

The DCS Story

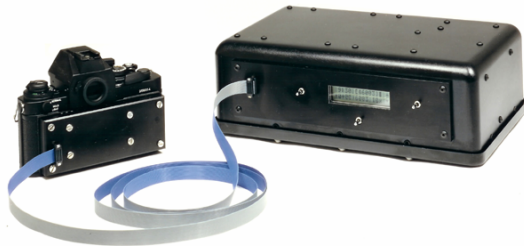
17 years of Kodak Professional digital camera systems

1987-2004



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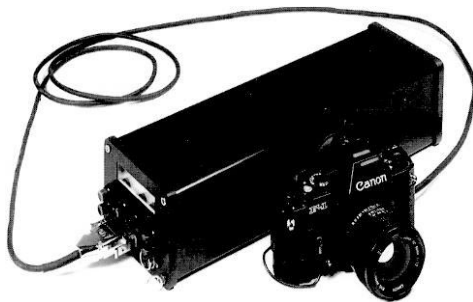
Electro-Optic Camera (1988)

By 1987, Kodak had developed the world's first megapixel CCD imager, the M1. A US Government customer contracted with the Federal Systems Division (FSD) to incorporate the M1 into a standard 35 mm camera body to create the first megapixel portable digital camera, truly the prototype of the digital

camera system (DCS) product line. It was designed for covert use, with the black box in a camera bag and the ribbon cable to the camera body concealed inside the neck strap. Images were downloaded from the internal hard drive by docking the black box on an Exabyte tape archive unit. (The first digital camera dock!) The Canon F1 film camera body had no electronic interface, so the shutter release was detected by monitoring the battery current. The imager package was mounted to a TE cooler to reduce noise, but cooling was limited to prevent fogging the cover glass and was not very effective. Only one unit was built. The black box electronics were wire wrapped.

- Stock Canon F1 body with motor drive
- Monochrome KAF-1400 (M1) imager (1320 x 1035, 6.8 μm) with thermoelectric cooler
- 10bit A/D Logarithmic amplifier
- 10-Mbyte buffer for 6-image burst; buffer image count display
- Internal 100-Mbyte SCSI hard drive holds 60 images; disk image count display
- Docking archive unit with 2000-MByte Exabyte 8 mm SCSI tape drive and battery charger
- Raw image files in Unix TAR format; Time/Date stamp
- Intervalometer; log histogram. Pixel value readout.
- Image delete. Image recover; disk erase; disk format
- Alphanumeric LCD with menus, status, and error messages
- Three-color LED disk, buffer, battery status indicators on camera back
- Intel 80C196 μ Controller, PL/M
- Internal lead acid camcorder battery

Tactical Camera (1989)



When FSD marketing saw the electro-optical (EO) camera, they saw an opportunity to create digital cameras for the military. Based on the EO camera design, the Tactical camera was made more rugged by eliminating the internal hard drive and using the buffer memory to store images until they could be unloaded to external SCSI storage. With a motor drive, the camera would capture a "movie" at 5 fps and play it back just as fast from memory. Two demo units were built and

demonstrated to many government customers.

- Selectable 1280 x 1024 or 640 x 512 resolution
- 20-Mbyte buffer for 12/48 image burst at 5 fps
- RS-170 NTSC video output with superimposed image data
- Zoom and pan high res image
- All other features of EO camera, except TE cooler, hard drive, archive unit



HAWKEYE II Imaging Accessory (1989)

Demonstrations of the Tactical camera generated a lot of interest, but its size and weight precluded military field use. FSD borrowed the mechanical design of the PPD IRIS camera, developed a DRAM image storage module (ISM) with more capacity than the available memory cards, and created a compact camera design with real printed circuit boards. Exotic and expensive lithium batteries kept the power-hungry camera and ISM going. The name "imaging accessory" was used because Kodak was reluctant to develop digital cameras that might compete with film. Five units were built.

- Stock Nikon F3 body
- Selectable 1280x1024 or 640x512 resolution
- 8-bit A/D
- Removable 5-Mbyte DRAM Image Storage Module for 4/16 images
- Replaceable lithium batteries
- All other features of Tactical camera, except motor drive



HAWKEYE II Imaging Accessory (1989)

The normal customer response to a demo of integrated Hawkeye II camera was, "That's incredible! It would be perfect for my application if it only had one more special feature." So FSD returned to the tethered camera configuration, designing a totally modular camera system that could be easily expanded and adapted. A patented "image bus" backplane accommodated plug-in circuit boards. Interchangeable camera heads, battery and

power modules completed the system. A few units were sold with Brier 20-Mbyte floppy drives and built-on video monitors. A two-headed camera was built for stereo photography. The camera achieved real fame in 1991, when it went into orbit on Shuttle mission STS-44.

- Stock Nikon F3 body, some units with motor winder
- Optional monochrome or color Kodak KAF-1300 series image sensor (M3) (1320 x 1035, 16 μ m)
- Internal 100-Mbyte hard drive
- Removable lead acid battery module
- Intel 80C188 μ Controller, PL/M
- All other features of integrated Hawkeye II camera

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
EO	M1	1035x1320	Mono	200-800	5	6
Tactical	M1	1024x1280	Mono	200-800	5	12
Hawkeye II int	M1	1024x1280	Mono	50-400	0	4
Hawkeye II teth	M1	1024x1280	Mono	50-400	2	6
Hawkeye II teth	M3	1024x1280	Mono	50-400	2	6
Hawkeye II teth	M3	1024x1280	3G RGB	50-400	2	6



D-5000 (1989)

Developed by the Electronic Photography Division (EPD), The D-5000, or ECAM was the prototype of all modern professional digital single-lens reflex (SLR) cameras. A compact autofocus SLR with megapixel color imager, memory card slots, JPEG, and *what's this? No image display on the back?* The DOS model added a PCMCIA-ATA card slot. Although not a product of the FSD or Professional Photography Division (PPD) teams, the camera was marketed by FSD to government customers, and many of the original ECAM team brought their expertise to PPD for later projects.

- Color or monochrome Kodak KAF-1300 series image sensor (3M) (1280x1024, 16 μm).
- Color ISO 160
- Standard K mount lenses
- Auto focus with illuminator
- M, Av, Program auto exposure
- TTL flash
- Selectable color balance
- SRAM or flash memory card slot



IRIS (1990)

Larry McMillan of the Professional Photography Division (PPD) had championed the Kodak 35 mm rapid film scanner (RFS) to meet the news photographer's need to send images home electronically as quickly as possible. He saw that a digital camera could eliminate the time to process film. "IRIS" was a confidential project to create a memory card camera for photojournalists. The camera was as simple as possible, with no image processing or bells and whistles; it saved the raw imager data to the card. Just a few demo units were built.

- Stock Nikon F3 body
- SRAM memory card slot



Professional Camera Back (1990)

Just as the integrated Hawkeye II camera was cool but not quite enough for the government customers, IRIS didn't meet the real needs of the news shooters. PPD had paid to develop the first color megapixel imager (M3) and conceived a fast frame rate news camera that could directly transmit images from the field without a computer. PPD had the right imager and the right market; FSD had the camera architecture, so the two teams combined the M3 with the Hawkeye II image bus electronics in a sleek and commercial-looking plastic housing. Several demo cameras were shown privately at Photokina and publicly at the NPPA Electronic Workshop in November of 1990. Most of the FSD development team moved to PPD to commercialize a camera in response to the ensuing excitement.



KODAK PROFESSIONAL DCS (1991)

By May of 1991, PPD was ready to announce the first Kodak Professional Digital Camera System at a New York City press conference. The prototype camera was spruced up with a much larger image LCD and optional JPEG compression and serial transmission boards. Six models were priced from \$20,000 to \$25,000. The slogan "Convert to a new digital system without switching cameras" suggested that the familiar F3 camera body would make the digital transition simple and easy! To make the system easily luggable for the planet-roving photojournalist, a custom nylon hip pack and an enormous hard case were thrown in for free. After the launch of the Kodak Professional DCS 200 IR digital camera, a magazine reviewer named this camera the "DCS 100." Although never official, the name stuck, even within Kodak. A total of 987 units were sold from 1991 to 1994.

- Stock Nikon F3 body with motor winder
- Color or monochrome KAF-1300 (M3) imager (1320x1035, 16 μm)
- 8-bit A/D
- Monochrome LCD image display
- NTSC video output
- SCSI interface
- Removable lead acid camcorder battery
- Intel 80C188 uController, PL/M multitasking firmware
- Internal 200-Mbyte hard drive (160 uncompressed/600 compressed images)
- Optional JPEG compression board, serial interface, and captioning keyboard
- 8- or 32-Mbyte buffer memory
- Acquire module software for Adobe Photoshop (Macintosh)
- Plug-in software for Aldus Photostyler (Windows)



Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS DC3	M3	1024x1280	3G RGB	100-800	2.5	6
DCS DC3/32	M3	1024x1280	3G RGB	100-800	2.5	24
DCS DC3/B	M3	1024x1280	3G RGB	100-800	2.5	6
DCS DM3	M3	1024x1280	Mono	200-1600	2.5	6
DCS DM3/32	M3	1024x1280	Mono	200-1600	2.5	24
DCS DM3/B	M3	1024x1280	Mono	200-1600	2.5	6



KODAK PROFESSIONAL DCS 200 (1992)

Announced at MacWorld Boston in August 1992, the DCS 200 targeted desktop publishing rather than photojournalism. In sharp contrast to the complexity and cost of the original DCS, the 200 was the simplest DCS camera ever. Everything but the imager fit onto one circuit board. 2.5-inch hard drives had just appeared and were just the size to tuck under the camera body. The 8008s was the least-expensive Nikon body with a removable back. The simple camera was conceived and commercialized in less than a year and shocked a market expecting minor improvements to the original DCS. The non-i models omitted the internal hard drive to lower the price. All models supported HitchHiker external hard drives for removable storage. For the commercial studio, a monochrome 200 with the Kodak Professional color filter wheel accessory produced superb color images. The filter wheel was an afterthought and was controlled by an interface piggybacked on the SCSI port. The original plan to sell the low-cost back without the body was scrapped. 3,240 cameras were sold from 1992 to 1994.

- Stock Nikon 8008s body
- 8-bit A/D
- 2-Mbyte buffer
- Internal 80-Mbyte 2.5-inch SCSI hard drive (50 images)
- Removable AA batteries in body and back
- Status LCD, SCSI ID and DELETE buttons
- SCSI interface
- Intel 80C196 uController, PL/M firmware

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS 200c	M5	1012x1524	Bay RGB	50-400	1/3	1
DCS 200ci	M5	1012x1524	Bay RGB	50-400	1/3	1
DCS 200m	M5	1012x1524	Mono	100-800	1/3	1
DCS 200mi	M5	1012x1524	Mono	100-800	1/3	1

Kodak

The use of the familiar and respected Nikon and Canon bodies for most DCS cameras was a marketing advantage, but the Kodak name didn't appear on the "crown" of the camera until the production of the Kodak Professional DCS Pro 14n digital camera. Many thought that the original DCS was a product of Nikon with some Kodak help, when in fact, Nikon was not aware of the project until it was announced. Nikon's actual participation began when they provided technical information for the stock N90 body used in the NC2000 camera. So, to avoid further confusion, the team decided to brand the DCS 200 with the huge Kodak logo on the grip.

DCS 200 + Architecture (NC2000, DCS 4XX, EOS DCS X)

The success of the DCS 200 camera encouraged a new electronic design to fit the same mechanical package as the earlier camera. Major improvements resolved problems with batteries and complaints about the slow performance and internal hard drive of the 200. The PCM CIA slot accepted the new Type III hard drive cards, and audio recording enabled a busy news photographer to add quick comments for captioning images. With only minor changes, the new main board was designed into dozens of camera models for Nikon, Canon, and medium-format bodies, with imagers from 1.2 to 6 megapixels. FSD designed the architecture into several specialized government models, including underwater models based on the Nikonos body.

- 12-bit A/D
- Audio recording (WAV files)
- Status LCD, SCSI ID, and DELETE buttons
- Single PCMCIA-ATA card slot
- Internal NiMH battery
- SCSI interface (undocumented parallel port mode)
- Intel 80C196 uController, PL/M firmware



AP NC2000 (1994)

Developed by Kodak "in cooperation with AP," announced by the Associated Press in February of 1994, and offered first to AP member newspapers for \$17,500, the News Camera 2000 became the standard digital news camera. The Nikon N90s offered snappier autofocus than the 8008s. The NC2000e model with 16-Mbyte buffer memory was offered in 1996. The official relationship with Nikon began in 1994 and Nikon provided confidential documentation on the 10-pin body interface. 550 cameras were produced for the Associated Press.

- Stock Nikon N90s body

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
AP NC2000	M3	1012x1268	Bay RGB	200-1600	2	5
AP NC2000e	M3	1012x1268	Bay RGB	200-1600	2	12
AP NC2000m	M3	1012x1268	Mono	200-1600	2	12
AP NC2000ir	M3	1012x1268	Mono	200-1600		12



From 1995 to 1998, the DCS camera team was part of the new Digital and Applied Imaging (D&AI) Division and later 4XX cameras sported the new "Kodak digital science" logo. Although the original DCS logo was left behind, the honored DCS name would remain to the end.



KODAK PROFESSIONAL DCS 4XX Digital Camera (1994)

The NC2000 was followed by a string of Kodak models. The most important was the Kodak Professional DCS 460 digital camera, which introduced the 6-megapixel imager. The "world's highest resolution portable digital camera" captured images that begged comparison with film. Problems with charging the internal battery prompted the only DCS safety recall. One camera actually exploded in a customer's studio. Over 5000 cameras were produced.

- Stock Nikon N90s body

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS 410c	M5	1012x1524	Bay RGB	100	2	1
DCS 420c	M5	1012x1524	Bay RGB	100-400	2	5
DCS 420ir	M5	1012x1524	Mono	200-800	2	5
DCS 420m	M5	1012x1524	Mono	200-800	2	5
DCS 420c P/S	M5	1012x1524	Bay RGB	100-400	2	5
DCS 460c	M6	2036x3060	Bay RGB	80	2/8	2
DCS 460m	M6	2036x3060	Mono	80	2/8	2
DCS 460c P/S	M6	2036x3060	Mono	80	2/8	2
DCS 460ir	M6	2036x3060	Mono	80	2/8	2



KODAK PROFESSIONAL EOS-DCS (1995)

After the many Nikon-bodied DCS cameras, Canon longed to see its lens mount in front of those megapixel imagers, so they joined Kodak to help develop and market the EOS-DCS cameras, which carried the "in cooperation with Canon" label. Canon provided custom firmware and interface connections in the "D" branded EOS-1N body. Canon only sold the 1 and 3 models. Over 1000 cameras were produced.

- Modified Canon EOS-1N body

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
EOS-DCS 1c	M6	2036x3060	Bay RGB	80	0.6	2
EOS-DCS 1m	M6	2036x3060	Mono	80	0.6	2
EOS-DCS 1ir	M6	2036x3060	Mono	80	0.6	2
EOS-DCS 3c	M3	1012x1268	Bay RGB	200-1600	2.7	12
EOS-DCS 3ir	M3	1012x1268	Bay RGB	400-6400	2.7	12
EOS-DCS 3m	M3	1012x1268	Bay RGB	400-6400	2.7	12
EOS-DCS 5c	M5	1012x1524	Bay RGB	100-400	2.3	10
EOS-DCS 5ir	M5	1012x1524	IR	200-800	2.3	10
EOS-DCS 5m	M5	1012x1524	Mono	200-800	2.3	10



KODAK PROFESSIONAL DCS 465 (1995)

Studio photographers loved the Kodak Professional DCS 460 digital camera for its image quality, but they missed the flexibility of their medium format and view cameras. The DCS 465 was a DCS 460 with a standard Hasselblad back mount that could be hung on almost any studio camera with the right adapter. A row of connectors supported both electrical and mechanical trip cameras and studio flash units. About 200 units were produced.

- Standard Hasselblad camera back mount
- Camera sync, electrical trip, mechanical trip, flash sync connectors

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS 465c	M6	2036x3060	Bay RGB	80	2/8	2
DCS 465m	M6	2036x3060	Mono	80	2/8	2
DCS 465ir	M6	2036x3060	Mono	80	2/8	2



DCS 4XX GPS, CIR

After 1990, the FSD continued to create custom cameras to meet the special needs of government and military customers by modifying the commercial DCS products. These include global positioning system (GPS)- compatible models and the color infrared (CIR) models, which provided a unique capability that was ideal for environmental and law enforcement that required forestry and vegetation analysis.

- Stock Nikon N90s body
- Interchangeable filters for selective spectral response

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS 420 GPS-C	M5	1012x1524	Bay RGB	100-400	2	5
DCS 420 GPS-IR	M5	1012x1524	Mono	200-800	2	5
DCS 420 GPS-M	M5	1012x1524	Mono	200-800	2	5
DCS 420CIR	M5	1012x1524	Bay RGB	200-800	2	5
DCS 460CIR	M5	1012x1524	Bay RGB	200-800	2	5



DCS 425, 435

Some of the FSD models became major repackaging projects. The Federal Systems Division (FSD) DCS 425 and DCS 435 digital cameras packed the 200+ electronics, batteries, and PCM CIA slot into a one-inch thick back for the Nikonos RS submersible camera for the serious military photographer.

- Stock Nikonos RS body
- Replaceable 6v Lithium batteries

Camera	Imager	Pixels	CFA	ISO
DCS 425c	M5	1012x1524	Bay RGB	100- 400
DCS 425ir	M5	1012x1524	IR	200- 800
DCS 435	M3	1012x1268	Bay RGB	200-1000



KODAK DIGITAL SCIENCE SCS 1000 Camera

Another ruggedized repackaged camera from FSD, the specialty camera system (SCS) 1000 cameras were noticeably more compact than the corresponding commercial EOS DCS models using the same Canon body.

- Stock Canon EOS 1N body
- Optional MIL SPEC connector for SCSI and serial
- GPS capability
- 3v Lithium K123 batteries

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
SCS 1000ir	M3	1012x1268	IR	16-3200	2.3	10
SCS 1000m	M3	1012x1268	Mono	16-3200	2.3	10

Pro SLR Architecture (DCS 3XX, 5XX, 6XX)

Four years of 200+ family cameras created a long wish list for the next DCS generation. Professionals wanted instant image review and JPEG compression, like consumers enjoyed on their cheap digital cameras. Blue noise and color filter array (CFA) aliasing were the major image quality complaints. The design required a clean sheet and a lot of problem solving. A new PowerPC microprocessor would provide the horsepower for a graphical user interface and quick display of images. The originally designed image-processing path would finish and JPEG-compress images in real time, but that plan died in the details. Some models later provided background JPEG processing. The new Firewire interface made history of SCSI's bulky cables and terminator confusion.

- Lithium Niobate blur filter
- 12-bit A/D
- Audio recording (WAV files)
- Color LCD, graphical user interface, 1/4/9 image display, histogram
- Status LCD
- White balance, tagging, card format and recover
- Background JPEG processing
- Dual PCM CIA-ATA card slots
- Removable NiCd/NiMH battery.
- IEEE 1394 (Firewire) interface for host computer
- Folding rigid-flex main circuit board
- Motorola MPC821 uController, C multitasking firmware
- Optional cell phone transmission kit



KODAK PROFESSIONAL DCS 5XX, Canon EOS DXXXX (1998)

The partnership with Canon culminated in the first truly integrated DCS camera, where the body and back were seamlessly merged (well, almost). Canon provided an EOS 1N body with special firmware and no film transport parts. The 2-megapixel M15 imager used indium tin oxide (ITO) clock conductors and a new CFA mix to dramatically improve blue channel output. 3.6 superb images per second, no aliasing, and a pong game for downtime made it a winner with news and sports shooters. The revolutionary camera was launched at PMA in 1998 at \$14,995 and was the first to carry the new Kodak Professional brand. The EOS D2000 and D6000 were Canon branded and marketed models functionally identical to the Kodak Professional DCS 520 and DCS 560 cameras.

- Modified Canon EOS-1N body

	Imager	Pixels	CFA	ISO	FPS	Depth
DCS 520c	M15	1152x1728	Bay RGB	200-1600	3.6	12
DCS 520x	M15	1152x1728	Xena CMY	200-1600	3.6	12
DCS 560c	M16	2008x3040	Bay RGB	80- 200	1	3
DCS 560m	M16	2008x3040	Bay RGB	320- 800	1	3
EOS D2000c	M15	1152x1728	Bay RGB	200-1600	3.6	12
EOS D6000c	M16	2008x3040	Bay RGB	80- 200	1	3



KODAK PROFESSIONAL DCS 3XX (1998)

Since the DCS 200, the team struggled to find a way to make a less-expensive professional camera. The Calvin project was the first to reach the market after several attempts, and it was the first DCS with popup flash! The M5 imager and the new Pronea APS body made possible the lowest DCS price yet, only \$4,995. The 315 introduced background JPEG processing and automatic white balance (scene balance). The Kodak

Professional DCS 315 digital camera was the beginning of the "coopetition" relationship with Nikon that continued to the end of the DCS line. The DCS 315 images disappointed customers that were spoiled by the DCS 520 quality, but the much-better and still-affordable 3-megapixel DCS 330 was just the right camera for small portrait studios.

- Modified Nikon Pronea 6i body
- AA batteries

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS 315c	M5	1008x1520	Bay RGB	100-400	2	3
DCS 330c	M17	1504x2008	Bay RGB	125-400	1	8
DCS 354c	M24	1958x2606	Bay RGB			



KODAK PROFESSIONAL DCS 6XX (1999)

At PMA 1999, Kodak unveiled the super-pro Nikon F5 body, which was seamlessly integrated to the DCS 520 electronics and wrapped in a bulletproof magnesium housing. After Nikon launched the D1, later in '99, Kodak Professional planned to ease out of the photojournalist market and concentrate on studio photography. The Kodak Professional DCS 620x digital camera, with the super high ISO image quality of the Xena CMY imager was planned to be the last DCS photojournalist camera.

- Modified Nikon F5 body

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS 620c	M15	1152x1728	Bay RGB	200-1600	3.6	12
DCS 620x	M23	1152x1728	Xena CMY	400-6400	3.6	12
DCS 660c	M16	2008x3040	Bay RGB	80- 200	1	3
DCS 660m	M16	2008x3040	Mono	320- 800	1	3
DCS 660cir	M16	2008x3040	Mono	320- 800	1	3

Kodak Professional By 1998, PPD had become Kodak Professional and the DCS team happily reunited with that organization. The rest of the DCS cameras proudly bore the red and gray Kodak Professional brand.

Pro 3 Architecture (DCS Pro Back, 7XX)

The new focus on the studio market meant more and more pixels! Kodak Professional added a TI DSP to the PowerPC to gain the performance to process all of those pixels.

- 12-bit A/D
- Audio recording (WAV files)
- Color LCD, graphical user interface, 1/4 image display, histogram
- Zoom and pan raw images
- Status LCD
- White balance, tagging, card format, and recover
- In-camera JPEG processing
- IEEE 1394 (Firewire) interface
- Motorola MPC823 uController, C multitasking firmware
- Texas Instruments TMS320C6211 DSP



KODAK PROFESSIONAL DCS Pro Back (2000)

The 16-megapixel M11 imager packed with all the DCS Pro 3 features and horsepower made the Pro Back a worthy successor to the DCS 465. Launched at Photokina 2000, it heralded Kodak's serious attack on the digital studio market. There was no other portable studio back. The Plus model added a connector to support most electrical trip studio cameras. The DCS Pro Back was shipped with Kodak Professional capture studio software as well as the new Kodak Professional DCS

Photo Desk application.

- Hasselblad 555 ELD camera back mount
- Adapter for Mamiya RZ67
- High-voltage flash sync
- Dual CF card slots
- Powered from Firewire cable or external battery

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS Pro Back	M11	4080x4080	Bay RGB	100	0.5	4
DCS Pro Back m	M11	4080x4080	Mono	100	0.5	4
DCS Pro Back Plus	M11	4080x4080	Bay RGB	100	0.5	4



KODAK PROFESSIONAL DCS 7XX (2001)

With Nikon still happy to supply F5s, it was natural, a "no brainer," in fact, to drop the new DCS Pro 3 electronics into the good old 6XX housing and make some very cool cameras. Despite the intent to back out of the market, the Kodak Professional DCS 720x digital camera was yet another great photojournalist camera with its high ISO and high frame rate. But the DCS 760, introduced at only \$7,995, was destined to be a cult camera for the portrait and wedding photographers. The cameras were indestructible and made very nice images. Still available on eBay... The Kodak Professional

DCS camera manager software first shipped with the DCS 760. The Kodak Digital Science SCS2000 C camera was an FSD-modified, weather-resistant version of the DCS 720x.

- Modified Nikon F5 body

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS 720x	M23	1152x1728	Xena CMY	400-6400	4.3	25+
DCS 760c	M16	2008x3032	Bay RGB	80-400	1.5	24
DCS 760m	M16	2008x3032	Mono	320-800	1.5	24
DCS 760ir	M16	2008 x 3032	Mono	320-800	1.5	24
SCS 2000c	M23	1152 x 1728	Xena CMY	400-6400	4.3	25+



KODAK PROFESSIONAL DCS Pro Back 645 (2002)

The project began as an even smaller Pro Back model to fit the totally new autofocus medium-format camera Hasselblad was secretly developing. The H1 was delayed enough that Kodak introduced models for the Mamiya and Contax 645 AF cameras first. Only the front plate and camera interface flex are different between the three models.

- Custom fit for Mamiya 645 AF and AFD, Contax 645 AF, and Hasselblad H1
- Single CF card slots
- Clip on Li ION battery
- Optional Li Niobate blur filter

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS Pro Back 645 C	M11	4080x4080	Bay RGB	100-400	0.55	8
DCS Pro Back 645 H	M11	4080x4080	Bay RGB	100-400	0.55	8
DCS Pro Back 645 M	M11	4080x4080	Bay RGB	100-400	0.55	8

PRO 14 Digital Camera Architecture

Bigger, faster, cheaper (and smaller and lighter, too), "the only camera you'll ever need" filled the 35 mm frame with pixels. Fill Factory of Belgium supplied the first non-Kodak and the first CMOS imager to be used in a DCS camera. The successful DCS Pro 3 architecture was "supercharged" with a much faster DSP to process the huge and messy C14 images. A snazzy user interface with popup menus and lots of new features included a "basic" mode for the overwhelmed user.

- CF and SD/MMC card slots
- Removable Lithium ion battery
- IEEE 1394 (Firewire) interface
- Motorola MPC823 uController, C multitasking firmware
- Texas Instruments TMS320C6414 DSP



KODAK PROFESSIONAL DCS Pro 14n Digital Camera (2002)

Late in 2002, the decision was made to end the Kodak Professional camera business, which had yet to make a profit. A last-minute reprieve amid hopes that a new projected camera might turn the tide led to the most dramatic DCS announcement ever. After Canon pre-leaked its announcement of the "world's highest resolution digital SLR," the 12-megapixel 1Ds at \$9,000, the 14-megapixel DCS Pro 14n at only \$4,995 stole the show at Photokina 2002. But the DCS Pro 14n was months late, and high ISO image noise was disappointing. Still, at \$4,995, it was a very cheap studio camera that signaled the demise of the medium-format digital back.

- Modified Nikon F80 body

Canon	Imager	Pixels	CFA	ISO	FPS	Depth
DCS Pro 14n	C14	3000x4500	Bay RGB	6-800	1.7	20
DCS Pro 14n 512	C14	3000x4500	Bay RGB	6-800	1.7	7
DCS Pro 14n m	C14	3000x4500	Mono	6-800	1.7	20



KODAK PROFESSIONAL DCS Pro SLR/n Digital Camera (2004)

Fill Factory's disappointment in the C14 imager prompted them to redesign it and find a better imager foundry, in hopes of saving the Kodak Professional business. Announced at PMA, February 2004, the DCS Pro SLR/n camera with the new-and-improved X14 imager was the camera the 14n was meant to be. Loyal Pro 14n owners were offered an upgrade to the new imager, making their older cameras nearly the same as the new Pro SLR/n. Also announced in 2004, the Pro 14n and SLR/n could be upgraded by Kodak with the Pocket Wizard transceiver for versatile wireless camera and strobe triggering.

- Modified Nikon F80 body

Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS Pro SLR/n	X14	3000x4500	Bay RGB	6-1600	1.7	20
DCS Pro SLR/n m	X14	3000x4500	Mono	6-1600	1.7	20
DCS Pro 14nx	X14	3000x4500	Bay RGB	6-1600	1.7	20



KODAK PROFESSIONAL DCS Pro SLR/c Digital Camera (2004)

With the Canon relationship long gone, but with patent cross licenses still in place, Kodak enlisted Sigma to design and manufacture a Canon-mount version of the 14n using Kodak supplied imager modules and a body derived from the Sigma SD-9 digital camera. The new X14 imager came along just in time, so the new camera became the stablemate of the SLR/n. After its revelation at CeBIT 2004, happy Canon shooters celebrated the return of Canon mount DCS cameras. But alas, the party is over with this one...

- Custom Sigma body.

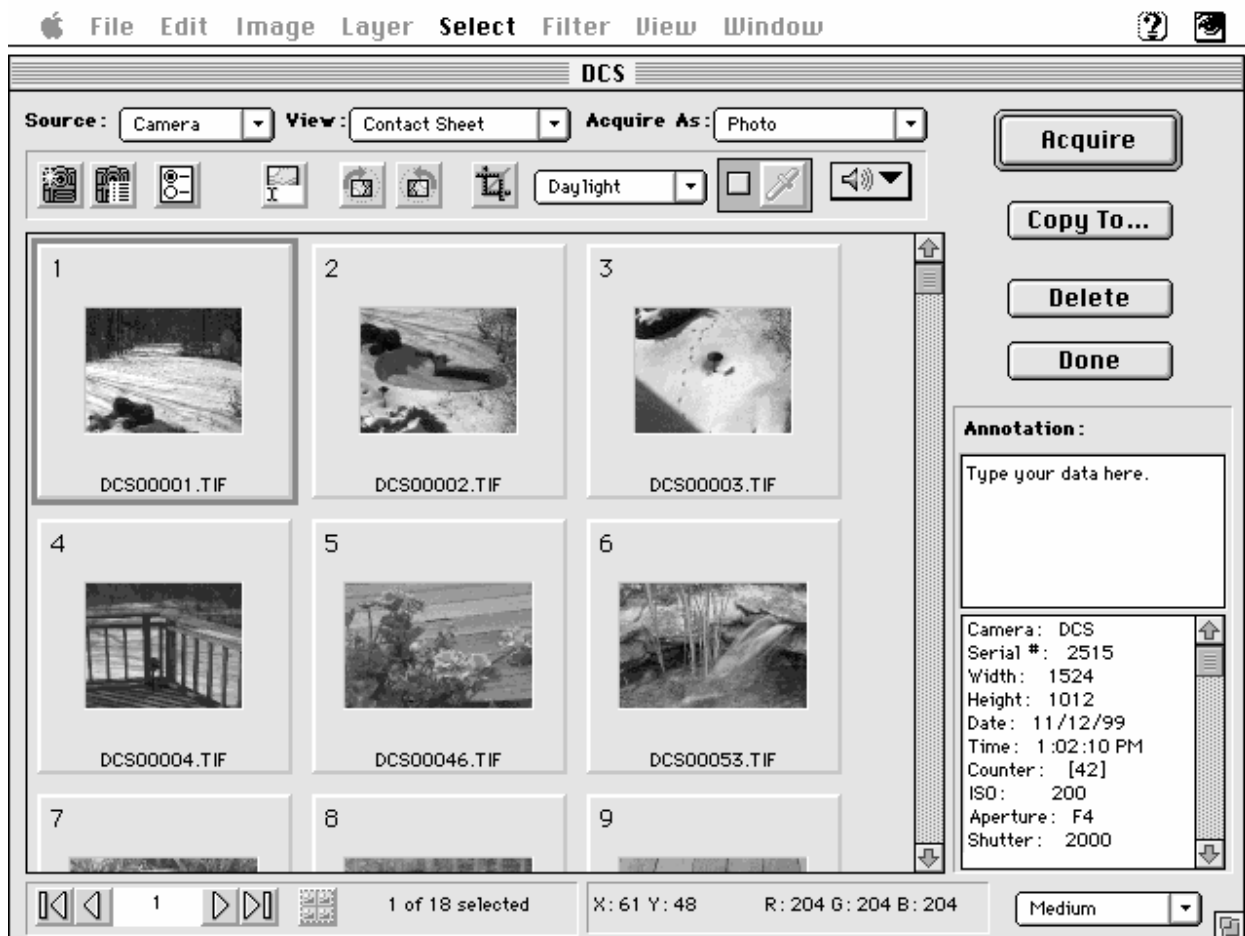
Camera	Imager	Pixels	CFA	ISO	FPS	Depth
DCS Pro SLR/c	X14	3000x4500	Bay RGB	6-1600	1.7	20

Host Software

When the original DCS camera was introduced in 1990, its friendly relationship with Macintosh computers and PCs appealed to the working professional whose income depended on efficiently moving images to print. The still video cameras of the day, and many video-oriented digital cameras to follow lacked the vital "workflow" pros wanted. The essential and acclaimed DCS host software evolved in concert with the features of the cameras.

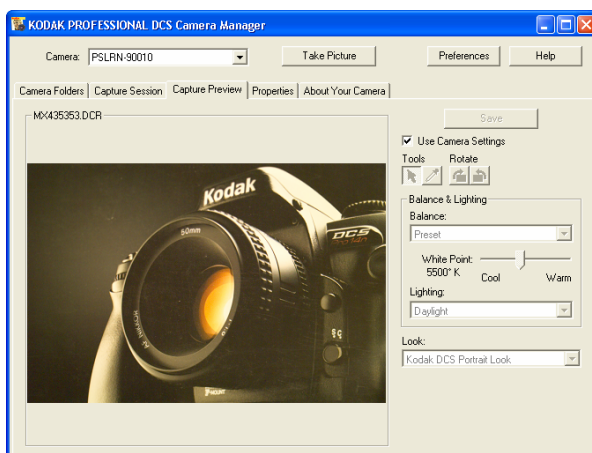
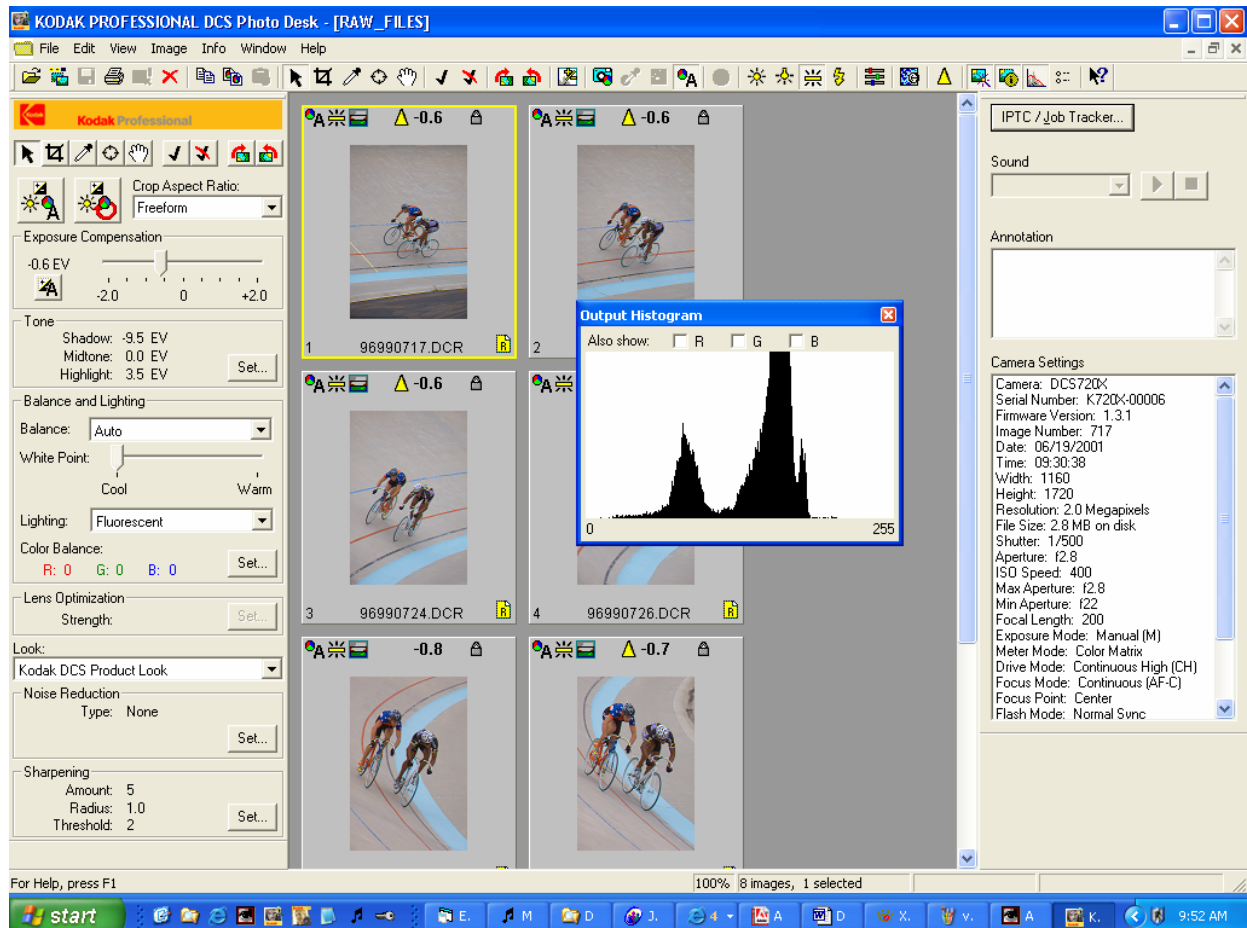
KODAK PROFESSIONAL DCS Acquire Module/TWAIN (1991)

Some things never change. In 1991, Adobe Photoshop was the application of choice in working with high-quality images. It was a Macintosh-only application then. Aldus offered PhotoStyler, a substitute for PhotoShop for Windows. The DCS software team provided plug-ins for both applications. The first few DCS cameras shipped with the Macintosh Acquire module only. Windows users were satisfied a few weeks later. By 1996, PhotoShop was running in Windows and the PC TWAIN standard allowed a single plug in to work with many imaging apps. The Acquire and PC TWAIN plug-ins provided direct control of the cameras through the SCSI interface as well as an efficient browser for images on camera or on disk.



KODAK PROFESSIONAL DCS Photo Desk (2000)

Freedom from the limitations of the plug-in environment was the motivation to create two new stand-alone applications to replace the Acquire/TWAIN software. Photo Desk was a powerful browser and image-processing program that first shipped in December of 2000 and supported images from all DCS 520 and later cameras.



KODAK PROFESSIONAL DCS Camera Manager (2001)

Photo Desk provided no tethered camera support, so the Camera Manager application was created to control Firewire connected cameras. Camera Manager was designed to work with Photo Desk. A click of the "Take Picture" button commanded the camera to capture and image, which Camera Manager could transfer to a folder open in Photo Desk, where the new image would appear. Later, a preview window was added to allow for quick

adjustments before saving.

