Toward a Human Centric Networked Society

Shigeru Sasaki
Senior Vice President
Fujitsu Laboratories, Ltd.


August 29, 2010
Fujitsu at a Glance

- Headquarters: Tokyo, Japan
- President: Masami Yamamoto
- Established: June 1935
- Net Sales: US$49 billion
- Sales and Support Operations: over 70 countries
- Employees: 185,000 worldwide
- Core Business: ICT products, services and solutions
- R&D Lab Operations: 8 global labs and 1,500 researchers
Fujitsu’s Core Business Segments

Net Sales Figures FY 2009

- **Technology Solutions**
  - System Platforms
  - System Products
  - Network
  - Products
  - Services
  - **US$32.85 billion**

- **Device Solutions**
  - LSI Devices
  - Electronic Components
  - Others
  - **US$5.76 billion**

- **Ubiquitous Product Solutions**
  - PCs/Mobile Phones
  - Hard Disk Drives
  - Others
  - **US$9.67 billion**

- **Other Operations**
  - Car navigation systems
  - Vehicle electronic parts
  - Printed circuit boards
  - **US$4.18 billion**

Note: Percentage breakdown for each segment is calculated as segment’s net sales / total consolidated net sales. US$1=¥95. FY2009 is fiscal year ended March 31, 2010.
# Global IT Services Share

Fujitsu is the 3rd Largest Global IT Services Vendor

<table>
<thead>
<tr>
<th>Rank</th>
<th>IT Services Company</th>
<th>Services Revenue (M US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IBM</td>
<td>39,264</td>
</tr>
<tr>
<td>2</td>
<td>HP</td>
<td>27,745</td>
</tr>
<tr>
<td>3</td>
<td>Fujitsu</td>
<td>27,102</td>
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<tr>
<td>4</td>
<td>Computer Sciences Corporation (CSC)</td>
<td>16,680</td>
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<tr>
<td>5</td>
<td>Accenture</td>
<td>15,985</td>
</tr>
<tr>
<td>6</td>
<td>Northrop Grumman</td>
<td>12,454</td>
</tr>
<tr>
<td>7</td>
<td>Hitachi</td>
<td>12,318</td>
</tr>
<tr>
<td>8</td>
<td>Capgemini</td>
<td>11,154</td>
</tr>
<tr>
<td>9</td>
<td>NTT Data</td>
<td>10,498</td>
</tr>
<tr>
<td>10</td>
<td>NEC</td>
<td>9,103</td>
</tr>
</tbody>
</table>

*Source: Top 100 Research Foundation (2009)
http://www.servicestop100.org/it-services-companies-top-100.php*
Leaders in a wide range of fields look to Fujitsu for targeted, value-creating solutions that help them maintain and extend competitiveness.

<table>
<thead>
<tr>
<th>Retail</th>
<th>Financial Services</th>
<th>Transport &amp; Logistics</th>
<th>Utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>M&amp;S</td>
<td>Specsavers</td>
<td>Commercial Bank</td>
<td>Total</td>
</tr>
<tr>
<td>maxeda</td>
<td>Auchan</td>
<td>Allianz</td>
<td>EnBW</td>
</tr>
<tr>
<td>SONAE</td>
<td>Kroon</td>
<td>Bank of America</td>
<td>Total</td>
</tr>
<tr>
<td>STAPLES</td>
<td>Kiwi</td>
<td>Cargotec</td>
<td>OMV</td>
</tr>
<tr>
<td>Whitbread</td>
<td>Deutsche Bank</td>
<td>Lufthansa</td>
<td>Galp</td>
</tr>
<tr>
<td>JD.com</td>
<td>UBS</td>
<td>ProView Financial</td>
<td>SNCF</td>
</tr>
<tr>
<td>Rinoscente</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Public Sector</th>
<th>Manufacturing</th>
<th>Communications</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Office</td>
<td>Daimler</td>
<td>Telefonica</td>
<td>AT&amp;T</td>
</tr>
<tr>
<td>ENM</td>
<td>Bosch</td>
<td>Orange</td>
<td>Vodafone</td>
</tr>
<tr>
<td>Québec</td>
<td>Volkswagen</td>
<td>China Mobile</td>
<td>O2</td>
</tr>
<tr>
<td>Ontario</td>
<td>Siemens</td>
<td>Ericsson</td>
<td>China Telecom</td>
</tr>
<tr>
<td>Kela</td>
<td>Continental</td>
<td>Mercedes Benz</td>
<td>Siemens Healthineers</td>
</tr>
</tbody>
</table>

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Fujitsu Labs Role in Fujitsu Group

Universities & Research Institutes

Government Projects

Fujitsu Labs

Fujitsu Group

Research Investment

Technology Transfer & Incubation

Fujitsu Ltd.

Business Units

Fujitsu Subsidiaries

R&D

Products & Solutions

Spin-out ventures

New & Existing Markets

Value

Customer & Partner needs

Technology & Market trends
Fujitsu’ s History of Innovation

- **1968**: Establishment of Fujitsu laboratories ltd.
- **1974**: LSI based computer (fastest in the world) FACOM M-190
- **1980**: High Electron Mobility Transistor (HEMT)
- **1989**: Color plasma display
- **1992**: Ladder type SAW filter
- **1994**: 25 nm
- **2002**: Palm vein authentication
- **2003**: Electronic paper
- **2005**: 1 mm Electronic paper
- **2012**: Peta-scale computing

**Code of Conduct:**
- Respect of technology
- Favorable treatment to researchers
- Precise evaluation of development result
  (Kanjiro Okada, fifth president)

- Relay based mainframe (first in Japan)
- Emission of single photon (wavelength band for communication) from quantum dot (Joint research with Tokyo Univ.)
Fujitsu Labs Leads Technology Development

Fujitsu Laboratories

- IT System/Services
  - Service & Solutions
    - Human Behavior Visualization
    - Social Model Design and Optimization
  - Security
    - Palm Vein Authentication
  - Platform
    - SaaS and Cloud Applications

- Network
  - Service Platform
    - Energy and Cost-saving Network Control
    - Human-aware front network (PAN, BAN)
  - Photonic
    - Digital Coherent Optical TRX
  - Wireless
    - LTE, SON

- Ubiquitous
  - Front-end System
    - Human Interface
    - Sensing & Actuation

- Base Technology
  - System LSI
    - Compound Semiconductor
    - “Monozukuri”

- Green Technology
  - Efficient Energy Conversion
  - Energy Management System

Fujitsu’s Products, Services & Solutions

- Technology Solutions
  - Services
    - Solutions
    - SI
    - Infrastructure Services
  - System Platforms
    - Server System Products
    - Network Products
    - Others
  - Ubiquitous Solutions
    - PCs
    - Mobile Phones
    - ITS solutions
  - Device Solutions
    - LSI Devices
    - Electronic Components
Global R&D Partnerships: Recent Success Cases

- **QD Laser, Inc., spin out venture from collaboration with University of Tokyo funded by Japanese government**
  - Commercialized world’s first green quantum dot laser (2010)

- **R&D office in China’s Suzhou Industrial Park (March, 2010)**
  - Started trial collaboration for development of inter-cloud technology with local Chinese company

- **R&D office in Singapore with A*STAR (May, 2010)**
  - Joint biomedical research for diagnosis of cancer and diseases
  - Joint software development on Asia’s fastest HPC provided by Fujitsu

- **Incubation of revolutionary protein analysis bio-chip technology at Technical University Munich (April, 2010)**
Paradigm Shift in ICT Systems

From “Technology Centric” to “Human Centric”
Interfacing ICT into our real-world lives creates new value
Enabling a Human Centric Networked Society

Advanced network

Server

Middleware

Cloud Fusion

Supercomputer

Green Data Center

Multitude of sensors and mobile devices

Agriculture

Power management

Healthcare

ITS

Office/ Home

Real-world discovery

Understanding conditions around us

Human Centric Computing

- Real-time situational awareness
- Human behavior analysis

Real-world value creation

Adaptive service and solution offering

Intelligent Society
Fujitsu is a leading provider of comprehensive ICT solutions harnessing the strength of Japan's service oriented culture.
Healthcare Technology Solutions

Sensing and health data aggregation supports healthy lifestyles

Cloud service

Context-aware computing

Schedules, clinical records, procedural records

Ensuring medical safety

Automatic recording and sharing of information, Checks and alerts

Hospital

Sensors
RFID tags

Portable terminals

Sensing and health data aggregation supports healthy lifestyles

Health insurance provider

Financial institution

Pharmacy

Personal monitoring

Home

Improving health through better interaction with health data

Services provision

Behavior sensing

Hospital

Sensors
RFID tags

Portable terminals

Healthcare Technology Solutions
A relationship between human and machine heals hearts

- Can ICT help with mental or psychological support?
- Offers healing and rehabilitation for elderly and mentally challenged

Diurnal rhythm, analysis of long-term changes, detection of unusual patterns, etc.
New Agricultural Management Technologies

Technologies to visualize agricultural production and improve management efficiencies

- Cultivation planning, risk assessment, food safety control
- Extraction and dispersion of field knowledge

GPS, various sensors
Worker conditions, sunshine, wind, soil temperature, moisture, pH, etc.

Agricultural administrator

Knowledge management

Data mining
Sensing infrastructure
Visualization

Fujitsu cloud services

Weather/Markets

Sensor Database

Fujitsu cloud services

Knowledge Database
Smart Network Monitoring System

- **Disaster Prevention**
- **Energy Conservation**

**WisReed**

- Wireless Network
- Fixed Line Network
- Cloud

**Fujitsu’s Technologies**

- **Ad-Hoc Routing Protocol (WisReed)**
  - Autonomous Network Connection and Failure Restoration
  - System Scalability
  - Prevention of Maintenance Cost Hikes

- **Sensor Middleware**
  - Efficient Data Collection with Less Stress on Servers and Applications
  - Network Monitoring and Control using Ad-Hoc Communications
Remote erasure of HDD content, PC lock
- World’s first to show capability in power-off state

CLEARSURE

1. Erase / lock command
2. Erase / lock command
3. Erase / lock HDD data
4. Result report
5. Result report

Lost or stolen PC
Encrypted HDD
Dedicated PHS Communication module
BIOS

Customer service department
Internet
Administrative server (Fujitsu-owned or operated)

PHS net

LI FEBOOK P750/ A model provides CLEARSURE

CLEARSURE is currently only available in the Japan domestic market.
Green Data Center Technologies

Total technology development process from device to facility

Tatebayashi green data center

CPU I C  +  CPU module  +  Board  +  Server  +  Data center

Device  +  Package  +  System  +  Facility

GaN power device

Server cooling technology

VM power management

Multi-point temp. measurement

Smart air conditioning system

Fujitsu Labs Technologies
shaping tomorrow with you