

Open Source Examples of
Digital Asset Management
and
Photography Workflow

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BLU

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Agenda

*It's not often that I get to blend my 2 personal passions (OSS & Photography)
So thank you for your interest and time today!*

- Photography 101
 - From noob to professional in 20 minutes
 - Guaranteed or your money back!

- Definitions of:
 - Digital Asset Management?
 - Photography Workflow

- Stepping through the Workflow with Opensource Examples

- Some Batch Processing Examples with Digikam

- Some Detailed Post Processing Examples with Gimp

House Keeping

Who Am I

- **Christoph Doerbeck**
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- **Currently (9+ yrs)**
 - Principal Solutions Architect, Red Hat Inc.
- **Previously (15+ yrs)**
 - UNIX Admin
 - Ultrix, HP/UX, AIX, Linux, Solaris
 - Education, R&D, Retail, Financial
 - Instructor (corporate education)
- **BLU member/contributor 12+ yrs**
- **BS Computer Science Engineering**





My Disclaimer

Although I try pretty darn hard to research and present interesting material, I make no claim that what I report is entirely accurate. This document & presentation is intended for consumption by responsible individuals in the spirit of sharing knowledge about Linux and Open Source Software (OSS). If you wreck you system(s) and/or data based on materials discussed here, you cannot hold me, those I work for OR the bar tenders that serve me... responsible.



Background

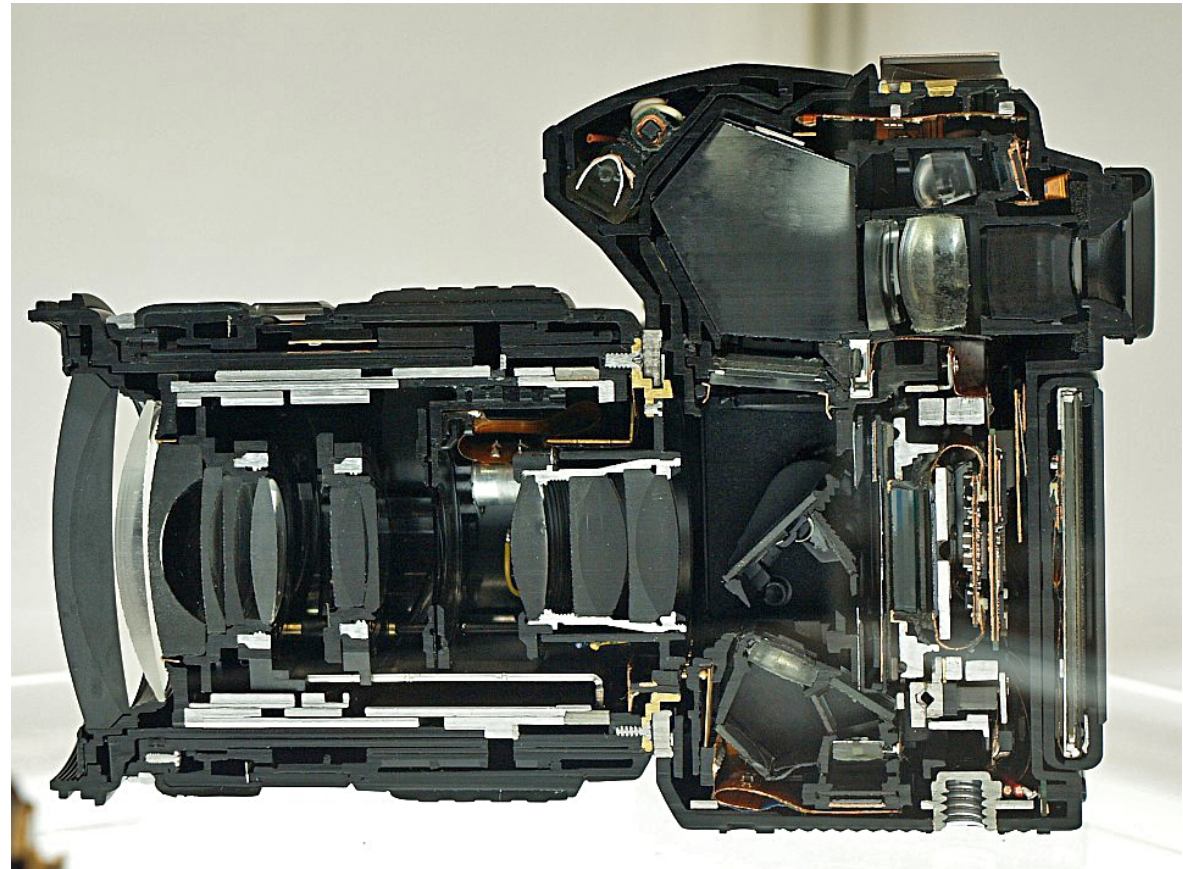
Cross Section of a Modern Camera

- **SLR Design**

- 1949
- Shared light path
- View finder sees exactly what film will capture

- **DSLR Design**

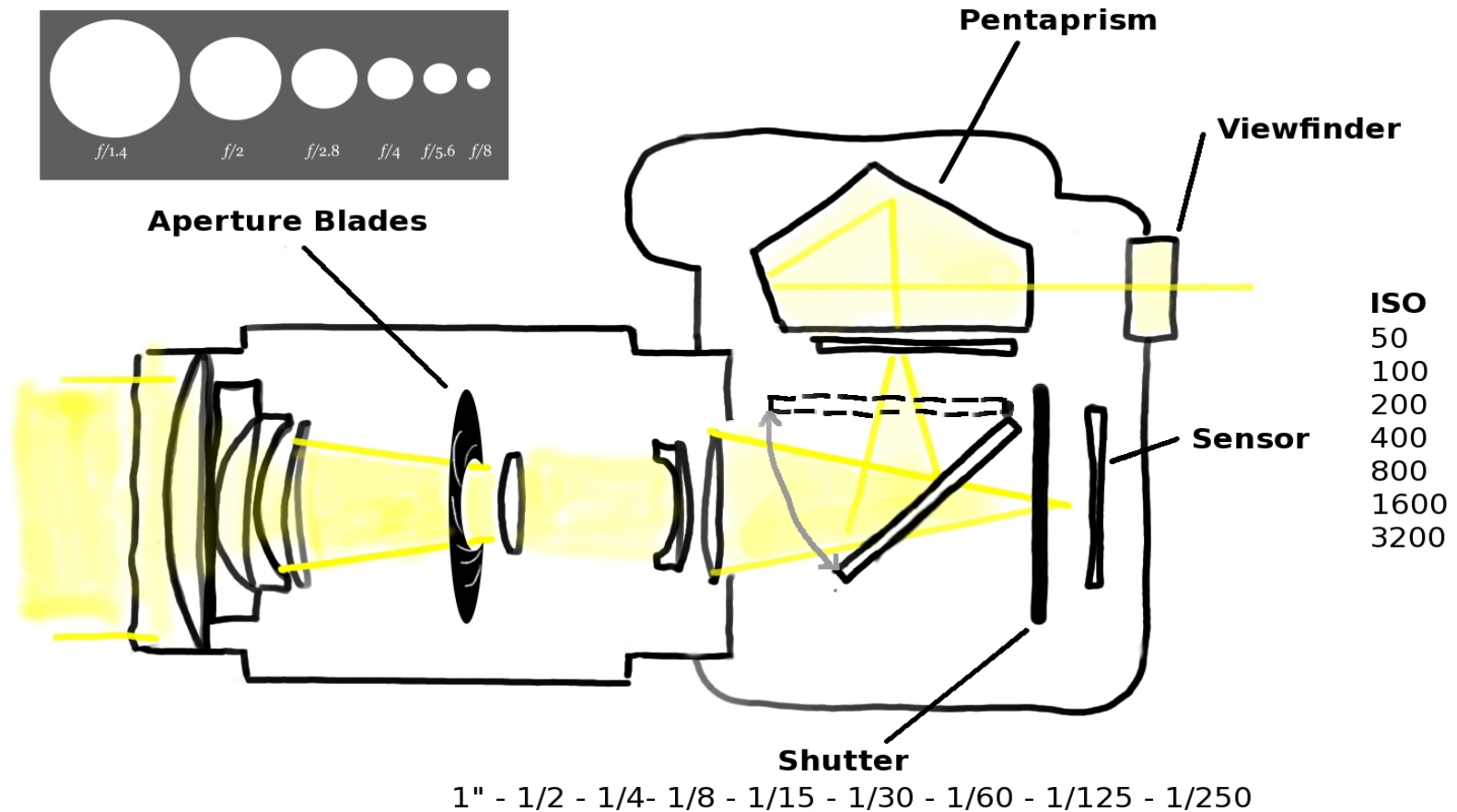
- 1991 by Kodak
- Replaced film with CCD
- Otherwise, pretty much the same design



- **Development of Digital imaging began circa 1969**

Source:https://en.wikipedia.org/wiki/Digital_single-lens_reflex_camera

Simplified View of a Modern Camera



Shutter Speeds, F-Stops, ISOs

Whole Stops

Net Effect	Shutter Speeds	F-Stops	ISO	Meter
	1 sec	1.4		---
More Light	1/2	2.0	3200	---
.	1/4	2.8	1600	---
.	1/8	4.0	800	---
.	1/15	5.6	400	←
.	1/30	8	200	---
.	1/60	11	100	---
.	1/125	16	50	---
.	1/250	22		---
Less Light	1/500	32		---
	1/1000			---



The Science of Photography

- **Photography is the science of capturing light**
 - If the sensor is like a sponge, it needs X amount of light (water) to soak
 - Too little X and image is under exposed
 - Too much X and image is over exposed (blown out)
 - Modern Cameras have a built in meter which measures reflected light
 - If you want 100% accuracy, get a meter and measure the "incident light"
- **We judge a capture by it's "Image Quality" (IQ)**
 - sharpness
 - dynamic range (DR) = color depth, color accuracy, contrast
 - noise
 - other lens induced factors: CA, Glare, Distortion, Bokeh, etc...



The Art of Photography

- **Photography is the art of capturing and evoking emotion**
 - Composition: Geometry/Lines, Framing, Mergers
 - Perspective
 - Lighting
 - Negative Space
 - Tension
 - Motion and Panning
 - Specialty Cameras, Lenses & Tools
 - ex: CZ, Leica, Rolleiflex, Hasselblad, Large Format, Film vs. Digital
- **We judge a capture by ????**
 - some things work, some don't
 - it's up for interpretation, it's art after all...



Pro's & Con's of the Big 3

For the purposes of today, I'm calling A/S/ISO the Big 3

- **I'm not trying to be absolute, but generally speaking:**
 - Aperture
 - Open = decreased DOF (depth of field / blurry background)
 - Closed = increased DOF
 - *Ex: portraits, nice blurry/soft background is pleasant. Which one do you pick?*
 - Shutter Speed
 - Slow = increased DR, decreased noise, blurry results from shake or motion.
 - Fast = decreased DR, increased noise, less blur from camera shake
 - *Ex: sports, you want moving players to look sharp. Which one do you pick?*
 - ISO
 - Slow = needs more light, increased IQ
 - Fast = needs less light, reduced IQ
 - *Ex: museum, no flash allowed. Which one do you pick?*



Last Thoughts

- **If you select Auto mode:**
 - Camera is trying to balance the Big 3 all by itself
- **If you select an Assisted Auto mode:**
 - Portrait mode: open aperture, face detection, focus on eye's, subject lock
 - Landscape mode: closed aperture, most focus points, HDR?
- **If you put the camera in a "Priority Mode"**
 - You pick 1 of the Big 3, camera counter balances with the other 2
- **What about full Manual Mode?**
 - You do all 3 settings, period. You get EXACTLY what you command.
- **Auto Focus is not perfect. What are you aiming at?**
- **Other random thoughts**
 - White Balance, RAW vs. JPEG, AEL, Exposure Compensation +/-



Digital Asset Management

- **DAM** - *management tasks and decisions surrounding the ingestion, annotation, cataloguing, storage, retrieval and distribution of digital assets* (http://en.wikipedia.org/wiki/Digital_asset_management)
 - photos, music, videos, podcasts, etc...
- DigiKAM does most of this very well
 - <http://www.digikam.org/>
 - Similar to industry tools like Lightroom
- Darktable
 - <http://www.darktable.org/>
 - another OSS workflow tool
- Plenty of live examples of DigiKam coming up...



Photography Workflow

- **General Consensus is:**
 - (1) Camera Setup and Image Capture
 - (2) Image off-load and storage
 - (3) Digital Asset Management
 - Organizing, sorting, tagging images
 - Post-processing images
 - Exporting images
 - (4) Backing up images
 - (5) Printing or publishing images to the web



1. Camera Setup and Image Capture

- **We have mostly covered this topic during the background**
- **Quick Discussion on RAW**
 - Vendor Proprietary Formats
 - Adobe reverse engineered RAW formats and enable conversion to open standard
 - Adobe Lightroom was a game changing product
 - Sony ARW format requires newer flavors of Linux (I think!)
 - Shooting in RAW gives you 2 F-Stops of freedom to correct things in post
- **Quick Discussion on RAW**
 - Color space choices
 - Noise Reduction
 - HDR
 - Plenty more options to consider



2. Image off-load and storage

- **Rapid Photo Downloader**
 - Customize file & folder names with XIF fields
 - Automatic Backups
 - It's FAST!
- **DigiKam**
 - no personal experience
 - similar functionality
 - renaming rules not as robust?

3. Digital Asset Management Tasks

- All DigiKam for me at this point
- Let's go live and see examples of:
 - Organization
 - Sorting
 - Tagging
 - Post Processing
 - Internally with Editor, LightTable, and Batch Queue
 - Externally with Gimp
 - Exporting
 - ???





4. Asset Back Ups

- **My Current Architecture**

- Server in basement with 3x 3TB drives, LVM RAID-1 (mirror)
- Full photo pool (2002-2015) in single namespace/filesystem
- Laptop has photos from 2015
- periodic rsync
- yes I've lost photos be being negligent

- **Future Architecture**

- Server in basement with 3x 3TB drives with Gluster
- Full photo pool in single namespace/filesystem
- Laptop retains photos of current year
- Photos immediately stored/backed-up to Gluster with OwnCloud
- Gluster replicates to cloud (ex: AWS)

Stepping Through a Photography Workflow

Final Words

Thank You!