



JPEG 2000 for still picture collection and management



MIGRATOR 2000 : JPEG 2000 features for all digital imaging domains

- **Personal collection** : consumer imaging, digital cameras, low cost printers, reduced documentation, lots of existing images to scan or capture.
- **Professional imaging** : large quantities, variety of quality and contents, all sizes, specific and extensive documentary fields, confidentiality issues, high quality printing, custom adaptations.
- **Commercial image banks** : multiresolution images, interoperability, copyright management, watermarking for content protection, error resilience for noisy environment

MIGRATOR 2000 will develop, demonstrate and disseminate tools for the JPEG 2000 digital imaging standard. The project focuses on image archiving, image delivery and medical applications, implementing content description and IPR protection including watermarking tools.

- full JPEG 2000 compliant file production and storage tools and system.
- digitisation and import of existing digital images converted to a single standard format
- documentation and import of existing textual databases as metadata included in the image files
- access to region of interest pre-determined or user selected for details displayed in higher resolution
- scalability in resolution and quality from lossy to lossless coding, for fast browsing purposes and economic transfer on line
- IPR protection through metadata and watermarking, in compliance with the WIPO treaty on digital objects copyrights

MIGRATOR 2000 : Migration of Image Generation and Registration Authoring Tools to the Open Resources of JPEG 2000

MIGRATOR 2000 : Modular Organisation

- Image acquisition and import manipulation, ROI selection, colour adjustment

Image

- Textual add-on and import from databases, non visual description

Text

- Identification, Registration and License Plate delivery (ISO 10918-3 and -4 standards); IPR database creation

Registration
Authority

- Content protection (Watermarking) using the LP and possible multiple watermarks

Watermarking

- Compression & image file creation scalability selection

Compression

- Error resilience

Error
resilience

- Storage and image bank

File

Image bank

- Image viewer : scalability, dynamic ROI

Image

- Metadata viewer

Metadata

- Watermarking monitoring

Monitoring

- On-line access

On line

All modules will be available to developers (these are not open sources files) at the end of the project, while at the same time an integration of all the modules into a general purpose workstation will be demonstrated and used by the partners. The project includes a phase of evaluation where all the modules will be tested and adjusted to the market requirements (exclude the watermark module). Operational conditions will be set for all types of applications and a large user group will give their feed-back on the result.



MIGRATOR 2000 : **Addressing a variety of JPEG 2000 applications**

The market place

Three main domains in digital imaging

▪ **Personal imaging**

- Collection using simple tools.
- Classification with reduced description criteria.
- Long term storage.
- Retrieval process based on limited technical knowledge.
- Printout and export to shared image banks on line.
- Email attachment dissemination.

▪ **Professional imaging**

- Medical : Static Region of Interest, Lossless encoding and compression, confidentiality and high level of accuracy in documentation.
- Photo archive : reference images, historical documents, digital transfers of fragile contents, versatile metadata types.
- Press agency : real time gathering and distribution, instant protection through remote registration, short term storage.
- Satellite : unlimited image size, multiple components.
- Industrial : different image types, viewing conditions with dynamic Region of Interest for detail access, domain oriented cataloguing.
- Scientific : variable documentation and image structure, multiple source type and adaptive documentation.
- Cultural : high quality, all kinds of documentation, high level of protection, specific distribution.
- Education : diversity of contents, fair use status, easy access through multilingual, multicriteria documentation.

▪ **Commercial imaging : images as goods for sale**

- Intellectual Property Right (IPR) protection (labelling and watermarking), with adapted business model.
- IPR database and unique identifier delivered and managed by Trusted Third Parties (TTP).
- Access control for confidentiality and/or pay-per-view systems.
- On-line low resolution promotion, waiting for larger bandwidth for content distribution and high resolution delivery.
- IPR metadata structure ready for ECMS operation (Electronic Copyright Management Systems)



MIGRATOR 2000 : **a set of complementary skills and know-how**

NETIMAGE	Image collection and registration. http://perso.wanadoo.fr/netimage ; contact : jean.barda@wanadoo.fr
ADETTI	Image applications. http://adetti.iscte.pt ; contact : rui.costa@adetti.iscte.pt
UCL	Image processing and coding, medical imaging and watermarking. http://www.tele.ucl.ac.be ; contact : macq@tele.ucl.ac.be
FRATELLI ALINARI	Photo archive creation and management. http://www.alinari.com ; contact : andrea@alinari.it
ELYSIUM	Data driven web imaging solutions http://www.elysium.ltd.uk ; contact : richard@elysium.ltd.uk
SACD	Intellectual Property Rights protection by Identification and Registration. http://www.sacd.fr ; contact : clauderollin@sacd.fr
Thomson CSF Communications	Image coding, secured transmissions and watermarking. http://www.tcc.thomson-csf.com ; contact : frederic.chartier@tcc.thomson-csf.com

NETIMAGE
Normes ET Technologies
pour l'IMAGE



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COMMUNICATIONS

External partners associated to the project :

- University of California, Berkeley : the MIP project on UCB campus.
- University of British Columbia, Vancouver : Leader of JPEG 2000, part V.
- Ecole Polytechnique Fédérale de Lausanne : Signal processing laboratory
- Ecole Nationale Supérieure des Télécommunications : Image laboratory

Project Website : <http://www.migrator2000.org>