Fujifilm’s R&D Initiatives for Medium to Long-term Growth

FUJIFILM Holdings Corporation

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1. R&D Reforms in the Business Restructuring

Structural Reforms in the Second Foundation

Coexisting of both “Breaking away from silver halide photographs” and “Utilizing photo related technologies”

“Breaking away from silver halide photographs”
Business driven development system

×

“Utilizing photo related technologies”
Cross functional corporate system

(Strengthening fundamental and core technologies, promoting new business themes)

Smooth transfer of staffs within the Company / Carrier pass

1. R&D Reforms in the Business Restructuring

Actual R&D system

Consolidated management by R&D Management Headquarters through clarifying the functions and roles

As of March 2016
1. R&D Reforms in the Business Restructuring

R&D policies of FUJIFILM Advanced Research Laboratories

Creation of new value through “Intellectual Fusion and Innovation”: Promoting new business themes

- Intellectual Fusion
- Interaction and fusion of diverse areas and technologies

- Innovation
- Creation of new differentiating technologies

- Value Creation
- Achieving concrete results that will contribute to future societies

Opened in April 2006

2. Technological Advantages of Fujifilm

Fundamental and Core Technologies

- Grain Formation Technology
- Functional Molecules Technology
- Functional Polymer Technology
- Redox Control Technology
- Nano Dispersion Technology
- High-precision Coating Technology
- Film Formation Technology
- Core Technologies
- Imaging Technology
- System Design
- MEMS Technology
- Bioengineering

Core Technologies

= Resources to win in businesses

Fundamental Technologies

= Physical strength to keep
2. Technological Advantages of Fujifilm

Silver halide photographs is an accumulation of various technologies

- Functional Molecules
- Grain Formation Technology
- Nano Dispersion Technology
- Functional Polymer
- Imaging Technology
- Film Formation Technology
- Redox Control Technology
- High-precision Forming Technology
- System Design
- Minilabs (development)
  - Converting optical information to image information (Image processing)
- Photographic film (sensor)
  - Recording optical information (Highly functional materials)
- Albums (storage)
  - Storing output image (Archiving)
- Photo prints (printing)
  - Outputting image information (Highly functional materials, image processing)

2. Technological Advantages of Fujifilm

Examples of expansion of core technology (1)

**Imaging Technology**

- Sensors
- Automotive lenses
- Security lenses
- Machine vision camera lenses
- TV camera lenses
- Mirrorless digital cameras
- Endoscopies

The well-controlled image sensor and optical system producing high-quality images. Providing a total solution, including analysis of the captured image.
2. Technological Advantages of Fujifilm

Examples of expansion of core technology (2)

Nano Dispersion Technology

- Nano silver pavement
- Nano pigment ink
- Photo emulsion

Magnetic materials
(Tapes for archiving)

Pharmaceuticals
(Drug Delivery System)

Cosmetics, Supplements

Nano-dispersion of about 100 substances that have separate functions, such as to capture light, produce color, and sharpen images, etc.

Examples of expansion of core technology (3)

Film Formation, High-precision Coating Technology

- CO₂ separation membrane
- Sensor film for touch panels (EXCLEAR)
- Gas barrier film
- Photographic film

Film to control specific wavelength light

Film for FPD

Coating about 20 photosensitive layers on the 180 micron base film uniformly and precisely with the thickness of about 20 microns. (Simultaneous multilayered coating technology)
2. Technological Advantages of Fujifilm

Bioengineering

- Development/volume production of pharmaceuticals
- CMO of biopharmaceuticals
- Re却minal Peptides (RCP)
- CDI
- Regenerative medicine
- J-TEC
- Autologous cultured epidermis

Research of gelatin for photographic film enabled the manufacturing of gelatin with high quality and high productivity.

Examples of expansion of core technology (4)

System Design Technology

- Medical IT systems
- In-vitro diagnosis systems (IMMUNO AG1)
- X-ray diagnostic imaging systems (FCR)
- Digital inkjet press (Jet Press)
- Value added printing
- Instant photo system

“Image Intelligence™”
The technological assets of image processing technologies cultivated through image analysis, evaluation, and digital imaging.
2. Technological Advantages of Fujifilm

3. Selecting R&D Themes and Creating New Businesses

KFS for R&D in the 2nd Foundation

→ “Selection and concentration”,
  “Appropriate usage of people, things, money”

“Selection and concentration”
Creating a system for selecting themes
(“Stock-taking” of technologies and four-quadrant matrix, two-way theme settings, discussion of research plans)

Efficient resource allocation
(Control by ratio of R&D expenses to revenue, relocation of researchers)
3. Selecting R&D Themes and Creating New Businesses

System for selecting themes

“Stock-taking” of technologies – four quadrant -

New Technologies  
Existing Technologies

Existing Markets  
New Markets

Keys to Determine Priority Businesses

- Is it a growing market?
- Do we have the technology to be applied in this area?
- Can we stay competitive in this area?

3. Selecting R&D Themes and Creating New Businesses

Establishment of Innovation & Strategy Planning Div.

<Before>

R&D Management Headquarters

Strategic Corporate Planning Div.

Positioning the function of strategy development in R&D Div.

<Actual from August 2015 >

Corporate Planning Headquarters

R&D Management Headquarters

Strategy group

Innovation & Strategy Planning Div.

Ex. Strategic Corporate Planning Div.

Deciding resource allocation from management perspective.
Subcontracting R&D depending on themes
3. Selecting R&D Themes and Creating New Businesses

Highly Functional Materials Business Development Headquarters

- Accelerating creation of new products and businesses in highly functional materials field
- Established in June 2013
- Small project teams mobilizing necessary resources
- Key words: “Small, speedy, less investment, and numerous”
- Continuously creating highly profitable products and businesses

Innovation & Strategy Planning Div.

- Accelerating development of new businesses in medium-to-long term
- Established in August 2015
- Gathered function of business strategy and technology strategy in the Corporate Planning Headquarters
- Key word: “Open Innovation”
- Global activities

Open Innovation Hub: Providing places by five concepts

- Co-creation with business partners
- Introducing our fundamental/core technologies and products and technologies under development
- Combining potential needs and our technologies
- Proposing innovative technologies, products, and services
- Fostering innovation
Achievements of Open Innovation Hub (Jan. 2014~)

- Over 650 companies visited in two years since its opening
- 10% of them connected to collaboration (sample works, NDA, sales, etc)
- Effective for presence improvement (mass media, governments, universities, public institutions, VIPs from overseas, etc)
- Useful for employee education (about 2,000 employees visited)

3. Selecting R&D Themes and Creating New Businesses

Creating total solutions business by Fujifilm’s unique value creation through combining wide range of technologies

Seizing issues / needs by backcasting

Resolution of issues totally not by individual material/component but by wider approach

Social issues / needs

Five important issues set by Japanese Cabinet Office (Strategic innovation program)
- Healthy life expectancy
- Secure and robust infrastructure
- Safe and comfortable movement
- Environment and energy
- Food and agriculture
3. Selecting R&D Themes and Creating New Businesses

Examples of medium to long-term R&D themes

Fujifilm’s unique total solutions in healthcare business field

Ex., Field of infectious diseases

- In-vitro diagnosis systems (IMMUNO AG1)
- Antibacterial coating solution (Hydro Ag)
- Antimicrobials (Small-molecule pharmaceuticals)

4. Controlling Efficiencies in R&D

KFS for R&D in the 2nd Foundation

→ “Selection and concentration”, “Appropriate usage of people, things, money”

“Selection and concentration”
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Linkage by corporate function (Innovation & Strategy Planning Div.)

“Appropriate usage of people, things, money”
Efficient resource allocation (Control by ratio of R&D expenses to revenue, relocation of researchers)
“Implementing selected R&D themes based on management perspective speedily, utilizing resources properly”

- Effective resource allocation
  ⇒ Concentrate resources of people, things, money into growth fields

- Open Innovation
  ⇒ Introducing most-advanced technologies from outside globally while utilizing in-house technologies
  ⇒ Implementing open innovation which matches regional characteristics
  ⇒ Implementing the open/close strategies of technologies

Strengthening management perspective through Innovation & Strategy Planning Division