

Open source software for the keen photographer: file formats

Ramón Casero Cañas

workflow

# Open source software for the keen photographer: file formats

Ramón Casero Cañas

OSS Watch

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Raw format

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Digital photography using open source software

- Gimp, all a photographer needs?
- Digital photos, worse results using open source software?
- GNU/Linux Ubuntu Edgy + Gnome desktop



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- Digital photography using open source software
- Gimp, all a photographer needs?
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Digital photography using open source software

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## Digital workflow

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### Digital workflow

From camera to computer

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Film or print Digital camera Scanner Memory card JPEG, TIFF, Raw file TIFF file Photo manager Image editor Storage device Internet Printing



## From camera to computer

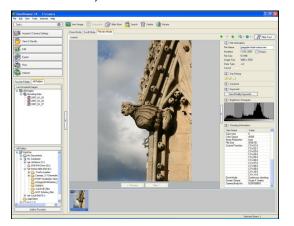
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From camera to computer

 Proprietary software from camera manufacturer (Canon ZoomBrowser EX)





# From camera to computer (2/2)

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 Memory cards: Memory Stick (MS), CompactFlash (CF), Secure Digital (SD), or SmartMedia

- Most cameras supported in Linux at OS level, or with libgphoto2 and/or libptp2
  - Standard connections: USB, IEEE 1394 (FireWire)
  - Standard communication protocols: Mass Storage, Picture Transfer Protocol (PTP)
- Hardware connectors:
  - Dedicated cable (non-standard)
  - Card reader (standard)



### File formats

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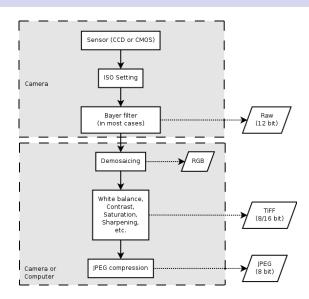
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JPEG

most popular in the Internet

open source implementation (IJG)

lossy compression: quality/size

TIFF

lossless format

private tags, non-standard

Raw ("digital negatives")

lossless format

based on TIFF

serious compatibility concerns

Image Quality	File type	File size	Number of shots in a 512M memory card
Basic	JPEG	527K	780
Normal	JPEG	1.2M	400
Fine	JPEG	2.8M	202
Hi	TIFF	15M	33
Raw	NEF	7.9M	62



## File formats (3/5)

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## File formats (4/5)

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### File formats

photographer: Ramón Casero Cañas workflow





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## File formats (5/5)

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Hi TIFF Raw NEF

**Image Quality** 

15M 7.9M

File size

Number of shots in a 512M memory card 33 62

File type





### Raw format

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"Digital negative"

- Decoding and processing necessary
- Maximum quality (e.g. banding in JPEG)
- Maximum flexibility and customization (e.g. exposition sharpening)
- Offline processing (better computers and algorithms)
- 2006 RAW survey: 77% use raw all or most of the time



### Raw format

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- Yes (download and open files)
- ... but limitations and legal issues (e.g. encryption of metadata): The raw problem



## Raw format (2/2)

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photographer:

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### Software solutions

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 Memory card automatically mounted in e.g. /media/usbdisk-1/

Command line

\$ cp /media/usbdisk-1/DCIM/100NIKON/\* ~/photos/



## Software solutions (2/8)

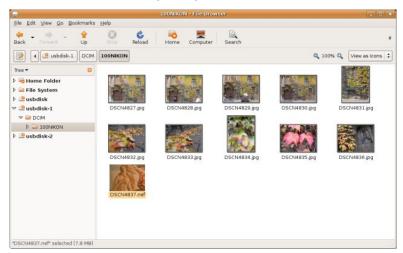
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Software solutions

Nautilus file manager + gnome-raw-thumbnailer





## Software solutions (3/8)

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dcraw

\$ dcraw -a photo.nef

... convert to PPM

\$ dcraw -a -T photo1.nef

... convert to TIFF

\$ dcraw -i -v photo1.nef

... display (limited) metadata

Further options

Extract the camera-generated thumbnail

 Use different interpolation methods for speed/quality trade off

Apply noise reduction while preserving edges.

Change gamma values

Set black point and highlights

Change colour balance

Use ICC profiles





## Software solutions (4/8)

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Canon ZoomBrowser EX vs dcraw







## Software solutions (5/8)

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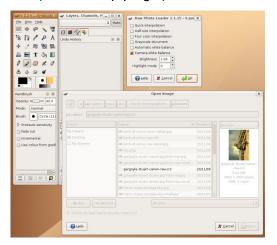
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rawphoto (dcraw Gimp plugin)





## Software solutions (6/8)

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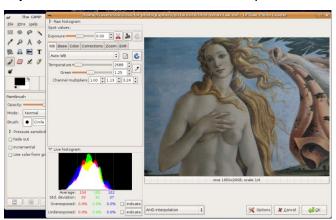
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Software solutions

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UFRaw (Gimp plugin)

adjust white balance, tone curves or exposure





# Software solutions (7/8)

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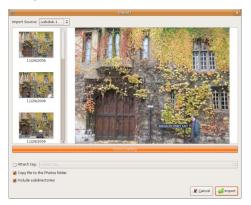
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• F-Spot (personal photo management application)

 tag, copy, move, edit, catalogue, delete or search by tag or date range





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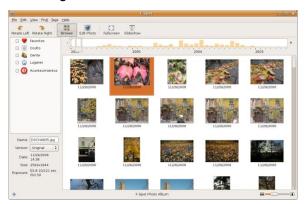
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• F-Spot (personal photo management application)

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## Batch processing

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dcraw \$ dcraw -a \*



## Batch processing (2/3)

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UFRaw

\$ ufraw-batch -exposure=3.0 \*.nef

... options in the command line

\$ ufraw-batch -conf=photo1.ufraw \*.nef

... using an ID file



## Batch processing (3/3)

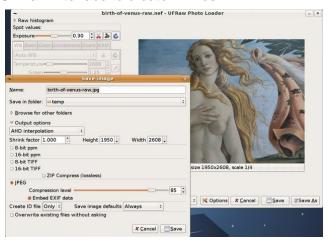
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UFRaw interface to create ID files.





### Conclusions

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Cradite

JPEG, TIFF, raw files from camera to computer... OK

- Support for raw files... OK, some concerns
- Good results with open source software... OK
- Batch mode... OK



## Credits

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Credits

- Gargoyle picture by S. Yeates
- Heart icon by Sicabol (public domain)
- Scanner icon by Machovka from the Open Clip Art Library
- Wilber icon by T. Kuosmanen
- Other icons by S. Garrity, L. Calamandrei, R. Collier, R. Dawes, A. Nilsson, T. Kuosmanen, G. LeSage and J. Steiner from the Human and Tango Icon Themes for Gnome (Creative Commons Legal Code Attribution-ShareAlike 2.5)
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