Software Technologies: Fujifilm's Unique Technological Assets

Reproducing perfect images of worlds as people see or perceive them in place of their vision and brain, or expressing precise images of worlds as people want to express them by sensing their intentions—that is what Fujifilm has always helped accomplish by utilizing image analysis and evaluation technologies, which it has nurtured in the development of silver halide photographic systems over 70 years, and digital imaging technologies, which it developed ahead of its competitors in the 1970s. Such Fujifilm technological assets, collectively dubbed "Image Intelligence™," are widely applied in the fields of photography, printing and medical imaging.

Fujifilm's Image Processing Technologies

Image Intelligence™ is a set of systematized technologies to fill the gap between human vision and input/output devices. More specifically, using these technologies, Fujifilm analyzes the gap from all possible perspectives including the action of light, human vision and cerebral functions, as well as the interaction with devices. The outcome of these analyses is used to understand how people see or perceive things and thereby establish relevant technologies.

	Photography/Printing	Medical
Dynamic Range Compression Technology	Realized a technique known as "dodging" with digital processing. Accurately reproduces all ranges—from highlight to shadow—through the automatic optimization of images with high light-to-dark contrast into those that resemble what the human eye perceives	Realizes the natural expression of both high- and low-density areas, which are difficult to reproduce in ordinary imaging, through the application of the Dynamic Range Compression Technology that utilizes multi-frequency processing (MFP)
Tone Correction Technology	Realizes an optimal gradation for each object through subject-specific analysis. Reproduces natural and smooth skin tones for portraits, while automatically finishing a gradation with emphasized light-to-dark contrast in landscape photography	Reproduces image density and contrast adequate for diagnostic purposes by optimizing the gradation of each body part image
Hyper-Sharpness Technology	Reproduces sharp images by precisely separating noise from the valid portions of images, thereby optimizing the balance of noise reduction and sharpness enhancement	Offers sharp images suitable for individual diagnostic purposes by controlling image sharpness through Fujifilm's proprietary frequency processing. Pattern Enhancement Processing for Mammography (PEM) emphasizes dot patterns of calcification based on the structure of objects
Object Recognition Technology	The automatic face detection technology optimizes both the exposure in photo-shooting and the high-quality finishing in printing. This technology is also applied in automatic red-eye correction and trimming.	Realizes analytical imaging for high-value-added diagnosis through the automatic, high-speed, high-precision extraction of organ, bone and vessel images from 3D images captured by CT and MRI systems

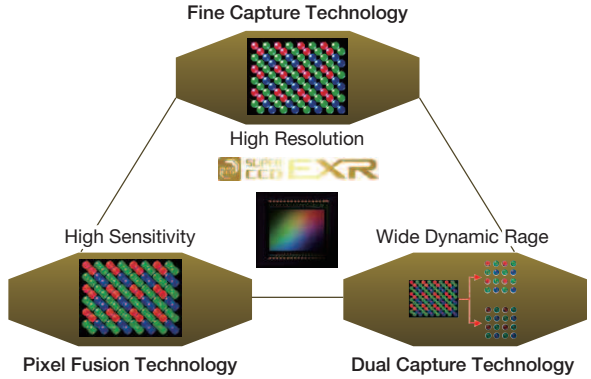
Harnessing Fujifilm's Unique Technological Advantages in the Ever-Competitive Digital Camera Market

As a digital camera packed with technologies that have been developed in step with the evolution of the FinePix series over the past 10 years, Fujifilm released the FinePix F200EXR digital camera during the fiscal year under review. This new product is packed with Fujifilm's advanced digital image processing technologies, including the newly developed Super CCD EXR sensor. Maintaining the FinePix concept of "Just as Your Eyes See," the Company has developed the new sensor to realize unprecedented picture quality, aiming to make it function just like the human eye.

People unconsciously try to see details in well-lit places. The resultant detailed sight makes them think that the image quality is high. In contrast, in dark places, they try to see objects as clearly as possible by enhancing visual sensitivity, unconsciously ceasing to see, for instance, each strand of hair. In other words, the human eye unconsciously adjusts its resolution and sensitivity so that people are not blinded by strong sunlight or by darkness.

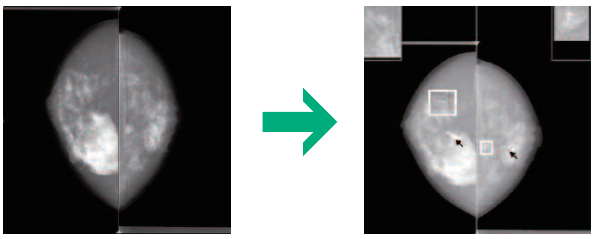
Fujifilm has developed the new Super CCD EXR sensor capable of automatically recognizing the scene and selecting the ideal shooting modes for "High Resolution," "Wide

Super CCD EXR Sensor's Three Capture Technologies



FinePix F200EXR

FCR Digital Mammography Computer-Aided Detection (CAD)



Before CAD

After CAD

CAD operation

Dynamic Range" and "High Sensitivity and Low Noise." This sensor enables 3-way capture technologies—namely, "Fine Capture Technology (High Resolution)," "Pixel Fusion Technology (High Sensitivity and Low Noise)" and "Dual Capture Technology (Wide Dynamic Range)" in one device, based on an innovative color filter array and three capture modes. The sensor's Wide Dynamic Range feature, for example, enables the creation of double image data with both high- and low-sensitivity in one shooting. The double image data is instantly synthesized to produce a natural-toned image. **Our unique breakthroughs in the development of the Super CCD EXR sensor allowed us to solve the increasingly difficult problem—attributable to a competitive trend of miniaturizing image sensors—of optimally balancing all the three image-quality elements.**

The Technical Image Press Association (TIPA)—the world's most famous and influential organization of specialist camera publications—voted the Super CCD EXR sensor and the FinePix F200EXR digital camera the "TIPA Best Imaging Innovation" and the "TIPA Best Compact D-Camera," respectively, at the TIPA Awards 2009. Fujifilm's double award-winning was highly praised, on a global scale. Accumulating another medal for the Company, the FinePix F200EXR received the "DIMA2009 Innovative Digital Product Award" from the Digital Imaging Marketing Association (DIMA) in recognition of its potential for contributing to the photo industry's future. DIMA presented the award to commemorate the holding of the Photo Marketing Association (PMA) trade show, the industry's largest event in the United States.

Contributing to the Realization of Visualized and Networked Medical Services

In 1983, Fujifilm released the Fuji Computed Radiography (FCR) digital X-ray imaging and diagnostic system. The FCR system was a leap in technological innovation, not only achieving the digitization of X-ray imaging information ahead of the entire world, but also enabling the production of more diagnosis-friendly images with optimized density, contrast and granularity through the built-in processing of original image signals. The FCR system offered many other marked advances, including improved in-hospital workflow, reduced physical burden on patients and lower environmental impact.

The digitization of medical images has brought about two new trends on the medical frontlines. The first trend was to establish computer-aided detection (CAD) systems to support radiogram interpretation, and the second involved the pioneering of a new medical networking field, where the communication and storage of medical exam information is dramatically improved.

The CAD systems are making significant contributions in the mammography field. **The difficulty of breast cancer diagnosis using X-ray images is often compared with finding a white rabbit on a snowy mountain.** Fujifilm's CAD systems apply superior image processing technologies. Using detection algorithm based on breast cancer cases gathered in Japan, these technologies allow for the exceptionally accurate detection of areas possibly having microcalcification, tumors and breast cancers.

Meanwhile, the SYNAPSE medical-use picture archiving and communications system (PACS), which Fujifilm launched in 1999, is increasingly promoting medical networking. On the first-generation SYNAPSE medical-use PACS system, Fujifilm integrated its image processing technologies fostered in the FCR system business with leading-edge IT technologies. The development was based on then futuristic concepts, including the use of Web technology-based interfaces and user-friendly operations, on the assumption that the SYNAPSE systems would be increasingly used throughout hospitals and between hospitals.

The SYNAPSE system boasts various excellent features. These include: the on-demand image display function, which enables quick access to necessary information buried in a massive volume of image data accumulated on a daily basis; Windows®-based user-friendliness; and a superior uptime stability of 99.99%, which is particularly important for medical institutions that allow no leeway for suspended operations under any circumstances. Such **effective and reliable features have empowered Fujifilm to deliver the systems to a total of over 1,100 institutions to date and, accordingly, attain the leading market position in Japan.**

Fujifilm has also introduced the SYNAPSE systems to over 2,500 medical institutions worldwide, with the system's source code (a computer program written in computer languages) being universal. While our Japanese, U.S. and European R&D bases undertake region-specific customization, we have established a collaborative structure to develop and maintain the core code.

Volume Analyzer SYNAPSE VINCENT

As described above, **Fujifilm has constantly endeavored to create innovative medical IT systems based on its long-nurtured image processing technologies, thereby contributing to the improved value of medical diagnosis.** Sustaining our momentum, we are tackling advanced challenges through the development and acquisition of new technologies.

Recently, the SYNAPSE systems are evolving from the current 2D-optimized imaging system to a new 3D-centric imaging system. In 2008, Fujifilm launched the Volume Analyzer SYNAPSE VINCENT 3D image analysis system. Based on Fujifilm's Image Intelligence™ technologies, the SYNAPSE VINCENT system enables quick and easy access to high-definition 3D images of organs and vessels captured using computer tomography (CT) and magnetic resonance imaging (MRI), while also providing highly practical analysis functions. By combining the conventional SYNAPSE systems and 3D-capable SYNAPSE VINCENT, we aim to bring about another new trend for "3D-PACS" in the medical sphere.

As explained above, Fujifilm is shifting its technological development focus, from higher value in diagnostic imaging-centered diagnosis to comprehensive diagnosis support.

Medical Systems/Life Sciences Business—Integrating Group Strengths Centered on Proprietary Technologies

Fujifilm began selling X-ray films in 1936, shortly after the Company's inception. Since then, Fujifilm has expanded its medical systems business by constantly releasing such products as digital X-ray imaging and diagnostic systems, particularly in the diagnosis field. From 2006, the Company has expanded the scope of its medical systems business, complementing the diagnostic field—the previous focus field—with the prevention field, which includes functional cosmetics and internal care products, and the treatment field, which involves pharmaceutical products. We are working to establish a comprehensive healthcare business in which we will create new value through the application of our proprietary technologies.

Operations in the Diagnostic Field Driving Current Growth

The current growth of Fujifilm is driven by digital X-ray imaging and diagnostic systems, endoscopes and other medical IT systems. Since its successful development and release of the Fuji Computed Radiography (FCR) digital X-ray imaging and diagnostic system in 1983—the first of its kind—Fujifilm has retained its top global market share in the computed radiography (CR) field. The acronym "CR" has been disseminated throughout the diagnostic imaging field worldwide to become a generic term. We are expanding the range of our FCR systems: we are improving imaging quality and functionality and reducing their size to accelerate marketing to private practitioners and small- to medium-sized hospitals. Also, we will further reinforce our sales activities in such strategic regions as newly industrialized countries (NICs).

Meanwhile, Fujifilm has enhanced its product lineup by launching fully digitized diagnostic systems for the digital radiography (DR) field. In the mammography field, where the Company has top-selling products that collectively sold over 6,000 units globally, Fujifilm released the new AMULET digital mammography system that realizes low-noise, high-definition images thanks to a new direct conversion flat panel detector boasting the world's smallest pixel size of 50 micrometers. Looking ahead, we aim to lead in market development by launching new differentiated products based on our unique technologies.

Fujifilm is strengthening its endoscope business through the selective allocation of its management resources, which includes the establishment of an integrated business structure for development, manufacturing, sales, and after-sales service. The Company completed the development of a