Fujitsu Laboratories’ R&D Strategy Briefing

April 3, 2013

Tatsuo Tomita
President
Fujitsu Laboratories Ltd.
Complex issues that impact our lives

Intricately intertwined issues

- Economy
- Population
- Food Supply
- Global Warming
- Energy
- Governmental: Domestic & Global
- Pollution
- Business Management
- Transportation
- Society
- Health
- Lifestyles
- Daily Lives
- Security & Safety

Complex issues that impact our lives
Paradigm Shift in ICT

Shift from “Technology-centric” to “Human-centric”: Support of activities that are more people-focused

- Improve productivity
  - Computer-centric

- Transform business processes
  - Network-centric

- Create knowledge, support human activities
  - Human-centric

- Create new value

1990 2000 2010 2020

Intelligent Society
Fujitsu’s Vision

Bringing about a “Human Centric Intelligent Society”

Innovation in the domain of human activity

Equipping businesses and society with information

End-to-end optimization

Shared platforms: technological capabilities, quality and reliability, eco-friendly
Technologies & Services for Achieving Fujitsu’s Vision

- Strengthen business offerings, deliver uniform services globally

<table>
<thead>
<tr>
<th>Markets</th>
<th>Japan</th>
<th>APAC &amp; China</th>
<th>North America</th>
<th>EMEA</th>
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<td></td>
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<td><strong>Integration</strong></td>
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<td>Cloud services</td>
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<td>Mobility services</td>
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<td>Big data &amp; security</td>
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<td>Integrated and optimized ICT</td>
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<td><em>(Modernization, integrated computing, virtualization)</em></td>
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<td><strong>Shared platforms</strong>: Technological capabilities, product quality and reliability, eco-friendly</td>
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A Partner for the Global Expansion of Our Customers
Fujitsu Laboratories: Mission

- Support the Fujitsu Group’s growth by leveraging leading-edge technologies

2013

- Innovation in the domain of human activity
- Equipping businesses & society with information
- End-to-end optimization
- Shared platforms

2018

- Continuous innovation for new businesses
- Contribute to growth of existing businesses

2023

- Breakthrough innovation toward cultivating new markets and businesses

Generate innovation through leading-edge technologies
Innovation in Domain of Human Activity

- Empowering people and society by integrating real and digital worlds

2013

Support individuals’ abilities through use of devices

Discover value by sharing information about objects

Support abilities of individuals by engaging multiple senses and enabling natural operations
Support human activity & daily life via interfaces that appeal to the 5 senses

Networks for sharing information about objects
Variety of real-world sensor data can be shared across digital world

2023

Generate new value by sharing information about people, objects, and society

Enhancement of users’ abilities through interaction with user environment
Offer customized services based on user location & activity

Networks connecting society with people & objects
Interconnection of sensors spread throughout society with people and objects, to deliver fully optimized services

- Human Interaction Technology
  - Ultra-Realistic Audio & Video
  - Intent-Recognition-Based Dialogue System

- Multi-Sense Interfaces

- Contextual Computing
  - Wearable Assistance-Technology

- Enhanced Abilities

- Total Connectivity
  - Smart Communication Platform
  - Autonomous Sensor Networks
Equipping business & society with information

From individual to cross-industry & society-wide solutions

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<tr>
<th>2013</th>
<th>2023</th>
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<tr>
<td><strong>Utilize data for vertical industries &amp; work tasks</strong></td>
<td><strong>Utilize cross-industry data</strong></td>
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<td><strong>Utilize society-wide data</strong></td>
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<td>Knowledge Integration from Massive/High-Frequency/Diverse Data</td>
<td>Customized Information Provision</td>
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<td>Build systematic knowledge from massive data of varying reliability &amp; size to help address problems</td>
<td>Offer customized, valuable data &amp; support decision-making based on surroundings, environmental impact &amp; future projections</td>
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- **SaaS and Cloud Security Platforms**
  - Developing specialized security gates and performing real-time data protection to guard personal and enterprise data

- **Predictive Security Platform**
  - Build infrastructure-wide cyber security platform to prevent & respond to attacks, predictive measures also taken

- **Unstructured-Data Forecasting**
- **Automated Analytics Process**

- **Biometric Authentication System for Social Platforms**
- **Predictive Security Platform**

- **Leverage Society-Wide Data**
- **Comprehensive Full-Scale Simulation of Cities**
- **Social Collaboration Platform**
- **Metrics for Smart Community Infrastructures**

**Customized Information Provision**

- Offer customized, valuable data & support decision-making based on surroundings, environmental impact & future projections

**Knowledge Integration from Massive/High-Frequency/Diverse Data**

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**Unstructured-Data Forecasting**

- Automated Analytics Process

**Security Platforms**

- Biometric Authentication System for Social Platforms
- Predictive Security Platform

**Leveraging Massive Data**

- Biometric Authentication System for Social Platforms
- Predictive Security Platform

**Leverage Society-Wide Data**

- Comprehensive Full-Scale Simulation of Cities
- Social Collaboration Platform
- Metrics for Smart Community Infrastructures
End-to-End Optimization

Deliver ICT platforms that rapidly adapt to ever-changing businesses & society

2013

Total ICT management for customer businesses
Optimize the infrastructure that supports enterprise ICT

- Added Value through Application LCM
  Support business growth through total management services ranging from application deployment and operation to maintenance and revision

- Wide-Distribution Deployment of Apps and Data & Effective Usage of Network/Server Resources
  Dynamically respond to business fluctuations by providing server resources that meet user needs, and through network-wide distributed processing

2023

Support, services and fully optimized ICT infrastructure that meet the needs of a changing society

- Formulating Growth Strategies Using a Data Collection and Analysis Platform
  Support sustainable growth via a platform for analysis and reuse of accumulated customer data

- Global Collaboration of Server Resources Employing Proactive Networks
  Use optimal-quality network services adapting to change to enable optimized operation of global-scale computer resources

Optimization of support and services, infrastructure optimization and efficient deployment

Overall Services and Support

Planning Deployment
Operations Maintenance
Modifications

Overall Infrastructure

Fabric Computing
Datacenters Leveraging On-site Natural Energy Generation
Comprehensive System-Verification
Automated Application-Operation
Application LCM Platform
User-Centric Data Delivery
Shared Platforms

Advanced technologies for achieving a Human Centric Intelligent Society

Core technologies for advanced ICT
- Performance
- Quality
- Eco-friendly

Manufacturing Simulations
Transforming manufacturing through synergistic effects of front line-integrated modeling simulations and HPC

Intelligent Software Development
Contribute to development efficiencies and enhanced security for product-oriented software

Materials, Devices & Packaging
Employ non-silicon materials and device technologies, along with packaging technologies that leverage them, to contribute to high-speed processing, high-speed communications, and effective energy leveraging

Manufacturing Simulations
- Universal Program Verification
- Model-Based Calibration
- Distributed Cooperative-Model Predictive Control

Software Development & Manufacturing
- Enhancement of Embedded Software Quality
  (Automated Testing, Security Enhancement)

Materials, Devices & Packaging
- High-Speed Processing
- High-Capacity Communication
- Efficient Energy Usage
Creating new value and developing new markets
Contribution to core businesses

Fujitsu Limited and Subsidiaries

Government Projects

R&D
Technology Strategy Task Force
R&D Investment

Universities & Research Institutes

Fujitsu Laboratories

Technologies and market trends / Customer and partner needs
Strategic R&D Themes

- Clarify positioning of R&D themes, eyeing future of Fujitsu Group
- Consistency of R&D themes with business; R&D resources: strategic allocation

Fujitsu’s Current BusinessSegments

- Technology Solutions
- Ubiquitous Solutions
- Device Solutions
- Other

Company-wide Core Strategic Themes

New business
Convergence business

Seed-oriented Themes

Business Strategic Themes

40%
40%
20%

Budget allocation
Transformation of R&D Themes

**Business-Strategic Themes**

**New Core Strategic Domains**

**Ubiquitous Innovation**
Contribute to development of front-end technologies and services important for interfaces between people and ICT, sensing, and massive data collection.

**Social Innovation**
Help to address societal issues and expand industry tie-ins and other societal business based on integrated simulation platforms that include human behavioral models.

**ICT Innovation**
Develop integrated ICT platforms and network-wide distributed virtual processing platforms that enable workload optimization to flexibly accommodate customer value targets.

**Manufacturing Innovation**
Contribute to the Fujitsu Group’s product portfolio through hardware/software technologies for groundbreaking product creation, leveraging related technologies, and by advancement/accumulation of technologies for manufacturing innovation.

**Fujitsu’s Business**
- Innovation in the domain of human activity
- Equipping businesses & society with information
- End-to-end optimization
- Shared platforms

**Previous Business-Strategic Themes**
- Human Centric Computing
- Intelligent Society
- Cloud Fusion
- Green Datacenters
- Manufacturing Innovation

**Previous Seeds-Oriented Themes**
- Cloud Fusion
- Human Centric Computing
- Intelligent Society
- Green Datacenters
- Manufacturing Innovation

**Seeds-Oriented Themes**
Strengthening Strategic Initiatives for Breakthrough Innovations

- Build cross-organizational ties throughout the Fujitsu Group, formulate strategic initiatives, and strengthen management of early-stage R&D starts
- Enhance support for global business development at global laboratories of Fujitsu Laboratories Group

**Life Innovation R&D Advancement Office**

Striving toward realization of a society that is prosperous and fulfilling for its inhabitants, proposes research direction pertaining to life innovation.

**Mobility R&D Advancement Office**

Advises R&D direction for mobility, an increasingly important area for ICT. Organically links technologies spread across different research units and enhances technology acumen and research.

**ATO* Advancement Office**

Gathers academic data held by internal research units worldwide, conducts studies to supplement lacking information, and leverages such information to disseminate a bird’s-eye view of R&D trends and guidance.

**Open Innovation Advancement Office**

In addition to ongoing support to build research partnerships comprised of internal research units with external research entities, organically links such initiatives to create new value for Fujitsu Laboratories as a whole, and accelerates preparations for related technological development.

Established designated organizations to enable greater attunement of technology data and trends, and for enhancing innovation for key-focus technology fields
Major Achievements in FY2012  April 2012 – March 2013

Innovation in the domain of human activity

Equipping businesses and society with information

End-to-end optimization

Shared platforms: technological capabilities, quality and reliability, eco-friendly

- User Interface Enabling Intuitive Operations
- Wide-Angle Laser Sensor with 140 Degree Horizontal/Vertical Range
- Pulse Monitor Using Cameras in PCs or Smartphones
- Secure Smartphone Use for Business
- Easy File Transfer by Capturing PC Screenshots on a Smartphone
- Linked Open Data Searching
- Automatic Recommendations for Analysis Scenarios
- Data Aggregation for Big Data
- Big Data Processing Technology Enabling 80% Improvement in Efficiency
- Analysis Tool to Identify Root Causes of Performance Issues in Virtual Machines
- Automatic Communications Protocol Selection Technology for Any Environment
- Optimal Transmission Technology Achieving 100 Gbps Using 10 Gbps Transmission Components
- High-Speed Transceivers Achieving World’s Fastest Inter-Processor Data Transfer
- Reducing Environmental Footprint with Water-Based Paints and Recycled Materials
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<tr>
<th>R&amp;D Area</th>
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<tr>
<td>Innovation in the domain of human activity</td>
<td><strong>Fujitsu Develops Next-Generation User Interface for Intuitive Touch-Based Operations</strong>&lt;br&gt;Enables innovative handling of data by directly touching actual objects</td>
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<td>Fujitsu Develops World's First Super-Wide-Angle 3D Laser Radar with a Horizontal and Vertical Range of 140 Degrees</td>
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<td>Fujitsu Develops Platform Technology for Secure Application Execution on Smartphones for Business Use</td>
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<td>Fujitsu Develops Easy Way to Transfer Files with Video of PC Screens Shot by Mobile Devices</td>
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<td>Equipping business &amp; society with information</td>
<td><strong>Fujitsu and DERI Revolutionize Access to Open Data by Jointly Developing Technology for Linked Open Data</strong>&lt;br&gt;Promoting open data usage with world’s first freely available storage and query platform that utilizes Linked Open Data</td>
<td>NEW</td>
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<td>Fujitsu Develops Industry's First Technology that Automatically Offers Analysis Scenarios for Big Data</td>
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List of Major Achievements in FY2012 (2)

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<td>Shared platforms</td>
<td>Fujitsu Achieves World's Fastest Transceivers of 32 Gbps for Inter-Processor Data Communications</td>
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<td>Fujitsu Pioneers Industry's First Use of Water-Based Paint for Plastic Chassis ICT Equipment</td>
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Generating Innovation through Leading-Edge Technologies

Striving to achieve sustainable growth for society

Seeking to bring about a prosperous society where people can live in security
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 affect 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.