eContentPlus

MILE
METADATA IMAGE LIBRARY EXPLOITATION

New Approaches for Collecting Metadata

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The Professional Photographer

- After capturing a picture the **professional photographer** can either edit data on the camera directly or/and edit the picture after downloading it on a computer.
- The following steps are: creating back-ups, new editing (resize, crop, etc.) and sharing or delivering and printing.
- Typical PP is not an expert of tagging nor of metadata / categorization but no one better than the PP can annotate the pictures at an initial stage

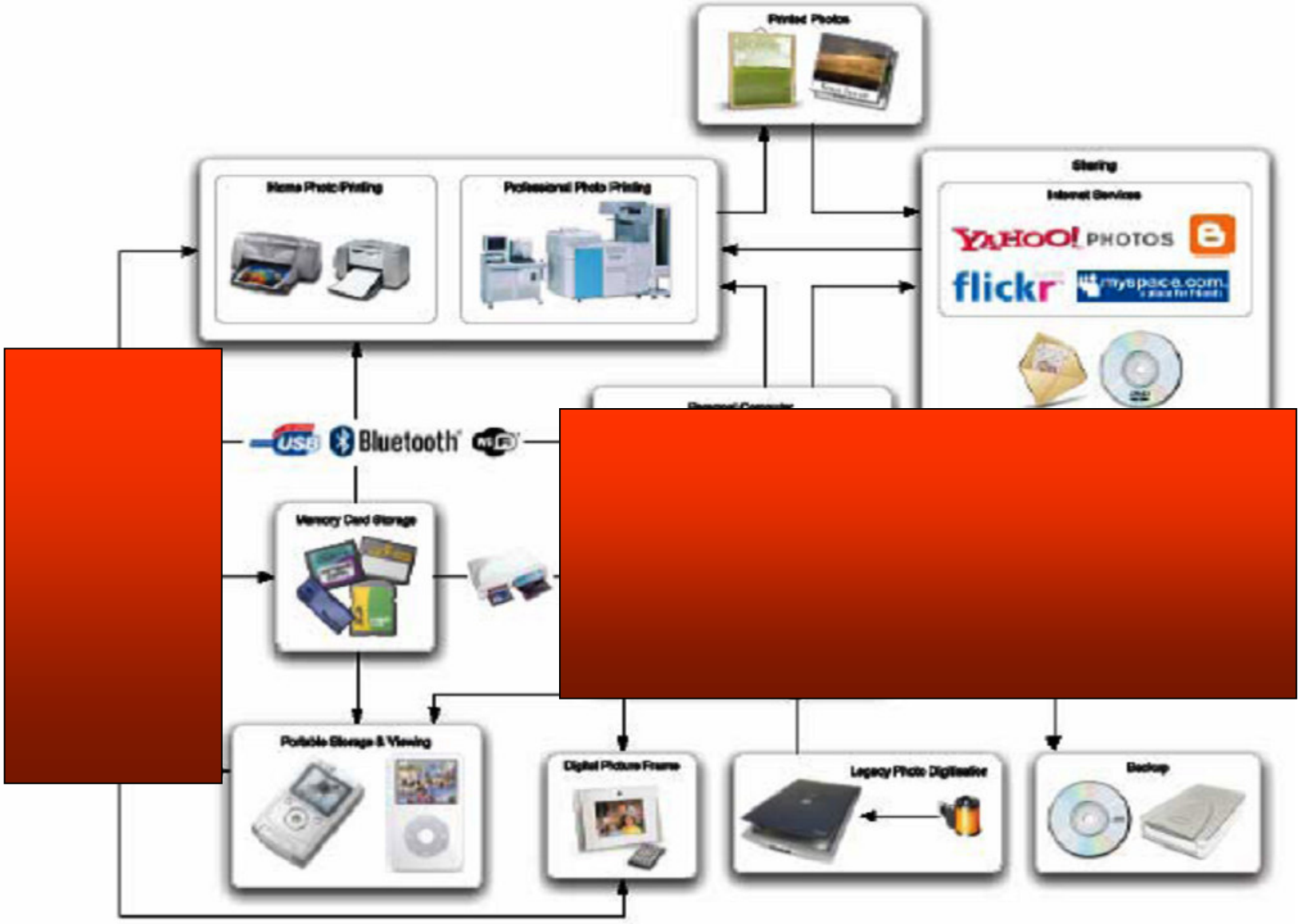
- Housekeeping: the disorder is permanently growing and the costs too!

The needs of the PP

- Automated tools for:
  - Descriptive Annotating and process annotating
  - Organizing, and categorizing
  - Searching,
  - Delivering,
  - Protecting copyright,
  - Managing multiple copies
  - Synchronizing and backup
- Customization functionalities (each photographer has different personal needs)
- Storage of large volume of images (MS,HP)
- Record ALL
- Be Simple and intuitive

A professional interview

- **MS ProPhoto Summit, Seattle (WA) 2007**
  - **Architecture PP**
  - **photos stored in folders (date-place-architect) and backed up in a home-networked SAN (10 TB)**
  - **Average number photos per week: 7.000**
  - **Sometimes uses video clips to record the palaces positions and space relations**
  - **Takes more than one shot (brackets)**
  - **Edits pictures with Adobe Photoshop CS but views them with ACDSee**
  - **Uses portable storage devices (HD)**
  - **Fundamental time stamp correctness: check first**
  - **Does not print any of his photos: only digital delivery**
  - **Home monitor is calibrated using professional services and devices**
  - **Looks at photos very rarely after delivering the selected pictures, the current volume of pictures he has make the navigation time consuming**
  - **Time and space are fundamental information to be stored**
  - **Only labels the storage folder (uses Digimarc to put his watermark through Adobe Photoshop)**
  - **Uses JPEG file compression (93%)**
  - **Is interested to HD-Photo and JPEG2000**



The digital photography landscape (The journey of a Digital Photograph – 2006- Baxevains, MSc dissemination, UCL)

Current annotation approaches

- Manual annotations
  - expert cataloguing – high quality but expensive
  - collaborative annotation (social tagging) – cheap but low quality, the validation process is expensive
- Semi-Automated tagging
  - The content is initially analysed by some tool
    - Content analysis tools (CBIR; PD; FD; KAA; etc.)
    - Combination of semantic and visual similarity
    - Statistical tools
    - timestamp
  - And then, the annotations are 'virally' migrated to the collections
  - Some photo management sw: Shoebox; PhotoTOC/Autoalbum; Photomesa; PhotoFile; MS Windows FileManager; Adobe Photoshop Elements; Sony MPB; iPhoto; Flickr; etc.

The New goal is to allow a photographer to create rich picture annotations with minimum hand writing.

…Talk to your camera, it will annotate and prepare pictures to be organized for you!

New Approaches

- **Automatic metadata generation with no effort by the photographer (ex-after)**
  - **Tripod (geographic metadata collection)**
  - **Voce (voice metadata recording)**
- **Brain interaction with a digital picture archive (ex-before)**
- **Hybrid solutions (current semi-automated plus new approaches)**

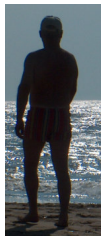
Automatic metadata generation

- Alinari has uses recording devices to collect as much metadata on the place (geographical coordinates to be then synchronized with the pictures captured, comments by the photographer, etc.).

- Synchronization issues need to be solved

Tripod- Geographic metadata collection

- GPS device records global position (15s)
- Internal memory stores data (32MB)
- Accuracy within 10-15mt
- Uses single ‘AA’ battery (lasts approx. 14 hours)
- Generates NMEA format
- Image tracking sw with basic editing functionality (e.g. naming the logs and merging logs)
- Adds locational information(Long, Lat and Elevation) to the EXIF data of photos
- Google Map



Voce - Comments & annotations through recording

- Photographer comments are collected by recording.
- The recording can be performed with voice recorder or video recorders
- Finally video2storyboard and voice2text tools are applied

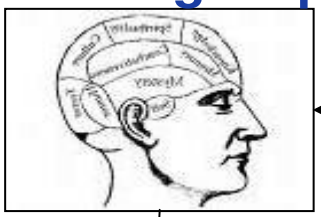
…Do most of your annotations on the place


Landscape Smartphone QVGA - WM 5.0
File Flash Help
aceMedia - View ACE
FIT_284
Show metadata
Back
Landscape Smartphone QVGA - WM 5.0
File Flash Help
aceMedia - View ACE (frame 3/10)
FIT_321
1 Next frame
2 Previous frame
3 Back
Show metadata
Menu
Landscape Smartphone QVGA - WM 5.0
File Flash Help
aceMedia - View ACE
FIT_284
Date: 2005-05-23
Author: Barbara
Persons: ---
Location: Deia
Notes: Coast near Deia
Concepts: ---
Show ACE
Back

Other researches

- Other researches could be used in particular application sectors and in a long horizon term:
  - Brain interaction with a digital picture archive

Brain interaction with a digital picture archive



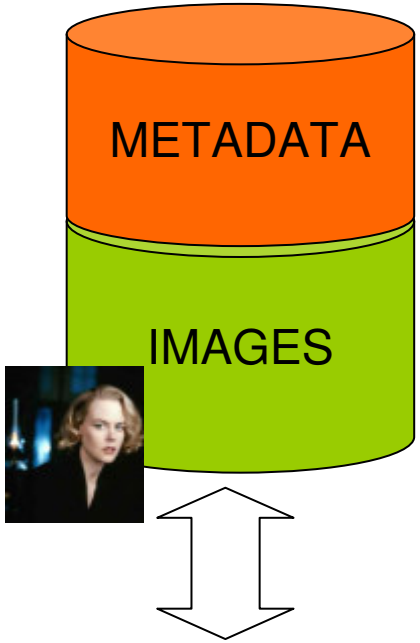
Brain activity capturing

Signal processing

Detection & Transform, coding

Interaction / interpretation

Visualization



Connector to Alinari's DB ('Select', etc.) + interaction (move, group, etc.)

Annotate and metadata generation

Some open issues

- Synchronization; camera orientation (azimuth, pitch, roll)
- The metadata generated sometimes require more memory storage than the pictures taken
- Some metadata can be injected in the pictures (in particular in the EXIF), some cannot.
- Copyright and security are not guaranteed
- New standards are needed (HD-Photo/JPEG2000, etc.)
- Interoperability (the ability of multiple systems with different hardware and software platforms, data structures, and interfaces to exchange data with minimal loss of content and functionality, [NISO, 2004])

Thanks for listening!

http://eu.alinari.it