes significant sales or in which Fujitsu's assets and liabilities are denominated, particularly between the yen and the British pound and U.S. dollar, respectively.