Canon









Canon





Power of Passion

EOS 5D Mark III

EOS 5D Mark III: Interviews with Developers and Designers

The embodiment of Canon's passion, created by uncompromising hands.

Canon

Users demons expression, a creative works. Canon's devel full-frame 35m the line to respo

This is a re "evolution." We hope use this camera. We are confi bring out a r

© Concep © High In © 61-Poir © Optical © Shootin © Creativ © Design © User In © EOS M © EOS Sy

Mark III

Eng

Users demonstrate a love for cameras and photographic expression, and continue to pursue the potential of new creative works.

Canon's developers created the EOS 5D Mark III, a 35mm full-frame 35mm camera, putting their pride as engineers on the line to respond to this drive for excellence.

This is a revolutionary camera that goes beyond simply "evolution."

We hope users will feel the dedication that engineers put into this camera.

We are confident that Canon's passion for making cameras will bring out a new desire for creativity.

tP.(
age QualityP.C
t High Density Reticular AFP.C
ViewfinderP.C
g Response ······P.1
e Photo P.1
P.1
terfaceP.1
pvie P.1
P.2

All our engineers with a deep devo We are proud to say we have been one that brings excit and the custome

Go Tokura

General Manager ICP Group 2 Image Communication Products Operations

A company-wide integrated project

If you look at increases in the performance of digital single-lens reflex cameras, from a long-term perspective, you can see a certain degree of continuity. With each model change, performance improved one step at a time, and the functions were enhanced. That's just the way it was.

That doesn't apply, however, in the case of EOS DIGITAL over the past few years. Rather than single steps, advances were made in great strides, in the backdrop of company-wide project at Canon.

"For several years, we have been conducting activities that we refer to as the "Mid-Range Project." These are cross-cutting activities that involve participation by the Products Planning Division, R&D and Design Divisions, and even the Sales Companies." (Tokura)

Mr. Tokura, who oversees the Products Planning Division, explains. The goal is to provide "the joy of owning a camera" and "the joy of taking pictures" to camera fans all around the world.

To achieve this goal, various surveys were conducted, and the results were reflected in the product. This is camera product planning based on the customers' ideal, rather than the manufacturer's convenience.

The EOS 7D and EOS 60D were created through these activities, and now, we see the arrival of the EOS 5D Mark III. This is the third stage of the project; a camera that represents the culmination of the results achieved.

An exciting, 35mm full-frame camera

The EOS 5D series was originally created in 2005 as a 35mm full-frame, high image guality camera that was accessible even to amateur photographers. In 2008, the EOS 5D Mark II was marketed as the world's first digital single-lens reflex camera to offer full high definition movie

functions. In addition to establishing a reputation for its high image quality, this camera created a new set of values for the culture of photography, by offering movie capture in a single-lens reflex camera.

Camera fans had great expectations for the successor in the EOS 5D series, which had received high accolades for both still photos and movies, and nobody would be satisfied with anything that was less than outstanding.

"The EOS 5D Mark III further refined the overall high image quality that was the primary feature of the EOS 5D series. At the same time, we dramatically improved basic features, high quality finish that appeals to all five senses, and accommodates a wide range of shooting styles." (Tokura)

Even looking at the specs alone, this is more than just a successor; it comes across as a new and more advanced series. Canon poured its passion and dedication to detail into this one product, because, as Mr. Tokura put it, "We wanted to create a camera that the customers would be excited about."

Putting the engineers' pride on the

The specs required were more advanced than ever before. Some of the functions had been central themes of development over many years, but other goals could not be achieved without drastic technological innovations. Mr. Matsumoto, who led the team of engineers, put it this way: " Dedication to detail. Don't let anything evade scrutiny."

"Ever since the EOS 5D was released, customers have had very high expectations for the EOS 5D series. As engineers, we put a lot on the line with this series. Our motto during the development period was to ensure that every member of the team pay close attention to even the smallest detail, so that we could meet the customers' expectations." (Matsumoto)

Toshio Matsumoto

General Manager ICP Development Center 2 **Image Communication Products Operations**

Just because the goal is to create a 35mm full-frame camera with high image quality didn't mean that performance in terms of high speed and ease of use could be sacrificed. In fact, the promise of high image quality made those features even more appealing. The developers were highly motivated to take on the challenges of new technologies, to create a camera that they would want themselves, and to offer a product that would stimulate the users' desire to take better pictures.

A quiet passion

Development focused on four themes: Mature, high image quality performance; Refined basic features that don't cut corners; Diversity that expands the scope of photography; and Authentic textures that appeal to all five senses. The developers began by developing technologies in their respective fields of specialization.

The development process ran into many difficulties, but the driving force that overcame these challenges was the uncompromising spirit of the engineers. "If you can't resolve the problem using existing technologies, then create a new technology. Don't let cost or body size be an excuse." The development center was overflowing with the determination to create a camera that would exceed the users' expectations.

All of the developers agree: "It was because we all wanted the same thing: to create, with our own hands, a camera that would bring excitement to photographers." The engineers let their innate abilities shine through. This is the true nature of Canon's products.

The New EOS 5D: More than just a photographer's tool

A number of key devices were completely renovated for the EOS 5D Mark III, including the CMOS sensor and the Imaging Processor. Advanced image processing technologies were also developed. Mr. Matsumoto looks back on the process.

they're filled with a new creative desire, and they create wonderful photographs. I am proud to say that we have made the camera that we were aiming for." (Matsumoto) Mr. Tokura adds with pride, "The EOS 5D Mark III incorporates many new features to meet and exceed customers' expectations." "We expect that customers will first enjoy actually taking pictures and then enjoy looking at the still images and movies shot with this camera." (Tokura)

The EOS 5D Mark III allows users to experience the joy of owning a camera and the joy of taking pictures and movies. This camera is an embodiment of Canon's passion.



"When the customers pick up this camera,





High Image Quality

Masami Sugimori

Manager ICP Development Center 2 Image Communication Products Operations

High S/N ratio that enables standard ISO 25600. Canon's high image quality maximizes the potential of every single pixel.

*Standard ISO speed range when shooting movies:ISO 100-12800

Makoto Hiramatsu

Manager ICP Development Center 2 Image Communication Products Operations

Mineo Uchida

Senior Engineer ICP Development Center 2 Image Communication Products Operations



High resolution achieved by making full use of every single pixel

The EOS 5D Mark II gained a strong reputation for its outstanding image quality. It stands to reason that its successor would be expected to have even higher resolution. "High image quality" can be defined by various technical facts, but our goal for the EOS 5D Mark III was to increase the signal to noise (S/N) ratio. In terms of specifications, this translates into high ISO sensitivity.

"This time, we wanted to extend the standard ISO speed for still photos by two steps. If we could increase the S/N ratio that much, then users could enjoy a greater sense of the resolution, and high image quality with natural colors, even when comparing the same number of pixels." (Hiramatsu)

If the S/N ratio is low, then it's hard to tell where the point of focus is, and you only get little fuzzy images. Conversely, with a higher S/N ratio, the volume of noise processing is minimized, and that means that the information obtained from each individual pixel is reflected naturally in the images. The basic development policy that Mr. Hiramatsu mentions is "Making full use of every single pixel." The S/N ratio is determined by the image sensors. This placed a lot of responsibility on Mr. Uchida, who was in charge of the system design team for imaging components, including the CMOS sensor.

New approx. 22.3 mega-pixel CMOS sensor with high S/N ratio

Mr. Uchida's first task was to investigate specifications for a new CMOS sensor. He needed to increase the S/N ratio as well as the continuous shooting speed. But given that this was to be the successor to the EOS 5D Mark II, there was one more condition that he had to keep in mind.

"EOS DIGITAL is essentially for still photos, but the EOS 5D Mark II has already become an important tool in professional movie production. We needed to meet a variety of requirements, including improved movie image quality, and still maintain a good balance." (Uchida)

The aspect ratio is 3:2 for still photos, and 16:9 for full High definition movie. An effective pixel count of approx. 22.3 mega-pixels provides an ideal

balance to ensure that all pixels are used effectively, with none wasted. The number of readout-channels was doubled to eight, in order to achieve 60P HD movie recording quality, which was out of reach for the EOS 5D Mark II. The sensor also incorporated innovations to eliminate the moiré effect during movie capture, in response to strong demand from the movie industry. The main issue was increasing the S/N ratio.

"The goal of extending the ISO sensitivity by two steps was one step higher than I expected," says Mr. Uchida.

When the engineers began developing the sensors, they set a goal of increasing the S/N ratio in both the CMOS sensor and the Imaging Processor. Condensing efficiency was improved by eliminating the gap in the micro-lenses. The photo diode efficiency and signal capacity were also improved. Noise mixed in with the signal was minimized, and the signal was digitized. The image sensor design team combined its efforts to achieve the targeted S/N ratio. All that was left was to match this with the capabilities of the Imaging Processor. And that was where Canon demonstrates its greatest strength: the in-house development of core devices.

The DIGIC 5+, far surpassing the _DIGIC 4

The new Imaging Processor is the DIGIC 5+, which is equipped with an astounding processing capability that is approx. 17x that of the DIGIC 4. "The overall improvement amounts to two steps, in the CMOS sensor and the Imaging Processor. We just needed to improve the S/N ratio by the targeted amount in each case. It wasn't easy, but we were all confident that we could do it." (Suoimori)

Noise processing contributes dramatically to the DIGIC 5+'s high ISO sensitivity. If you are willing to make a trade-off with resolution, response, and the number of images that can be taken, then you can increase the effects simply by repeating the noise processing over and over for each image. If the same or greater effects can be achieved in a single process, however, then it should be possible







to offer high image quality that makes full use of all pixels in real time. And without doubt, this would contribute dramatically to improved image quality in movie as well.

The color noise that is sometimes seen in shadowed areas was especially difficult to process. Processing on a completely different scale would be needed to minimize these effects.

"The DIGIC 5+ processes images faster, and using more pixels. By leveraging those strengths, we achieved noise processing that far exceeded the S/N ratio, and easily met our targets." (Sugimori)

This is how Canon achieved the high maximum standard ISO speed of 25600, which is the goal that Mr. Hiramatsu had set.

Overall improvements in image quality; both S/N ratio and lens characteristics

The EOS 5D Mark III features overall improvements in image quality, driven not only by an increased S/N ratio, but a variety of other methods as well.

"Another approach we adopted is a method of painstakingly correcting the lens' optical characteristics. This will enable us to further increase the image quality, throughout every centimeter of the image." (Hiramatsu)

The EOS 5D Mark III offers functions for correcting not only peripheral light falloff, but also chromatic aberrations and distortion. The Digital Photo Professional software also includes a "Digital Lens Optimizer." This is a very powerful tool that corrects aberrations which cannot be handled by the camera, and even diffraction that occurs when a smaller aperture is used.

"We worked on increasing the overall image quality, taking this into account as well. We are confident that this camera will live up to everyone's expectations." (Hiramatsu)

All three engineers are in agreement that this is an extremely well balanced camera, which meticulously captures the light coming off the subject, and transforms it into a faithful image. The EOS 5D Mark III will transcend the boundaries of still and movie images, to show the true nature of "high image quality."





61-Point High Density Reticular AF

Makoto Takamiya

Senior Engineer ICP Development Center 2 Image Communication Products Operations

Experience outsta focusing accuracy in We want users to take adva of the entire AF area, from one edge other.

Hideya Takanashi

ICP Development Center 2 Image Communication Products Operations





AF that works comfortably for portraits as well

Once they have this high image quality, users want to take pictures not only of landscapes, but also portraits, sports, and still objects. To meet these demands, the AF points need to be wider, and to allow fine positioning.

For the EOS 5D Mark III. Canon adopted a 61-Point High Density Reticular AF. These luxurious specifications bring this model in line with the basic concept of the EOS-1D X.

The advantage of this AF system is not only the large number of AF points, but the ability to cross-type focus- even at the edge of the AF area, as well as the high accuracy of focusing. "What makes Canon's AF different? I think it's the dedication to cross-type focusing. No matter what the subject, no matter which AF point used,

there are no subjects that can't be handled, and the focus is always extremely accurate. This AF system has met the users' requirements, with no compromises." (Takamiya)

Cross-type focusing is most impressive starting from f/4.0. Many of the users that choose the EOS 5D Mark III are great fans of large aperture L series lenses. This was Canon's response to that specialized preference.

An AF unit that embodies all of **Canon's expertise**

"In the world of cameras, technologies are evolving at an astounding speed, but we created this AF system determined that no matter what kind of AF system appeared in the future, this one would never be outdone." (Takamiya) The concept adopted for the design of the AF sensor placed an emphasis on focusing accuracy; for example, all of the AF points are arranged in two lines, in an offset array. "We incorporated all of the technologies that Canon has cultivated up to now; in fact, more than anyone would have expected." (Takamiya)

The low-light limit was also extended to -2EV. The camera's sensitivity has been increased by



Some additional work was needed, however, to provide this high-performance AF system at a price that was accessible to all users. "We ensured ease of volume production by using a plastic mold for the AF unit's secondary image forming lens; that is, the ophthalmic lens. The technological challenge was to do this and still maintain the original level of performance." (Takamiya)

The ophthalmic lens on the EOS-1D X uses a glass mold that is highly resistant to changes in temperature and humidity. In order to create an equivalent plastic mold, "We had to re-optimize every element." (Takamiya) This is how the EOS 5D Mark III acquired an AF system that works for every conceivable subject.

Knowledge that supports outstanding AF performance

Mr. Takanashi, who was in charge of developing the AF firmware, said that compared with the control for the EOS 5D Mark II, with nine points + six assist points, EOS 5D Mark III's AF system "was on a completely unprecedented level," because the volumes of data to be processed were far greater than any before seen in a camera of this class.

"We knew that increasing the AF performance and drive performance would place a greater burden on the firmware. The only way we could overcome this challenge was to approach it with the same design concept as the 1D series." (Takanashi)

In other words, a dedicated microcomputer was used for the AF control. In fact, two microcomputers were adopted, each with the









same strength as the EOS-1D X. This was so that in addition to focusing, the camera could display information in real time in the Intelligent Viewfinder.

"What we were aiming for," says Mr. Takanashi, "was to take advantage of the high density AF points, and make it possible for the display to track the movement of the AF points in keeping with the subject's movement."

If the shooting speed can be increased to approx. 6 frames per second, the camera would be suitable for sports scenes, so the AI servo AF Ill was adopted for the predictive function. This is the latest predictive algorithm, based on feedback from professionals, and offering highly refined predictive accuracy and stability. The system is capable of handling a heavy burden, so that the information can be displayed in an easy-to-understand format.

Effectively using the high density **AF** points

In fact, it was not easy to install this AF system, which was developed for professional cameras, in a model with a smaller body. The substrate and layout of mechanical components were difficult.

"Even so, the developers combined their knowledge and expertise to fit the system into the smaller space. This camera should be the pinnacle of accessibility for amateur photographers. I think that was the goal that everyone was working towards." (Takamiya)

"We want customers to use all AF points. Particularly when they use the Zone AF, they can capture the subject effectively while at the same time enjoying freedom of composition. We hope all photographers will give it a try." (Takanashi) Making full use of the 61-Point High Density Reticular AF is where the developers and camera fans will find common ground, in a shared passion for expressiveness.





Hiroshi Koiwai

Senior Engineer ICP Development Center 2 Image Communication Products Operations

go own eyes.

Tomohiro Ino

ICP Development Center 1 Image Communication Products Operations



Striving for both high specs and visual clarity

Optical viewfinder coverage with approx. 100%: that was the spec that the developers were striving for, as a 35mm full-frame camera with a broad angle of view, and to meet the expectations of camera fans. In the world of optics, however, things are not all that easy. Mr. Ino, who designed the viewfinder's optical system, faced a dilemma. In the case of a 35mm full-frame camera, the difference between an approx. 98% and approx. 100% viewfinder coverage means a roughly 30% increase in the size of the pentaprism. Increasing the size of the pentaprism, however, means a trade-off in the magnification as an optical characteristic.

"Magnification is determined by the viewfinder optical system. The key issue is correcting aberrations. In other words, the important thing is to find a way of balancing magnification with visual clarity." (Ino)

There are a number of different operations in the viewfinder's optical system, but the one that Mr. Ino focused on was the slight changes that arise in the image when you move your eye. This is a key point that leaves no room for compromise if you're going to achieve a comfortable level of visual clarity, particularly in the case of a 35mm full-frame camera with a broad field of view.

"Through a process of trial and error, we developed a new viewing lens optical system comprising four lenses. The system in the EOS 5D Mark II had three lenses. This additional lens enabled us to improve the visual clarity." (Ino)

The result of all this was a high-performance viewfinder that rivals the EOS-1D, with a viewfinder coverage approaching approx. 100% and a magnification of approx. 0.71x. But what Mr. Ino was truly striving for was an outstanding visual clarity that cannot be expressed with numbers. If not for that, it probably would have been possible to achieve an even higher magnification, which would have been easier to emphasize to potential users in terms of specifications. But as a camera lover, Mr. Koiwai refused to back down.

Taking on even more difficult challenges

Combining the viewfinder optical system into a single unit was the work of mechanical design team. led by Mr. Koiwai. If the viewfinder optical system comprises four lenses, then more materials are required to hold the lenses. According to Mr. Koiwai, combining these with a high degree of accuracy "would require design and manufacturing on an entirely different level."

Especially detailed attention would have to be paid to the base materials that support the large nentanrism.

withstand shocks. Could all this be achieved with a limited space? It was the ultimate test of the skills of a mechanical designer. "The challenges were far more difficult than in the case of the EOS 7D or the EOS 5D Mark II, but this would be top class camera even among mid-range models. Canon has always had a passion for prioritizing performance over cost. Thanks to careful selection of materials and a unique approach to the component shapes, I am proud to say that we completed an excellent viewfinder that is worthy of a high-spec camera." (Koiwai)

To be with the photographer anywhere

In order to make full use of the 61-Point High Density Reticular AF, the EOS 5D Mark III adopts an Intelligent Viewfinder that features a translucent LCD in the optical system. This was a natural choice, given that the system had already been proven in the EOS 7D. The engineers' pride, however, would not allow the same system to be used without showing some improvements.

"LCDs lose some of their responsiveness in low temperature environments. This is one defining characteristic of LCDs. so under normal circumstances, it would be difficult to counteract. We devoted our attention especially to this issue, and developed a new LCD for the EOS 5D Mark III







Stability when temperatures change. Strength to



Mountain climbing in the winter or on snow-covered ski slopes, camera fans want their camera close at hand, regardless of whether the temperatures are ten or twenty °C below zero (14 or -4 F). Mr. Koiwai and his colleagues felt that these conditions should be "nothing out of the ordinary."

Mr. Ino, who was involved in the design of the optical system, worked with designers in studies of the camera's external appearance.

No matter how great the performance is, there were limits to the size of the body, so the large pentaprism presented a formidable problem.

"In order to reduce the external dimensions as much as possible, we decided to cut offthe corners of pentaprism. This allowed us to tighten up the top segment of the camera. The extra work involved resulted in a cost increase, but when you think about the ideal form of a camera. this was the natural choice." (Ino)

Qualifications worthy of the "sacred ground" of cameras

There was a reason for the detailed attention to "visual clarity in the viewfinder. Mr. Koiwai talked about that reason, prefacing his comments by saying that they were his "personal opinion."

"When you look into an optical viewfinder, you are looking directly at the light, texture, and atmosphere generated by the subject. This simply cannot be matched by any other device components, including an LCD display." (Koiwai) Professionals have also been heard to say, "When the subject is moving, you absolutely must use an optical viewfinder."

"The world of imaging in a 35mm full-frame camera is a kind of 'sacred ground' for photographers. Visual clarity in the viewfinder should be worthy of that title." (Koiwai)

Photographers enjoy not only taking pictures, but even just looking through the viewfinder. That is the quality common to all great cameras. The EOS 5D Mark III has that quality.

Shooting Response

Shingo Nakano

Manager ICP Development Center 2 Image Communication Products Operations

A maximum of approx. 6 frames/sec. in a full-frame high resolution camera (approx. 22.3 mega-pixels) Canon's dedication to detail is embodied in the sharpness of these specs.

Kazuaki Yamana

ICP Development Center 2 Image Communication Products Operations



Setting goals beyond existing limits

Exactly because this is a 35mm full-frame, high image quality camera, users want to take pictures in every imaginable situation. To make this possible, they want continuous shooting performance of at least 5 frames per second. This was one of the requirements expressed with regard to the EOS 5D Mark II.

"The customers are saying 'at least,' so we can't be satisfied just because we have achieved a shooting speed of 5 frames per second." (Nakano)

Mr. Nakano supervised the mechanical design team. Everyone involved in development felt the same way: Aiming for the ultimate in performance, with no compromises, how far can we go? Based on the results of studies, the team settled on a target of 6 frames per second.

Even 5 frames per second was difficult to achieve in a 35mm full-frame camera with large mirror. To increase that speed by one frame per second without changing the body size presented technical challenges on an entirely new level.

"To be honest, I thought it would be quite difficult, but when we thought about not only increasing the continuous shooting speed, but also reducing the viewfinder image blackout time and improving the overall sharpness of movements when taking pictures, we felt that this was a goal we really wanted to achieve." (Nakano)

There were two main mechanical issues. One was that the electric power for moving the large mirror at high speeds could not be generated as in the case of a professional model. The other was that the faster the mirror moved, the greater the mirror bounce was. Technology breakthroughs to overcome both of these issues were necessary.

Evolution, and then further evolution

Mr. Yamana, who was in charge of developing the mirror unit, carefully studied the components of past EOS DIGITAL systems one at a time. He thoroughly studied the layout, raw materials, and other aspects of every single gear bearing, from the motor to the mirrors. His goal was to create a short, efficient mechanism that could increase the drive speed using the same level of electrical power as before.

The problem was, how to minimize mirror bounce. "From the perspective of shooting response, in addition to increasing the continuous shooting speed, we wanted to improve the release time lag as well, so we developed a mechanism with a new concept for controlling mirror bounce." (Yamana) First, two balancers were added to the main mirror. This minimized the occurrence of bounce by absorbing and redirecting mirror shock. The real focus of attention, however, was on the sub-mirror. Reducing bounce when the mirror was down contributes to increased frame speed, but it would be necessary to minimize bounce when the mirror was operating in order to reduce release time lag as well.

"We thought about it constantly, and eventually arrived at the new mirror control mechanism that we have today. This new mechanism can forcefully control both types of bounce, whether the sub mirror is up or down, using a single mechanism." (Yamana) Mr. Yamana himself was surprised when they created the prototype. Earlier mechanisms were designed only to minimize bounce, but this mirror unit offered an unbelievably high level of energy efficiency. It was able to drive the mirrors at a high speed with a limited power consumption. "Mirror mechanisms have evolved gradually ever since the birth of single lens reflex cameras. Even I thought that there was really no room left for further evolution, so this new development left me stunned, and inspired me as an engineer." (Nakano)

Mr. Nakano, who had been in charge of the mechanical design for many EOS DIGITAL systems in the past, was left speechless by this new mechanism.

Striving for more comfortable sound

Mr. Yamana's dedication to detail didn't end there. The next theme was finding ways to reduce vibration and to make comfortable sound. "With the EOS 7D, Canon targeted the theme of 'comfortable sound,' and established methods for evaluating camera sound. We developed this









method even further, and in the case of the EOS 5D Mark III, we tried to achieve a release sound that felt even better to the user." (Yamana)

This was not just about numerical analyses; we emphasized sensory evaluations as well. If even one person pointed out a problem with the sound or vibration when the mirror was operating, we would investigate the cause, and re-examine the materials for that component."

"It wasn't easy. If we changed the materials, then we had to do strength calculations right from square one. The thickness of the components changed too, and this affected the layout. But if we didn't take our studies to this level of detail, then we wouldn't be able to achieve the comfortable sound that Canon was striving for." (Nakano)

Design was changed more than 10 times. The problem is, the sound and vibration could not be correctly evaluated without assembling the parts to a single unit. Every time a new mirror unit prototype was created, the body was assembled by hand, and the team checked the sound, vibration, and overall operations. "Right now," says Mr. Yamana, "I could assemble this camera with my eyes closed." This seems no exaggeration.

The true pleasure of mechanical design is being able to confirm with your own eyes that the mechanisms you created operate the way that they were intended to.

"This camera goes beyond orthodox evolution. The model number inherits the name of the former EOS 5D, but it's a completely new camera, which actively incorporates Canon's most advanced technologies." Mr. Yamana says this with confidence, as he holds the mirror unit born from his own strong dedication to detail.

"The effects of this mirror unit go beyond simply increasing the continuous shooting speed. It also contributes to a shorter viewfinder image blackout time and an unwaveringly stable visual clarity. Anyone who looks into the viewfinder and presses the shutter button will experience a truly outstanding sharpness of movement." (Nakano)

This camera can no longer be described using words like "Evolution." It's a true "Innovation," made possible by the developers' dedication to detail.



Creative Photo

Hiroshi Matsushima

Staff Engineer ICP Development Center 2 Image Communication Products Operations

New functions that release the photographer's creativity. We want users to create a world of vision that transcends the imagination.

Tomoya Yamashita

ICP Development Center 2 Image Communication Products Operations

Hiroaki Nashizawa

ICP Development Center 2 Image Communication Products Operations



Creative photo functions that unleash creativity in the field

We want users to severely pursue the joy of creating new works of art on the front lines of photography. It was this desire that led Canon to develop two long-awaited photographic functions: Multiple Exposure function, and the High Dynamic Range mode. Mr. Matsushima, who acted as a liaison with the Product Planning Department, says that there was a reason so much time was spent in studying specifications.

"The Multiple Exposure function and HDR mode had both been in great demand from sales companies, and we began our studies from quite some time ago. As tools of expression, however, the customers had to be able to use these functions freely. We needed time to carefully examine the image quality and specifications that were appropriate to these new tools." (Matsushima)

The EOS 5D Mark III is a camera that boasts the highest level of image quality available outside of a professional model . If that high image quality could not be used to its full potential, then there was no point in including these features to begin with.

Mr. Matsushima felt that only when these requirements have been achieved will the functions be ready for use in the field. Immediately transforming impressions in the real world into photographs and stimulating the user's imagination, which was an unexpected effect, will offer new discoveries and a deep connection with the world that cannot be achieved by creating works of art on a PC at home. Never again would users feel regret at having missed the perfect shot. This is the embodiment of Mr. Matsushima's dedication to "Photography in the field."

Which functions are most ideally suited to achieving this goal? The research group began its R&D activities led by Mr. Yamashita, who was in charge of firmware design.

Multiple Exposure function suited to the digital era

Mr. Yamashita began by identifying which functions were needed. Countless sheets of paper were filled with user requirements.

"Customers that use this class of camera understand the functions, and have the skills to use them. If that's the case, the functions we provide should accommodate a diverse range of expressive intent. We wanted to offer as wide a range of options as possible, so that the users could choose the functions they need." (Yamashita) Are the users going to take

Are the users going to take their time with each shot, or place priority on continuous shooting? What standards will they use for overlaid exposure? Are they going to reuse the shots they have taken? Mr. Yamashita is proud to say that "All of the expected functions have been included." "If you're going to do it, make something that cannot be beaten. Something that cannot be easily imitated. It would be extremely frustrating if we were quickly overtaken by our competitors, and we want to create a camera that the customers are really happy to use. With all that in mind, there is no room for compromise." (Yamashita) This dedication to detail carried over into the photographic functions. Multiple exposure was originally a function of film cameras, achieved by exposing the film to light over and over. The best way to reproduce this effect in a digital camera was to use the RAW image - that is, the image before developing - as the starting point. If the results could be stored as another RAW image, then that image could once again be exposed to light. This way, each shot could be exposed an infinite number of times, just as in the case of a film camera. Mr. Nashizawa, who was in charge of image design, spent a lot of time and effort in achieving this goal. "In conventional systems, images were finished one frame at a time. It was a real challenge to incorporate multi-exposure mechanism into this process." (Nashizawa)

HDR Mode: Offering visual perceptions that transcend the imagination

In HDR mode, multiple images are used to reduce blackout and whiteout in scenes with dramatic contrast between light and dark, to provide a more dynamic range than what could be achieved with a single photograph. Adding image processing, however, opens up a completely unexpected world. "This is where you can find the true value of using this function on the front lines of photography. Users are stimulated by effects that go beyond their expectations, and this motivates them to try new forms of expression." (Matsushima) A wide range of artistic expressions can already be achieved by freely manipulating parameters, for example on a personal computer. In order to provide those functions as image processing functions on the camera, it was necessary to combine expressive directions in groups. Mr. Nashizawa analyzed the huge volumes of materials prepared by Mr. Matsushima one at a time, and eventually came up





with four finishing effects.

Looking back on the process, Mr. Nashizawa comments, "Because we are talking about artistic expression here, the difficult thing was to ensure that image evaluations were not based on a uniform standard." Canon's usual standard values of natural, unspoiled high image quality were quite different from these artistic finishing effects. "It was difficult, but the best thing being the designer is that you can see the results of the new function before anyone else. If I process the images using these parameters, then this is what the photo will look like. I experienced this surprise and excitement before anyone else. And if the results bring the photographer a lot of recognition, then the extra effort will be worth it. This is the true joy of image designing. (Nashizawa)

Helping the user to focus on the creative works in the field

"Using HDR mode, even drab landscapes under cloudy skies can become works of art. The scope of scenes that can be captured expands dramatically. That's why we added an auto image alignment function; so that users can select HDR mode easily while they are on the move." (Nashizawa)

The Creative Photo Button is Canon's way of encouraging users to try these functions. Multiple Exposure and HDR modes are well worth trying, but if they are hidden away deep in the menus, then they would be difficult to use. This new button was added so that photographers can use these functions whenever their spirit moves them.

Pressing this button while in viewing mode activates the Comparative Playback function. The key here was to find a way of displaying as much information as possible about the image, because many users were not satisfied with the playback functions available up to now. They want their next shot to be even closer to the one they imagined. Rating and protect functions increase the efficiency of post-processing. Canon's Comparative Playback function was made possible by this careful consideration of the creative workflow.

"Each time you press the INFO button, the next page of information appears. This way, you can compare your own personal photographic settings and composition while you're still in the field." (Matsushima)

Canon's approach of "Photography on the front lines" – that is, creating the best photograph in the field – is embodied in this new function.





Keita Sato Design Center

Careful detail on the order of 0.1mm. We want to offer this design to the world, putting our pride as a camera maker on the line.

Seiichi Arakawa

ICP Development Center 2 Image Communication Products Operations



A design approach that could even be called "stoic"

The EOS 5D Mark III was given a body that is both sturdy and packed with features, as expressed by Canon's unique continuous curved lines. Mr. Sato, one of the lead designers, yows that this camera will never upstage the photographer. "This is the pinnacle of mid-range cameras. I

would like to see its full potential expressed just as it is, with no artificiality," (Sato)

It would be easier to set some motif or theme, and design the camera around that. Instead. Mr. Sato wanted to create a new archetype for the modern digital single lens reflex camera, using a minimalist approach. This could only be achieved through an unwavering dedication to detail.

Take, for example, the ridge line that runs from the mount to the pentaprism. "Just changing the width by 0.1mm would make the camera look fragile, or leave a boorish impression, explains Mr. Sato. "It's very delicate." It took quite some time to define a line that would "feel strong and firm to anyone who looked at it."

You can't design a camera with drawings alone. You need to use simple mockups to carefully check the flow of highlights, the way they fade out, and the way the highlights blend into the lines. It was this careful dedication to detail, on a level that most people wouldn't even notice at first glance, which gave this camera its very unique character.

Drama in the details

grip as well. Priority was placed on ensuring that the user could maintain a firm hold on the camera, but excessive restrictions on how the camera is held would result in a loss of freedom. The goal was to offer a firm and comfortable grip. while at the same time offering the flexibility to accommodate a variety of situations, whether taking a photo, bringing the camera up to the eye, or holding it while walking.

"To make the camera easier to hold onto, we attached a rubber strip to the card slot as well. This made a big difference. You can see this in the 1D series as well."

In the case of a mid-range camera with a limited body size, however, it's very difficult to add a





Special dedication was paid to the shape of the

accidentally

height and angle of the button, we pursue the most comfortable position when pressing it down. When the button is pressed, your finger touches the outer body of the camera. We continue to adjust the height of the button and the depth of the stroke, to ensure that the touch feels just right." (Arakawa)

cover to open up fully.

optimum ease of use.





rubber strip that even just 1mm thick. I put a lot of pressure on Mr. Sato to get this done."

(Arakawa)

The mechanical design team spent considerable time and effort to install a dual card slot, for example by redesigning the internal layout, By that time, there was no extra room in the camera to add even one more millimeter. If a rubber strip was attached without making any changes, then there would be an irregular bump on the cover.

Mr. Arakawa reexamined the layout of the various fixtures, and redesigned the mechanical components to the very limits of manufacturing capabilities, but he finally reached the required rubber thickness. This still interfered with the angle at which the cover opened, however, making it difficult to insert or remove the memory card. Through extensive discussions with the designers, minute and almost imperceptible adjustments were made to the final design.

The process was incredibly delicate. The careful dedication to detail demonstrated by these two designers made it possible to attach a rubber strip to the card slot cover, and still allow the

Buttons optimized one by one

The EOS 5D Mark III has many buttons, each of which has been positioned in the best location for

"These buttons have been optimized one by one, through extensive studies with the Quality Evaluation Division. The height of the buttons and the curve on the top were finely adjusted down to one tenth of a millimeter. Diagonal lines were fine tuned in much the same way." (Sato)

The adjustments showed meticulous dedication to detail, to ensure easy reach and the best pressing angle when holding the camera, and to prevent the buttons from being pressed

"Once we have decided on the approximate

After the design has come together, a prototype is created using a metal mold, to confirm whether it is possible to recreate the intended ease and comfort of pressing the button even in volume production. Canon's pride as a camera manufacturer makes all these extra steps essential.

Achieving both outstanding design and ease of use

The camera's curves were created through the designers' meticulous attention to detail. The mission of the mechanical designers is to incorporate mechanical components while maintaining a priority on those fine curves.

The pentaprism is one example. A pentaprism that offers a viewfinder coverage approaching approx. 100% is very large, but as it is, it would tend to invite a top-heavy design.

"We collaborated with the team that worked on the optical design for the viewfinder, and adjusted the shape of the prism so that it would fit within the curves created by the designers." (Arakawa)

Another area that makes mechanical design so satisfying is added efforts to increase ease of use

"This doesn't show up on the spec sheet, but the dust-resistance, water-resistance construction of the upper body is more advanced than in the EOS 5D Mark II. This could be done in a variety of ways, but this time, we adopted a construction that uses a sealing material to prevent water and dust from entering the body." (Arakawa)

The camera was evolved based on new concepts, while at the same time making the best possible use of ideas that had been cultivated up to that time, "For me," reflects Mr. Arakawa, "this camera was the ultimate challenge."

"When the users see the shapes that flow from the viewfinder to the pentaprism, if they can get a feel for the camera's strong presence and reliability, and if they feel like 'I can take a great picture' the moment they pick it up, then this design has been successful." (Sato)

The EOS 5D Mark III is the culmination of the developers' passion and dedication to detail, and their desire to achieve the pinnacle of design, and to offer a camera that users will want to continue using for the rest of their lives.







Operability that will be the standard for a new generation

The EOS 5D Mark III features innovations in operability. Of course, it carries on basic operation methods from past models, so users will not feel lost, but without doubt, the overall impression will be one of a far more refined camera.

"As we see more and more functions being added to cameras, and a great diversification of photography styles, the functions that photographers are looking for in the field are constantly changing. Our goal was a fundamental reexamination of the camera's operability, so that all of these functions can be used the instant they are needed." (Fukushima)

Thus began activities that transcended the conventional boundaries of development fields, involving Mr. Fukushima, Ms. Hitosuga, and the other members of the User Interface development team, along with the mechanical design team and designers involved in operation parts.

The User Interface development team analyzed comments received up to that time from professionals and amateur photographers. Every single function of camera itself was reexamined. "Any operation executed while looking through the viewfinder would use the same operation methods as used in the past. For everything else, we pursued the ultimate ease of operation." (Fukushima)

This is the policy that was put forward for the new user interface on EOS DIGITAL models.

Buttons that symbolize dedication to creative photography

The concept of the EOS 5D Mark III is creating photographic works of art. The designers wanted a button that would enable quick access to those functions. The answer was the "Creative Photo Button": a new button created especially for users who want to capture that one special photograph. "Picture Style, Multiple Exposure, HDR Mode... we created this easy to understand starting point because we want the customers to try all of these functions." (Hitosuga)

One of the things that makes this button so irresistible is that when you press it while reviewing photos, it calls up the Comparative Playback function.

In the past, many customers expressed a desire to compare two images on a single screen. It would

be easy just to display two images side by side, but what did the customers want to do after comparing and carefully studying the two images? This became the next focus of dedication for the User Interface team. "The user would want to compare the two images, and then take another photograph," explains Mr. Hitosuga, "so we wanted to make it easy to know how which parameters should be adjusted to which settings; for example, the composition or the exposure settings." In other words, the two screen Comparative Playback function is a tool for creating great photos. That means a wide range of information has to be displayed. In order to achieve this in a limited display area, the information is divided into groups, and the display changes each time the INFO button is pressed. This function cannot be found on any other camera.

For users who want to enlarge or delete hundreds of photos

"Other users said that they wanted to be able to smoothly enlarge or delete photos even during playback operations," says Mr. Fukushima. When everyone discussed this, a number of different ideas came together; for example: "Enlarge the image from quick review," and "Start from a magnification that is set in advance." "The most significant improvement is that after you press the 'Enlarge' button, you can enlarge or reduce the image using the Main Dial. That means you can focus the movement of your thumb on moving the frame of the area to be enlarged." This may seem like only a slight change, but it makes a big difference for professionals and amateur photographers who take hundreds or even thousands of photos each day. The work that the thumb has to do is completely different. This also has the advantage of freeing up the AF Start and AE Lock buttons, which in the past were used to enlarge or reduce images, because users can jump directly to the AF Start even during playback. There is a perfect balance between enlarging images and the speed of returning to taking pictures.

Deletion can be set as a Custom Function, so that [Delete] can be selected right from the beginning when the button is pressed. This eliminates one action when moving from [Cancel], which is extremely convenient, says Mr. Fukushima,



Emi Hitosuga ICP Development Center 2

Image Communication Products Operations

A user interface with unprecedented clarity. The goal was to achieve refined operability that woul leave every user satisfied.

Yuuki Fukushima

ICP Development Center 2 Image Communication Products Operations



"When you want to delete hundreds of photos."

Button customization supports intuitive operations

"When you select operations while looking through the viewfinder, it's almost always either AF or changing the exposure parameters. We wanted to make these operations more intuitive." (Fukushima)

To do this, the EOS 5D Mark III adopted as part of its specifications the Custom Controls that received such positive reviews in the EOS 7D.

The new feature is that users can change the ISO speed by turning the Main Dial while pushing the SET button. The exposure bar doesn't respond to adjustments from the ISO button, but with this new setting, users can adjust the Tv, Av, and ISO speed settings while watching the exposure bar. This will be invaluable for users who want to take pictures in M mode, and who are particularly concerned about exposure.

Menu functions that increase ease of use

The menu functions on the EOS DIGITAL models have always been very easy to read. The display can be switched continuously using the Main Dial, so there is no need for scrolling. This feature has now been extended to the Custom Function. The key here is in the AF tabs. The designers took on the challenge of improving ease of viewing and searching, based on the comments of customers who said they had trouble keeping track of what settings they had selected. All of the functions that had originally been spread out among buttons, Custom Functions, and menus were gathered in one place, categorized, and combined in the AF tabs. The setting patterns were then stylized to make it those settings easier than ever. "Even in the final stages of the prototype, we continued making fine adjustments to the specifications. Normally, it's rate to go this far, but this time, we kept at it up until the very last minute, so that absolutely nothing was missed." (Hitosuga)

The EOS 5D Mark III was created especially for users who are already familiar with the earlier EOS 5D Mark II. No doubt, they will start out a little surprised, and soon after that they will be nodding their heads in recognition.



Yasuhiro Harada

Senior Engineer ICP Development Center 2 Image Communication Products Operations

Professionals' work flow, and camera fa dedication to detail. We wanted to offer full-scale movie functions that met all

Ryo Oikawa

ICP Development Center 2 Image Communication Products Operations



New movie functions that meet the needs of professionals

The EOS 5D Mark II was the first EOS DIGITAL camera to feature full high definition movie shooting functions. We wanted to provide the high quality imaging expressiveness that we had cultivated through still photos. It was a new function that proposed great potential for single lens reflex cameras to camera fans.

When it was actually released, however, the developers were surprised to see that it was the professional movie creators who all reached out at once for this new model. Today, EOS MOVIE is being used extensively in the production of TV commercials, dramas, and other movie works.

Professionals have very strict demands. We wanted to achieve a dramatic evolution in these movie functions, so that we could effectively meet these needs. Mr. Oikawa, who was involved in the development of firmware, had one function that he wanted to include.

"Professional movie producers take movies based on the assumption that they will be edited later. That means Interframe compression, in which each individual frame is compressed separately, is the most appropriate Codec type. That was the starting point for the development of ALL-I." (Oikawa) Individual frames can be decoded and re-encoded, so this approach is ideally suited to cut editing. Fast-moving subjects can also be captured with high image quality. In the case of subjects that are not moving much, the emphasis will most likely be on compression rate. That's why IPB, a high compression Codec, was also included.

Steady steps that made the impossible possible

However, the development of ALL-I ran into problems. Interframe had never been adopted for the movie functions of a single-lens reflex camera. The scale of processing was huge, and at first, it created an excessive burden even for the DIGIC 5+. The solution was to use every bit of the camera system's capacity, with nothing wasted. Every available microcomputer was used for distributed processing of the data. Everything that could be left to the devices was allocated to those devices. Of course, the designers also worked on improving the programs, for example to increase the efficiency of commands.

In the end, according to Mr. Oikawa, it was a culmination of these steadfast efforts that made





the ALL-I possible. In addition to time coding, which is essential to cut editing, a number of other new functions were also added, including the one when a file size exceeds 4GB, a new file automatically created so that recording can continue. "Wherever possible, we responded to requests from professionals, which we received at studios, trade shows, and other venues. This is the cutting edge for movie functions in a single lens reflex camera." (Oikawa) He can say this with confidence, because he has the goods to back it up.

Heat problems overcome through efforts across multiple fields

overcome in the evolution of EOS MOVIE: how to deal with the heat." Mr. Harada said this as he held the main substrate on which the DIGIC 5+ and the core microcomputer were mounted. Mr. Harada was in charge of developing the electrical system. The specifications for this camera are far more advanced than the EOS 5D Mark II, in terms of both the CMOS sensor and the Imaging Processor. Movie functions, in which these components are working constantly without a break, cannot be achieved without sufficient countermeasures to handle heat.

From the perspective of heat release, a larger body is better. If you can use metal, that helps a lot too. A mid-range camera, on the other hand, needs to be light and compact.

Mr. Harada and his team rearranged the layout of components so that the heat sources would not be concentrated in one place. The next target was to reduce the power consumption for the component devices

"Canon develops the key devices in-house, so we conducted studies in collaboration with those development divisions to find ways of controlling heat from the perspective of power conservation." (Harada)

They identified the sequences for all devices, and combined their expertise to cut unnecessary power consumption as much as possible. If necessary, the mechanisms to do this were incorporated into the devices. Discussions were also held with the members of the instrumentation and mechanical design teams, to further improve heat release efficiency.





"There was one other issue that needed to be

"We made adjustments all across the board.



starting right from the initial stages of development. It was difficult, to be sure, but overcoming these difficulties is one of Canon's strengths. Otherwise, it probably would have been impossible to achieve this level of movie functions." (Harada)

Bringing the appeal of movie to even more users

Audio recording is another important element of movie capture. The creative desires of camera fans will also be apparent in their dedication to audio functions.

"Movie works also include audio. If it was possible to monitor audio or adjust levels during filming, then we expect that a wider range of users will give this convenient movie product tool a try. Based on that approach, the development team proposed that we add a headphone jack, and that idea was implemented as well." (Harada)

The EOS 5D Mark III is intended to be a camera for creating complete works, not just to be a recording device. According to Mr. Harada, it needed to be able to accommodate every situation, for example by using the volume to capture a sense of distance or the speed of a moving subject.

To do this, he wanted to provide a mechanism that would allow the user to adjust the audio recording level even during shooting. A silent control function for movie capture was also an essential function for achieving this goal.

Looking back, Mr. Harada says that "These mechanisms were entirely new, so the development process wasn't easy." In order to ensure that the touch sensors operated properly, attention had to be paid to the materials and the distance from adjacent mechanical parts. It was a repeated process of mechanical design and adjustments.

Right now, a completed EOS 5D Mark III sits before Mr. Oikawa and Mr. Harada.

"Camera fans are extremely concerned about image quality, performance, and texture," says Mr. Oikawa, "We were able to live up to those expectations, even in the case of movie functions." For Mr. Harada as well, the challenges were immense, but he feels a strong attachment to the final product. "It's like my own child."

"Of course, if I say that, I know a whole lot of engineers who will step up and say, 'No, it's my child."" Holding the camera in his hand, Mr. Harada smiled.



EOS System

Hajime Watanabe

Senior Engineer ICP Development Center 2 Image Communication Products Operations

We strive for unprecedented evo accessories as well, to meet the photographers with a drive creativity.

Yusuke Shirakawa

Senior Engineer ICP Development Center 2 **Image Communication Products Operations**

Koji Maeda

Senior Engineer ICP R&D Center **Image Communication Products Operations**



To be used simply, with ease and peace of mind

The abundant system accessories are also part of the allure of the EOS DIGITAL. Of particular note is the GPS Receiver GP-E2 GPS, which is a first for Canon, just like the GP-E1, which was specially designed for the EOS-1D X.

Many users have expressed a desire to accurately record their geographical position, particularly when shooting landscapes.

How does the GP-E2 differ from third party GPS receivers? "Because," begins Mr. Shirakawa, "it is optimized for the EOS."

"In addition to being matched with the EOS in terms of design, it can communicate with the EOS 5D Mark III simply by clipping it onto the accessory shoe."

The GP-E2 is equipped with an AA/LR6 battery. One of its defining features is that it is always on, so as soon as the camera's power is turned on it can immediately add positional information to any photos taken.

In fact, one of the greatest stressors for photographers that use GPS receivers is that sometimes, positional information is not added. This is often because it takes too long for the GPS receiver to boot up and boost the satellite signal. "Our goal was to make the unit simple and easy to use with peace of mind, even if you don't know the unique characteristics of GPS receivers." (Shirakawa)

Mr. Shirakawa hopes that as a result, "A broader range of users will try the GP-E2."

Multiple functions that adapt to any situation

When the GP-E2 is attached to the camera's accessory shoe, it can add not only positional information but also directional information to the image. For example, if you find a beautiful mountain while you are moving, you can find out the name of the mountain later based on the position and direction when you took the picture. The camera's accessory shoe, however, wasn't originally designed to handle that type of



information.

"We had a lot of difficulty securing the necessary communication speed," says Mr. Watanabe. It was worth the effort, because when it is attached to the EOS 5D Mark III, it can add both positional and directional information to all images, even when panning the camera and shooting at up to 6 frames per second.

It can also be connected with a USB cable when using a flash. An L-shape Accessory Bracket AB-E1 is offered to ensure that the GP-E2 is lined up with the optic axis. According to Mr. Watanabe, "This is another thing that we paid close attention to, so that the unit could be used in as many situations as possible."

Changing the style of taking and viewing photos

Up to now, almost all of the photographers who used wireless file transmitters were professionals. Now, however, wireless LANs in homes have become very popular, and compatible video devices and mobile terminals are commonplace. The stage is being set for more users to enjoy the benefits of wireless file transmitters.

The Wireless file transmitter WFT-E7 was developed. "For example, you could connect directly to devices equipped with ad hoc communication - that is, wireless LAN functions. By using a WFT server function, you can operate the camera remotely while viewing the images in real time on a smart phone or mobile PC browser." (Watanabe) Mr. Watanabe says that the WFT-E7 has the potential to change the way people take photographs.

In addition, by using a DLNA server function, you can play back the images stored in your camera on a TV or other compatible device. The abundant interfaces are reassuring as well, with IEEE 802.11a/b/g/n, Gigabit Ether, and Bluetooth

Wireless file transmitters are no longer an accessory only for professionals.





Rapid evolution: Digital Photo Professional

Just as the EOS 5D Mark III evolved on a different dimension than other models before it, so too did the Digital Photo Professional. There is a function that Mr. Maeda, who was in charge of developing applications, wants to recommend.

"It's a new function: the Digital Lens Optimizer."

The EOS 5D Mark III can correct peripheral illumination, color aberrations, and distortion on its own, but the photographers using this camera will no doubt have a desire for high quality that goes far beyond the norm.

With this Digital Lens Optimizer, users can also correct complex aberrations such as comatic aberrations, astigmatism, and spherical aberrations. This is a revolutionary function that in a sense reverts the light to the form it had before passing through the lens.

"Even in the case of lenses with minimal aberrations, resolution can deteriorate as a result of diffraction that occurs when a smaller aperture is used. This was considered an unavoidable characteristic of optics. The strength of the Digital Lens Optimizer is its ability to correct even this." (Maeda)

For example, says Mr. Meada, the effects are clearly visible when shooting landscapes, if you want to improve the resolution of surrounding areas or shoot with a smaller aperture.

At the same time, the Digital Lens Optimizer is also compatible with the camera's new functions, like Multiple Exposure function and HDR mode. These creative functions can even be used with the Digital Photo Professional. When developing the HDR tool, we took into account the needs of artistically oriented camera fans who want to adjust the tone of the photograph.

"Even without using any other applications, users can enjoy creating artistic photographs easily using just this function. This is the ultimate tool for EOS DIGITAL customers." (Maeda)

What can you do after you've taken the photograph? Canon is always coming up with new answers.

