Introduction of Fujitsu’s Food and Agriculture Cloud “Akisai”

26th February, 2015

FUJITSU LIMITED
Contents

- Fujitsu’s growth strategy
- The potential of the food & agriculture market
- Fujitsu’s Food and Agriculture Cloud “Akisai”
- Expansion into global markets
- Considerations for market expansion
Fujitsu’s growth strategy
Roadmap to Earnings Growth

FY2012-2013

Structural Reforms
- Taking action to restructure specific businesses
  - Semiconductors
  - Ubiquitous Solutions
  - Businesses outside Japan

Group-wide efficiencies / Management transformation
Organizational changes and efficiencies / Adoption of IFRS

FY2014-2016

Growth Strategy
- Expand ICT usage areas for enterprises
  - Modernization
  - Business innovation
- Expand into new ICT usage areas
  - Social innovation
- Expand business areas globally
Investments in New Areas (Cumulative FY2014-2016)

- Plan to invest 200 billion yen to achieve growth strategy

Strengthen global delivery capabilities

50 billion yen

Social innovation

50 billion yen

Business innovation

100 billion yen

Modernization of existing business systems

Sales targets for products and services supporting innovation*

- Cloud: 350 billion yen
- Mobile: 260 billion yen
- Big Data: 250 billion yen
- Social: 240 billion yen

* Sales based on business deals (includes double-counting among categories)
Examples of Initiatives in Social Innovation Field

- Develop initiatives that, as a business, resolve societal problems
- Deliver new value through partnerships with variety of companies, organizations

### Health/Medicine
- Enable medical services tailored to individual needs

### Transportation/Automobiles
- Develop new services using positional data

### Food/Agriculture
- Build safe and secure food value chain
The potential of the food & agriculture market
Agriculture under the Abenomics growth strategy

Meeting of the Headquarters for Japan's Economic Revitalization “Growth strategy” (June 14, 2013)

Making agriculture, forestry, and fisheries into growth industries

Growth targets

• Bring number of corporate-run organizations to 50,000
• Bring scale of agricultural market (including processing and services) to JPY 10 trillion by 2020 (from JPY 1 trillion now)
• Bring exports of agriculture, forestry, fisheries products and food to JPY 1 trillion by 2020 (currently at JPY 450 billion)
• Form strategy to double agricultural and rural community income over next ten years while advancing combined agricultural value chain

Using IT to raise the level of Japan’s agriculture and related industries; converting to a knowledge industry & developing internationally (“Made by Japan” agriculture)

1. Create business models based on agri-informatics and other agricultural data, and convert into knowledge industry
2. Build field-to-table traceability systems

Key Performance Indicators

• Scale of agricultural IT market
• Share of sales of services in agricultural and related industries
• Status of global expansion of Japanese-style agricultural service solutions

Strategic Headquarters for the Promotion of an Advanced Information and Telecommunications Network Society “Realizing the World's Top-Class IT Society” speech (May 24, 2013)

Copyright 2015 FUJITSU LIMITED
Signs of innovation in Japan

Corporate entrants into agriculture

- 2009 Agricultural Land Act Amendment energized corporate entrants into agriculture
- 1.5 years after amendment, number of companies doubled to 840 compared to before the amendment

Trend in new employment in agriculture among younger workers

- Number of people 39 and under entering agriculture rising for past 10 years
- 34% now work at agricultural corporations

Projected investments in greenhouse farming

- Growth in greenhouse-farming market, where production can be stable
- Investment expected to grow from JPY 112.7 billion in 2009 to JPY 140.1 billion in 2020

Number of participating companies

- Ministry of Agriculture, Forestry and Fisheries’ "2010 White Paper on Food, Agriculture, and Rural Communities"

Trends in new agricultural workers aged 39 and under

- MAFF’s "Survey of Trends in Agricultural Employment, Survey of Changes in the Structure of the Agricultural Sector, Agriculture and Forestry Census, Survey of New Employment in Agriculture"

Projected scale of greenhouse farming market

- Fujitsu estimates
Fast-growing global food and agriculture markets

Agricultural production will need to double from current levels to respond to explosive population growth

- **Global population growth** (UN survey)
  - 7.2 billion (2013) → 9.6 billion (2050)

- **Global food market** (MAFF & A.T. Kearney survey)
  - JPY 34 bn (2013) → JPY 68 bn (2050)

*Asia (including China and India) to rise from JPY 8.2 billion to JPY 22.9 billion (2.8x increase)*
Fujitsu’s Food and Agriculture Cloud
“Akisai”
Solution Portfolio

- One-stop ICT solutions by Fujitsu’s Food & Agriculture Cloud.
- Variety of innovative solutions and services for agribusiness.

The “Akisai” Food and Agriculture Cloud Platform

Greenhouse cultivation

Management

Agricultural management

Production management

Consolidation management

Environmental control

Soil analysis, fertilizer planning

“Gyuho”

Beef production management

Sales, delivery management

Innovation service

Data collection

Aggregation, analysis

Usage

Copyright 2015 FUJITSU LIMITED
Production Management System for Agriculture

Data-driven agricultural management

- Sensors, Cameras
  - Air temperature, humidity levels, amount of solar radiation, photos, soil humidity, soil temperature, salinity, rainfall, etc.

- Mobile devices
  - Worker records
  - Production history
  - Growth data

- Data generated from daily activities

- Application
  - Sensors, Cameras
  - Mobile devices

- Food and Agriculture Cloud
  - Agricultural Production Management SaaS
  - Collection & Analysis

- External data services
  - Google Maps, weather service, etc.

- Harvesting

- Data-driven agricultural management
  - Management planning
  - Management decision making
  - Production management
  - Farm worker management
  - HR nurturing
  - Worker task review
  - Management analysis

- In the field

- Office, etc.

Easy to use on site  Analysis by management  Centralized management

Sensors, Cameras:
- Sensors, Cameras
- Mobile devices
- Data generated from daily activities

Application:
- Application
- Food and Agriculture Cloud
- External data services

Harvesting:
- Data-driven agricultural management

Easy to use on site:
- Easy to use on site

Analysis by management:
- Analysis by management

Centralized management:
- Centralized management

Copyright 2015 FUJITSU LIMITED
Easy to Use On Site

- Supports mobile devices such as smartphones, tablet PCs

- Easy wizard-guided operation
- Touch screen input – no mouse needed

- Map-based access to photos, comments from onsite patrols
- Click on the map for data on crop size, growing conditions, etc.
- Fields managed using mapping services

Easy input of comments and photos
Increasing harvest per unit area

- 30% increase of cabbage yield by optimizing farmer's work operation. Predicting harvesting period and production planning.

Usage Case

Predicting harvesting period
- Work in proper periods
- Pictures of cultivation inspection
- Advisory from research center
- Calculate cumulative temperature
- Settled planting
- Review and feedback

Production planning
- Harvesting
- Increasing harvest, ensuring stable supplies

Copyright 2015 FUJITSU LIMITED
300% increase of sugar content in orange yield by optimizing farmer's work operation. Revitalizing local business.

Usage Case

Increasing Food Production Capacity

Orange Farm

- Cultivation orange
- Recording each data
- Evaluating hypothesis

Data recording, utilization

Food and agriculture cloud

1. Data collection, storage, sharing through sensor and smartphone
2. ID management for each tree
3. Agricultural advisory service based on the field data

Fruit research center

- Advising remotely
- Instructing know-how
- Finding know-how

Data providing, analysis
In direct management farm, realized secure production by visualizing management, production and quality to use cloud of agriculture business and production management.

Disseminating cloud to contracted farmers as well, aims for consolidated management to realize JIT management.
Collaboration with Iseki

- Building on Iseki's know-how, we customized our agricultural production management cloud, enhancing features for managing agricultural products (now offered as an Iseki service).

- In the future we aim to promote even better data utilization and agricultural management using mechanical information and operational information gleaned from Iseki's agricultural equipment.
Greenhouse Horticulture System

- Real time monitoring and visualization of the environmental conditions.
- Fully automated environmental condition parameter adjustment within the house appropriately.
- Remote control for each devices and sensors by using smartphone or tablet PC.
At a Glance

Greenhouse

Circulating Fan

Window Opener

Fujitsu Cloud

Fujitsu Environment Control Box

Weather Sensor

Heater

Nutriculture Controller
Japanese railway company JR Kyushu cultivates green pepper “Green Saurus” in Shintomi-cho, Miyazaki Prefecture.

- 250t harvest per year, sales of 1 million US dollars in five years.
- 1.73 ha scale low-cost greenhouse facility in 2.1 ha farmland.
- Expert farmer (Fukuyama farm) offers consultation of cultivating skills. Fujitsu would support greenhouse operation and management by ICT.
- Expected as a new business model and local revitalization.
Aizuwakamatsu Akisai Plant Factory

- Reconstructed previous semiconductor factory into a large scale vegetable factory including 2000 square meters clean rooms. (Open for customers)
Data-intensive Agriculture
(using Fujitsu’s “Akisai” Food and Agriculture Cloud)

- Visualizing the cost and quality of each process for effective management of production planning and the measurement of results
- Gathering and analyzing environment control data for all production batches

![Diagram showing the integration of various systems and data analysis for data-intensive agriculture using Fujitsu's Akisai Cloud.](image-url)
Expansion into global markets
Creating a “smart agriculture” industry

- Establish "smart agriculture" as the crystallization of Japan’s technological capabilities in a technology-oriented model of agricultural production
- Build an export industry around industries related to smart agriculture by packaging them ("All Japan" model)
## Steps for expanding smart agriculture

- **Prove implementation model in Japan > extend internationally**
- **Establish key technologies as de facto and de jure standards**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2014</td>
<td>Proving implementation model for smart agriculture in Japan:</td>
</tr>
<tr>
<td></td>
<td>Collaborate with leading companies in ICT, robotics, energy</td>
</tr>
<tr>
<td>FY 2015</td>
<td>Extending implementation model for smart agriculture internationally:</td>
</tr>
<tr>
<td></td>
<td>To ASEAN, Middle East, Africa, etc.</td>
</tr>
<tr>
<td>FY 2016</td>
<td>Establish key technologies as de facto standards (establish track record):</td>
</tr>
<tr>
<td></td>
<td>Japan &gt; Asia &gt; Middle East &amp; Africa, etc.</td>
</tr>
<tr>
<td>FY 2017+</td>
<td>Establish key technologies as de jure standards:</td>
</tr>
</tbody>
</table>
Collaboration with FPT in Vietnam

- Overview of FPT Corporation
  - Major player in Vietnam's ICT industry focusing on ICT services, digital content, mobile retail, outsourcing, education
  - Since founding in 1988, has grown quickly and is consistently the leader in Vietnam's ICT industry; with aggressive international expansion, is now in 16 countries.

- Cooperation agreement on agricultural ICT with FPT
  - FPT's Chairman Binh and Fujitsu's President Yamamoto met in March 2014
  - Vietnam's President Sang visited Japan in March 2014 and met with President Yamamoto, who proposed the benefits to Vietnam of agricultural ICT
  - Fujitsu and FPT have signed a memorandum of understanding.
  - Plans to conduct trial project of greenhouse-farming cloud in Hanoi during fiscal 2015
Considerations for market expansion
Fujitsu’s strengths

Supporting the entire food & agricultural value chain

- Production management for corporate agricultural management
- Centralized management directly linked to the field

Supporting innovation that leverages data in agricultural management

- Know-how to put ICT to work in the field

Competitive situation

- Mainly focused on technologies, such as sensing technologies
- Functions supporting corporate agricultural management are weak
Expectations for ICT business in food & agriculture market

- If ICT reaches same penetration as in industry, the ICT market should be worth JPY 1.1 trillion/year (in Japan)
- As smart-agriculture industry, poised to become an All Japan export industry
Growth through social innovation

- Focus resources on the expanding innovation fields
- Expand business by collaborating and co-creating with customers and markets
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.