D-SLR Seminar

Basic information about D-SLR

How many types of D-SLR lens mount system are available in the market now?

5 types

Canon

Panasonic / Olympus

Nikon

Pentax / Sumsung

SONY

	Olympus Panasonic	Canon	Nikon	Sony
Camera	Panasonic L1 Olympus E1 Olympus E500 Olympus E330	1D Mark□N 1Ds Mark□ 5D 30D 350D	D2X D2HS D200 D70 D50	A100
Mount Diameter	Four Thirds Mount 44mm	EF Mount 51mm	F Mount 44mm	α Mount 47mm
Sensor size [mm]	4/3 type 17.3x13.0	APS-C size 22.5x15.0 Full size 35.8x23.9	APS-C size 23.7x15.6	APS-C size 23.7x15.6
Conversion ratio to 35mm camera focal length	2x	1.6x 1.0x	1.5x	1.5x

Even with wind angle lens for 35mm film camera, the field of view is narrowed, and the actual image does not become wide angle due to smaller sensor size

How many interchangeable lenses have been sold so far?

More than 80 million

How many interchangeable lenses are there in the market now?

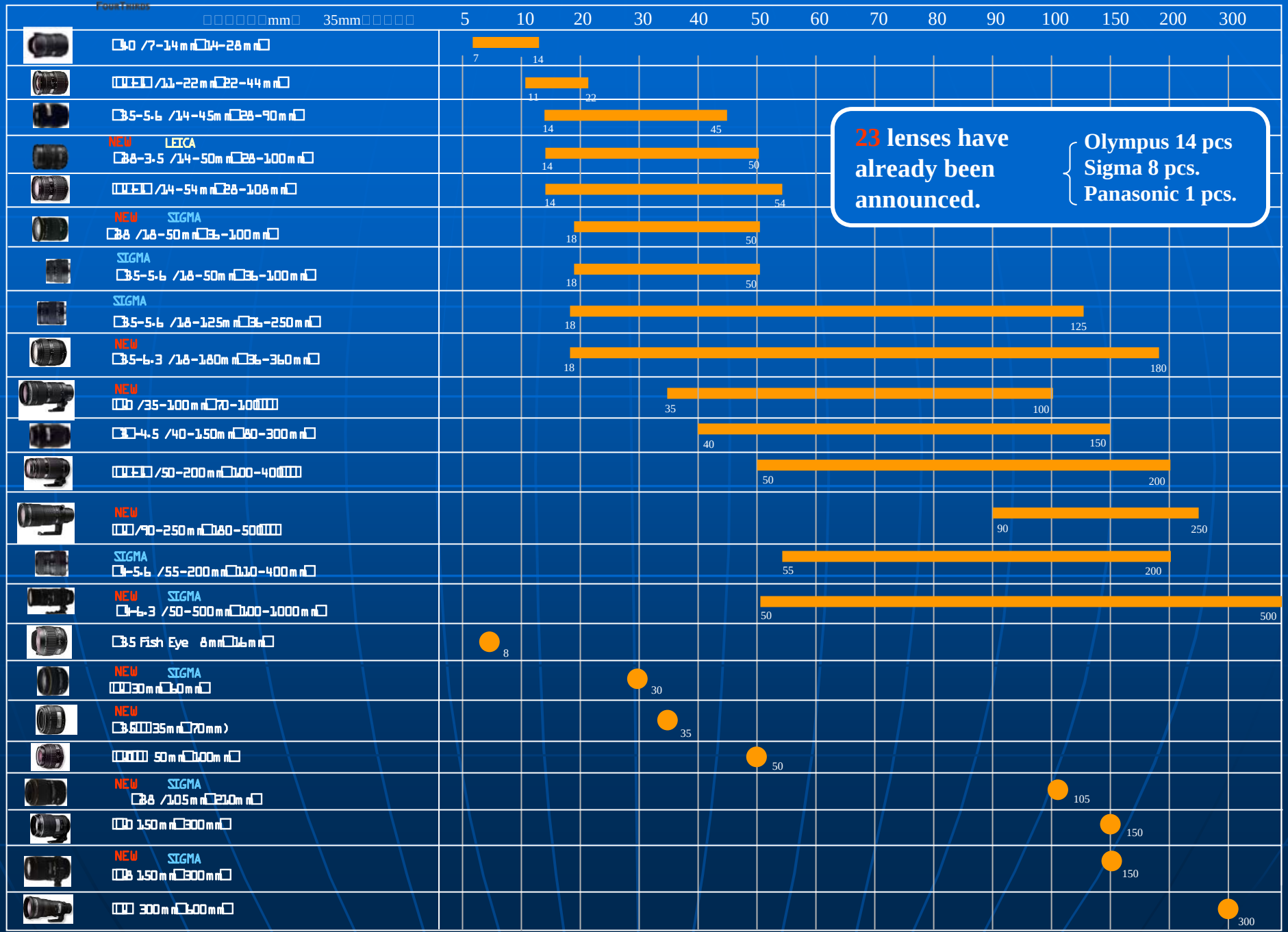
200 pcs. for AF film SLR camera

49 pcs. for D-SLR camera

	Four Thirds Mount	Canon EF Mount	Nikon F Mount	SONY α Mount
Lens Manufacture	Panasonic Olympus Sigma	Canon (Sigma, Tamron, Tokina)	Nikon (Sigma, Tamron, Tokina)	SONY (Sigma, Tamron, Tokina)
Lens Property from Analog era	Nothing	30 million	35 million	16 million (Minolta lens)
The total number of lens	23	57+ (69)	59 (AF50+MF9) + (66)	19+ (48)
Digital dedicated lens	23 (All lenses are designed for D-SLR)	5 (EF-S)+(13)	7 (DX)+(13)	6+(6)

4/3 system has the largest lens amount dedicated for D-SLR. This is the big advantage for this system and secure the better picture quality.

Four Thirds interchangeable Lens availability



Current all Line-up of four thirds lens

Special D-SLR camera lenses
-Advantage of Four Thirds system-

Problem 1. Film camera lens size is big, especially tele photo lens is too big to carry.

→ **Thanks to smaller image circle, lens size is smaller.**

Problem 2. Image sensor cannot receive oblique angle light caused by film camera lens sufficiently, so the image quality is deteriorated.

→ **Improved telecentricity causes more sharpness even periphery of the images.**

Problem 3. Reflection from image sensor is re-reflected at lens surface, so ghost and flare are easy to occur in digital camera.

→ **Optimized coating prevents ghost and flare**

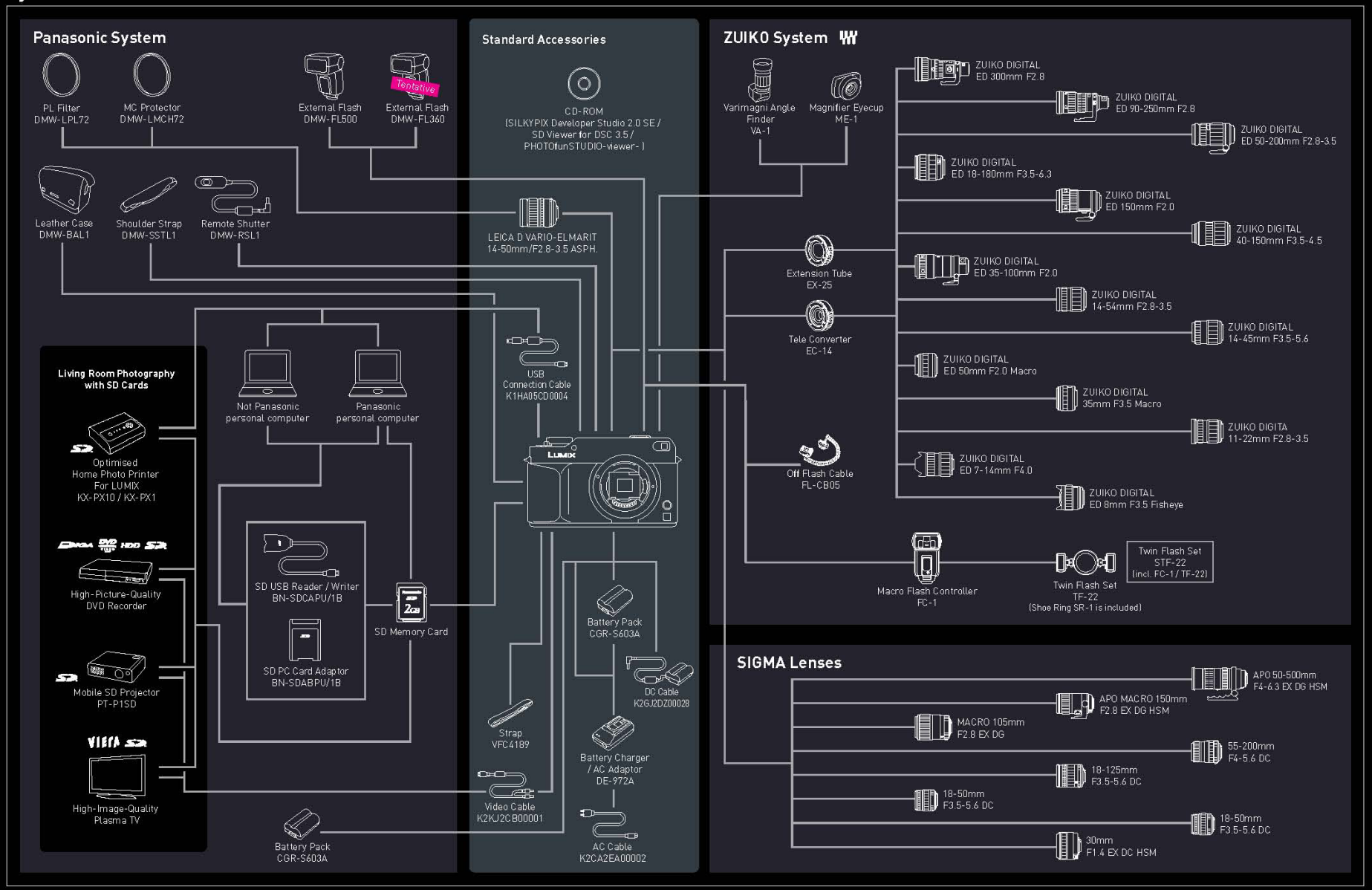
Even someone has enough lens property for film camera, those lenses do not provide expected perfect quality. So the lenses developed specially for D-SLR are necessary and this is the advantage of 4/3 system.

Why did Panasonic adopt Four Thirds system?

- Four Thirds system is dedicated to develop for digital SLR. So this system realizes perfect picture quality by taking full advantage of lens and sensor capacity.
- Four Thirds system can deliver smaller lens and camera body while keeping the picture quality.
- Four Thirds system is open format, so different makers camera and lenses can be used perfectly.

Whole system for L1

System Chart



Advantage / disadvantage of Digital Single lens Reflex (D-SLR) camera

D-SLR vs. Compact camera

	D-SLR	Compact camera
Weight / Size	Heavy / Big	Light / Small
Picture quality	Better	Good
Noise at high ISO	Less	More
Depth of field	Shallow	Deep
View finder	Optical without parallax	EVF or Optical with parallax
AF	Faster by phase difference detection method (AF sensor)	Fast by contrast detection method (CCD)
Live view	Basically No	Yes
Motion image	No	Yes
Dust Problem	Yes	No
Shutter	Focal Plane Shutter	Lens Shutter
Flash synchronized speed	Slow ex.) L1: 1/160 sec or lower	Fast
Lens expandability	Yes (from 12 – 1200mm)	No
Cost	Expensive	Less Expensive

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How can we get the shallow depth-of-field photo?

- Use bigger sensor camera
- Use telephoto lens (long focal length)
- Use brighter lens (open aperture)
- Close to the subject (macro shot)



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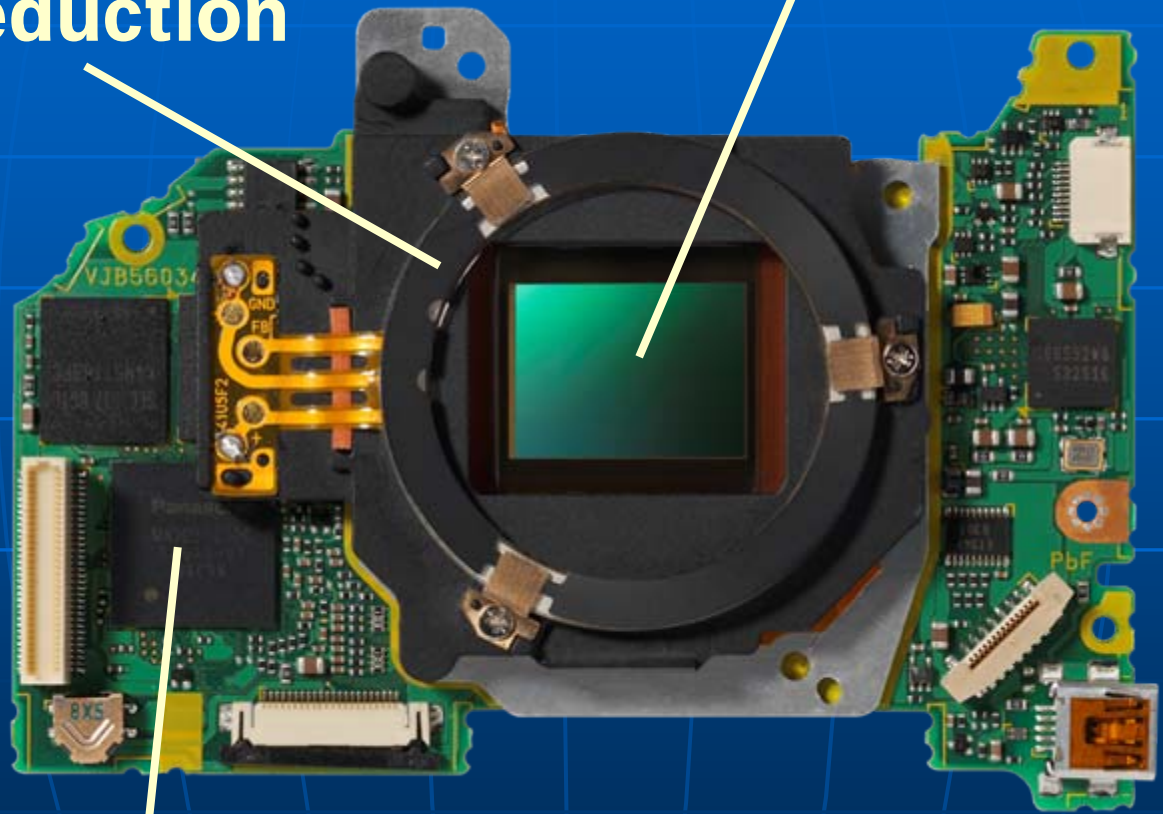
Live MOS Sensor

Supersonic Wave Filter
: Dust reduction



Venus Engine 3

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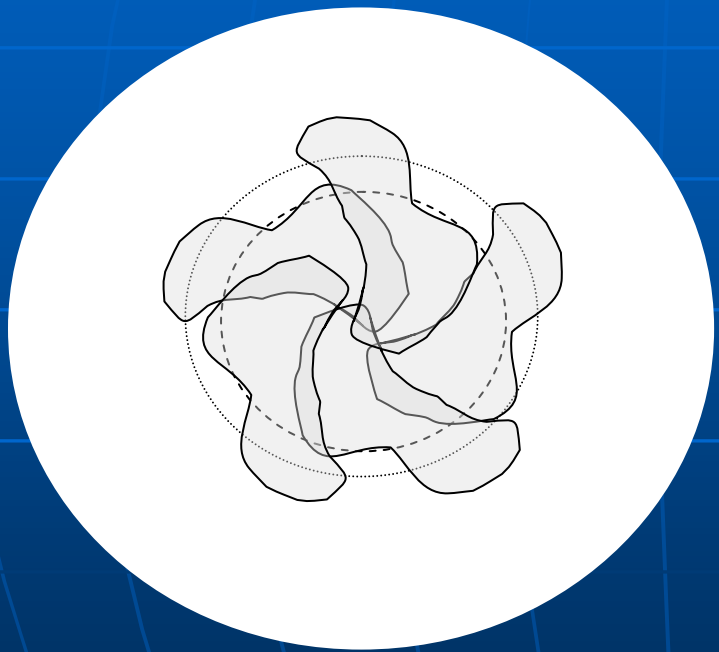
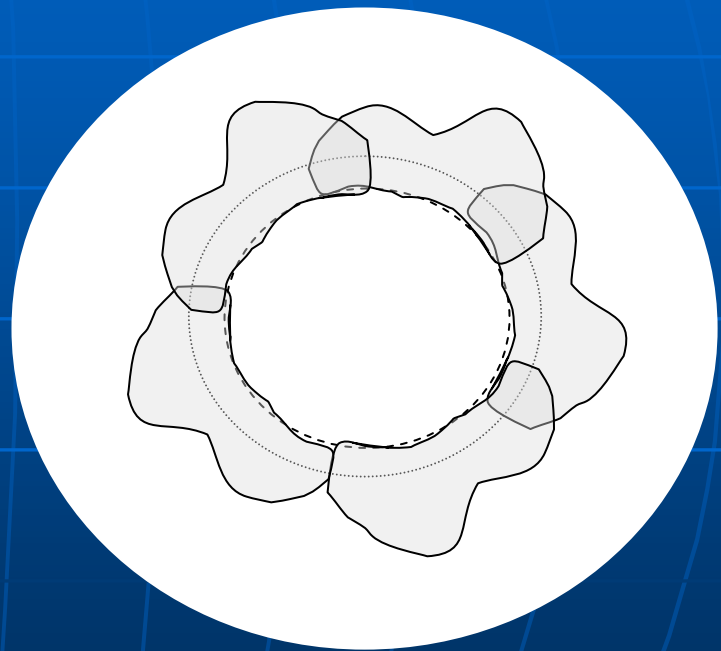
Lens Shutter

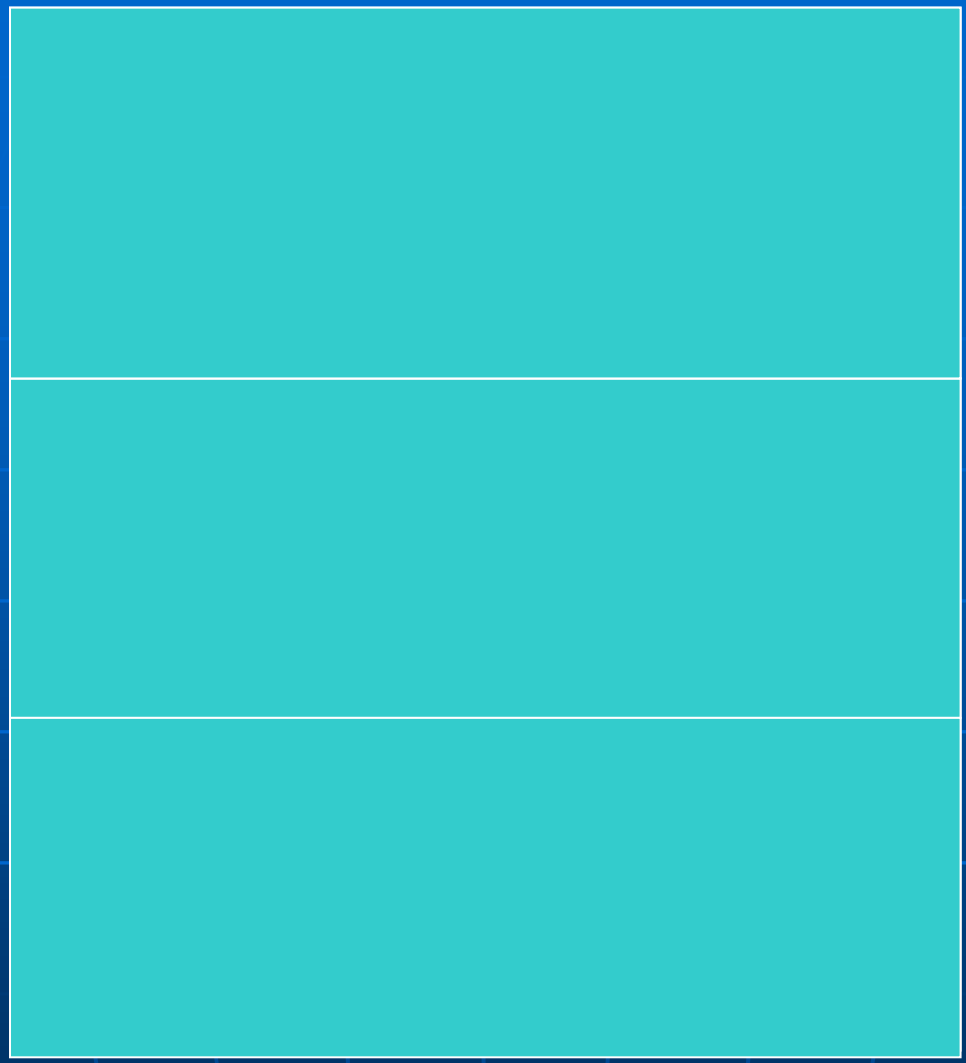
Close



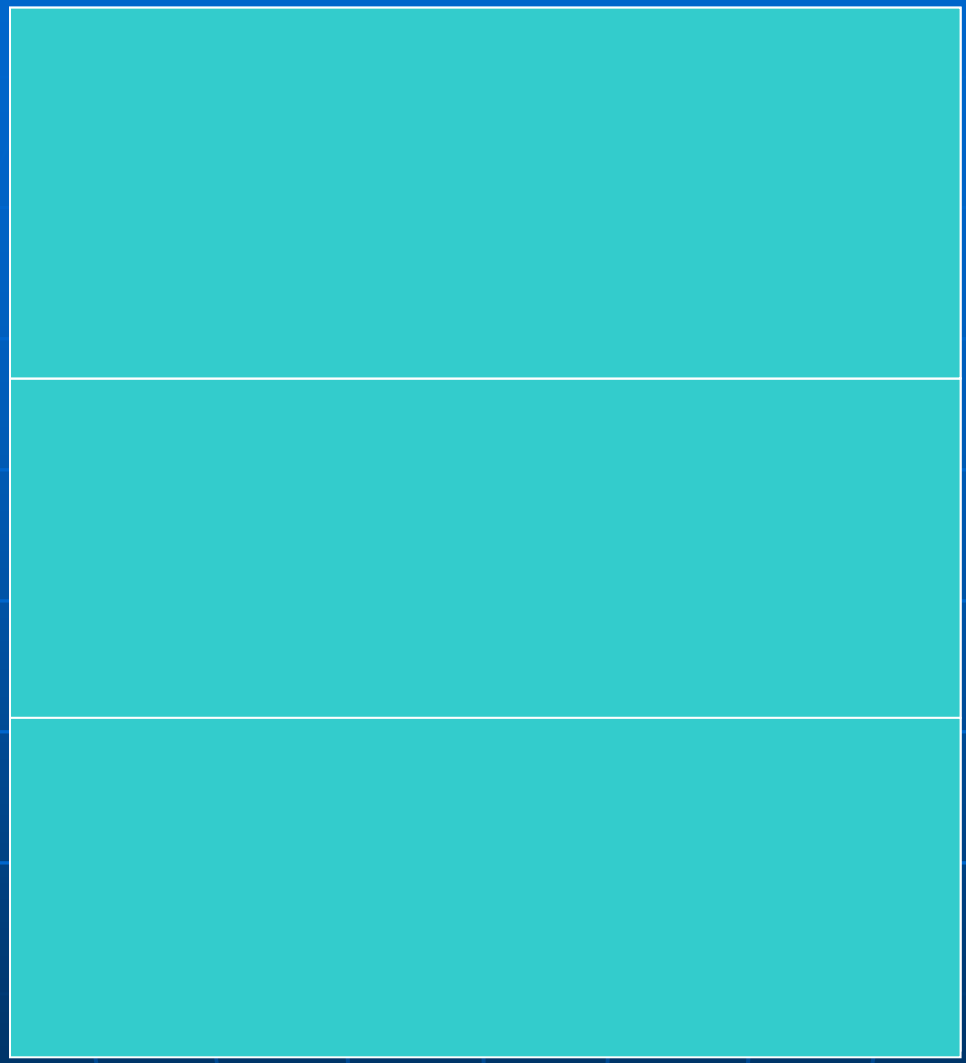
Open



Normal compact camera uses only 2 blades for lens shutter.



Focal Plane Shutter (Slow Shutter)



Focal Plane Shutter (Fast Shutter)

Sample Pictures

Aperture vs. DOF

F3.5

F5.6

F11

F16

F22

F3.5 vs. F2.0
300mm


F3.5


F2.0

Angle of view


600mm


400mm


300mm


200mm


100mm


50mm


36mm


28mm


24mm


20mm


18mm


16mm


14mm

Perspective

600mm

100mm

28mm

14mm

Fish Eye


14mm


Fish Eye


SUPER DRY
SUPER DRY
Panasonic
DUSKIN
Fish Eye

D-SLR vs. Compact

FX01 - F5.0, 1/50sec

L1- F3.5, 1/125sec

FZ30 - F4.0, 1/60sec

L1- F3.5, 1/125sec

FX01 - F5.0, 1/50sec

L1- F3.5, 1/125sec

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L1- F3.5, 1/125sec

FZ30 - F4.0, 1/60sec

L1- F3.5, 1/125sec

LUMIX DMC-L1

Why does Panasonic enter D-SLR market?

1. Winning in high-priced D-SLR market is indispensable to get the enough profit by DSC business in the future.

2. By the success of D-SLR, we can build a strong position as camera brand and it has good influence on the compact camera market as well.

Year of 2010 :
Target Sales Quantity - **1 million units**

Positioning of L1 among LUMIX

1. L1 is the first D-SLR for LUMIX and our flagship model.
2. The most important objective of this L1 is increasing LUMIX brand image.
3. We need to build up our LUMIX D-SLR image with L1 to make a success in the entry-level D-SLR market next year.

Target user

Person who has range-finder camera such as traditional Leica M series.

Person who wants to have different products from others.

Person who wants to have more emotional camera.

Male over 40 years old.

Prosumers that include professional photographers.
□Not for their job but for their taste□

L1 appeal features

Make it clear the appeal features of body and lens respectively.
Need to appeal to instinct not by specification

Lens

Leica D VARIO-ELMARIT 14-50mm/F2.8-3.5 APH lens

1. World first Leica Interchangeable lens with MEGA O.I.S. designed exclusively for D-SLR cameras.
2. High definition image rendering that conveys even the finest details and nuances.
3. High capacity of O.I.S. controlled by Venus Engine PLUS that is incorporated to lens parts.

Leica

Leica D lens

The value of Leica D lens

Nikon	Canon	Leica
18-70mm F3.5-4.5 (27-105mm) 56,000 yen	18-55mm F3.5-5.6 (29-88mm) 30,000 yen	M 24mm F2.8 324,000 yen
17-55mm F2.8 (26-83mm) 220,000 yen	17-55mm F2.8 IS (27-88mm) OIS 143,000 yen	M 50mm F2.8 124,000 yen
24-120mm F3.5-5.6 VR (36-180mm) OIS 94,000 yen	17-85mm F4-5.6 IS (27-136mm) OIS 87,000 yen	

Leica D Elmarit Lens 14-50mm F2.8-3.5 OIS (28-100mm)

Leica Brand

F2.8 brightness

O.I.S.

→ At least 150,000 yen value?

L1 includes precious Leica D lens as a kit lens.

Leica D lens is one of the most important trigger for purchasers to buy DMC-L1 kit.

On the other hand…….

SONY α100 doesn't include Carl Zeiss lens as a kit lens but normal zoom lens from Konica Minolta. Just 315,00 yen (approx.$300) lens is included.

Body	Canon 30D	Canon D350	Nikon D200	Nikon D70	SONY A100
Lens	EF-S18-55 F3.5-5.6 □	EF-S18-55 F3.5-5.6 □	DX ED18-70 F3.5-4.5	DX ED18-70 F3.5-4.5	DT18-70 F3.5-5.6
Price	30,000yen	30,000yen	56,000yen	56,000yen	31,500yen

L1 appeal features

Body

1. Operationality and design that are completely different from the other D-SLR

Though L1 is digital camera, it has traditional **analog camera feeling**

Full-time Live view that expands the way of shooting

Live MOS sensor that has both beautiful image of CCD and low power consumption of CMOS.

Dust Reduction that solves the biggest problem of lens interchangeable cameras

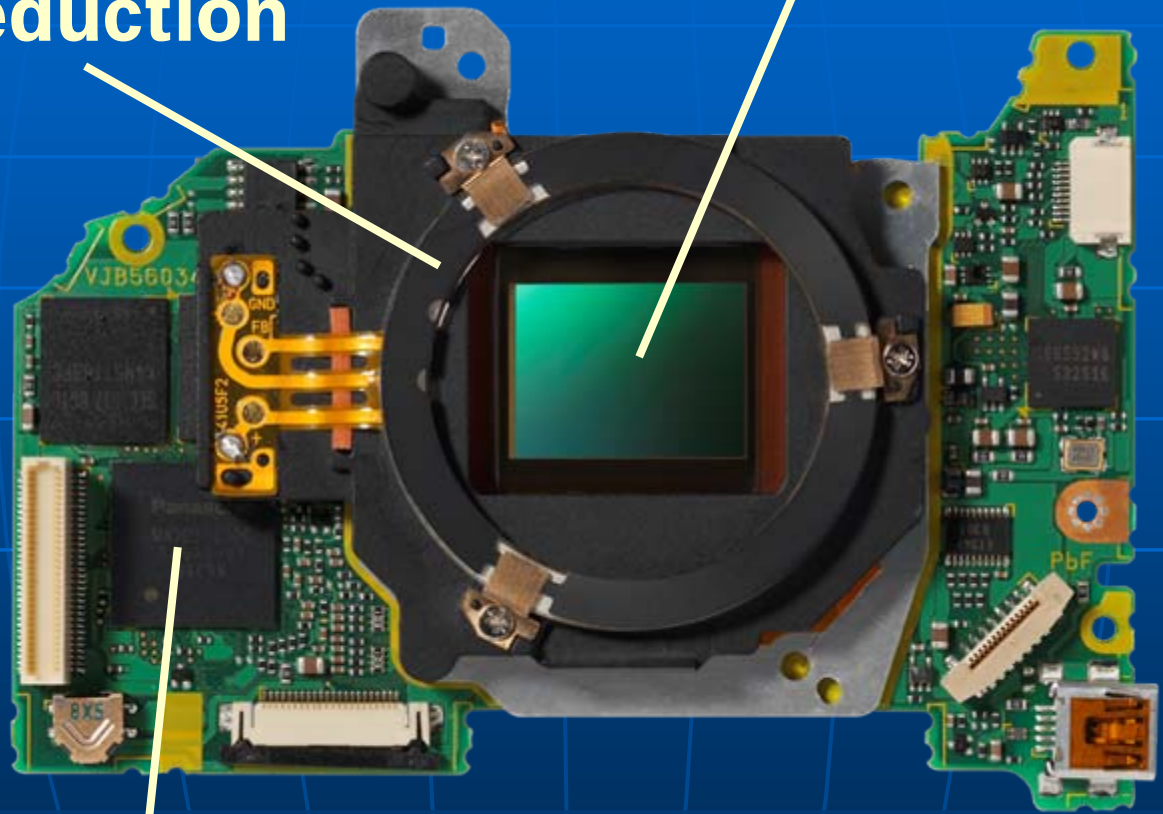
2. Superb picture quality that is realized with Venus Engine 3

Smooth gradation thanks to 14bit AD converter.

Film mode that expands the expression (We don’t say this at PMA.)

Live MOS Sensor

Supersonic Wave Filter
: Dust reduction

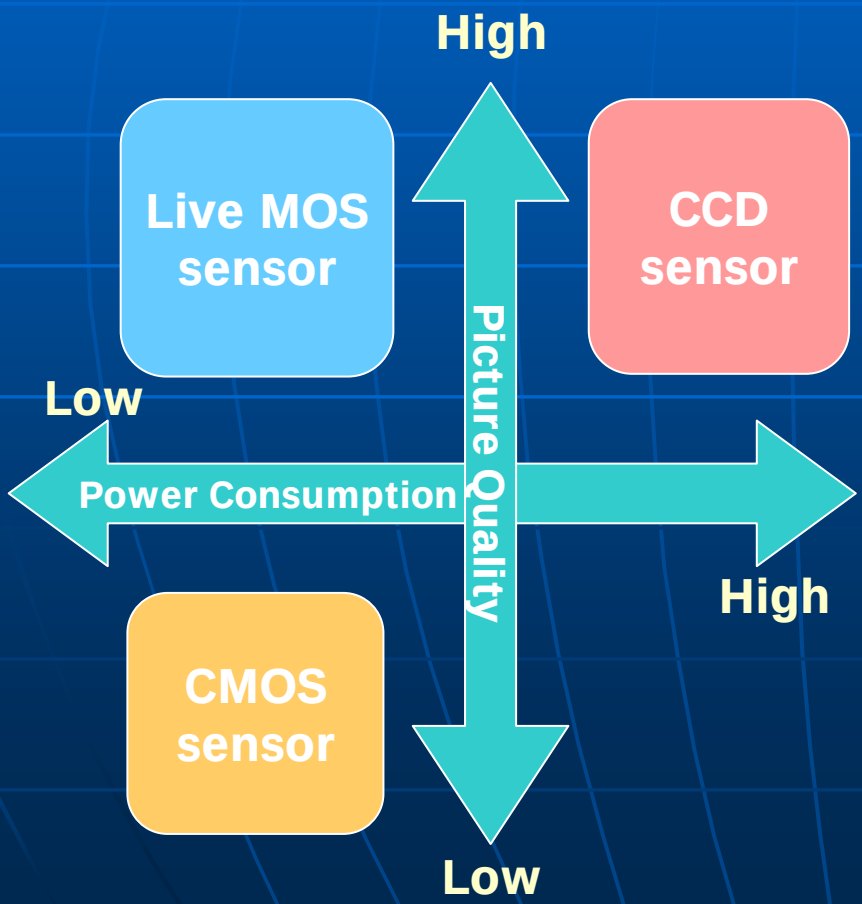


Venus Engine 3

Live MOS Sensor

First Fulltime-Live-View Digital SLR Image Sensor

Panasonic's v Maicovicon technology combines the high resolution and image quality of the CCD image sensor with the low power consumption of the CMOS image sensor.



1. New Structure and Pixel Technology
Enlarging the light-receiving area and achieve higher sensitivity

2. Low-noise Processing Technology
Suppressing graininess in the image

3. Circuit Technology
Low-voltage, low-power-consumption signal reading

Features of Live MOS sensor

The condition of comparison:
Sensor size is 4/3 and more, cell size is 5.0μm and more.
This is based on the estimation of Panasonic own technology.

		Live MOS	CCD	CMOS
Live View mode		Realized	Not realized	Not realized
Power consumption		A	B	A
Picture Quality	**Dark current**	A	B	A
	Sensitivity	A	AA	B
	Noise	A	A	B
	Smear	A	B	A
Complexity of the process		A	B	B
Ease of pixel miniaturization		A	A	B

Merit of Live Vie

- Can shoot with variety of styles
  (High angle / low angle shooting)
- Convenient when shooting with tripod
- Can confirm important information before pressing the button such as live histogram, white balance condition or composition guideline
- Can confirm the depth of filed of the picture without loosing enough brightness

Dust Reduction – supersonic wave filter

Why are Canon and Nikon so strong in D-SLR market?

- There are no special features on Canon or Nikon D-SLR. On the other hand, KM or Olympus have strong features such as CCD shift anti-shake or Dust reduction system.
- Canon and Nikon are so strong thanks to the overwhelming brand loyalty from professional photographers and prosumers.
- Traditional camera brands have many lens property in the market. The people who already have A brand lens tend to buy A brand D-SLR cam s.

If we don't have support from professional photographers and prosumers, we cannot succeed in D-SLR market. Even normal consumers who buy entry level D-SLR are greatly affected by those people. But we have to differentiate our L1 from the fields that Canon or Nikon are so strong such as the cameras for the professional work. L1 will be used for their hobby not job basically. We have to appeal different concept.

Marketing activities for success of D-SLR business

1. Strong tie-up with important photo dealers
2. Strong PR activities for photo magazines and website.
   ex.) Global press event at PMA
3. Patient work shop activities
   Work shop with professional photographers who use Leica.
4. Provide our products to professional photographers
   ex.) endorsements, work shop, internal training

A. Build up the D-SLR image of LUMIX
B. Expand the partnership with photo route dealers
C. Increase the fan of LUMIX

LUMIX

L1 Main Feature

STRICTLY CONFIDENTIAL

CCD	7.5 MEGA 4/3" Live MOS Sensor
Lens (KIT)	14-50mm (28-100mm)F2.8-3.5 O.I.S. □x□□□□ Leica D Vario-Elmarit Aperture control ring
EX ZOOM	○ □□□ 28□111mm□4.5x□□□M 28□153mm□5.5x□□
Engine	Venus 3
LCD	2.5", 207k pixel
Flash	GN= 11
Battery consumption	Target □more than 400 (CIPA) □w/o flash more than 1,000□
Live View	○ □EX ZOOM □Multi Aspect □D.ZOOM □Manual focus (center enlargement)
Motion picture	Nil
Film mode	Color □Characteristic of Color film (ex :Contrast higher, standard) simulated B/W□ Enhance variation of photo expression
AF	□ points
Others	□Dust reduction □Shutter speed bulb□Max 8 min□ □USB2.0 Hi Speed □□□□ External Flash□Interoperability□ □SDHC□FAT□□□ □Widen adjustable area of white balance □Vertical axis□horizontal axis□