

Digital photography as a social fabric

Proposals for new TLC service concepts, business models and revenue opportunities

| GIUSEPPE PIERSANTELLI | Ecosystems | Digital Photography



Digital photography

Agenda

- ▶ Digital Photography as a social fabric: context and objectives
- ▶ Project activities in a nutshell
- ▶ Project activities in depth
- ▶ Technology trends

Digital photography

Digital Photography as a Social Fabric: **context** and objectives

Digital photography so far

- ▶ Digital photography enables people to turn their memories, vacations and experiences in **bits**, to organize them, and eventually, to **share** them with other users connected to the Internet

Images and communication trends

- ▶ While digital photography is constantly increasing in popularity, thanks to low priced equipment, camera phone penetration, easiness of use, sharing and manipulating capabilities, new generations of digital photography related services are becoming relevant to **TLC business** and technologies
 - ▶ Social networks, targeted advertising, pervasive communities, online printing, and location based services are some of the emerging businesses

Memories to keep: the biz of printing

- ▶ The growing popularity of digital cameras is increasing the number of digital photos shot and stored. This, in turn, translates into more digital photos printed at various locations such as the home, retail locations, and online photo-printing services.

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Digital Photography as a Social Fabric: context and **objectives**

Summary

- ▶ *Digital Photography as a Social Fabric* is one of the cutting edge projects managed by Telecom Italia **Future Centre**.

Goal

- ▶ Exploring and exploiting the digital photography **ecosystem** – Creating and consolidating a **professional network** of technological partners – Finding correlations and new **business opportunities** for Telecom Italia

Description

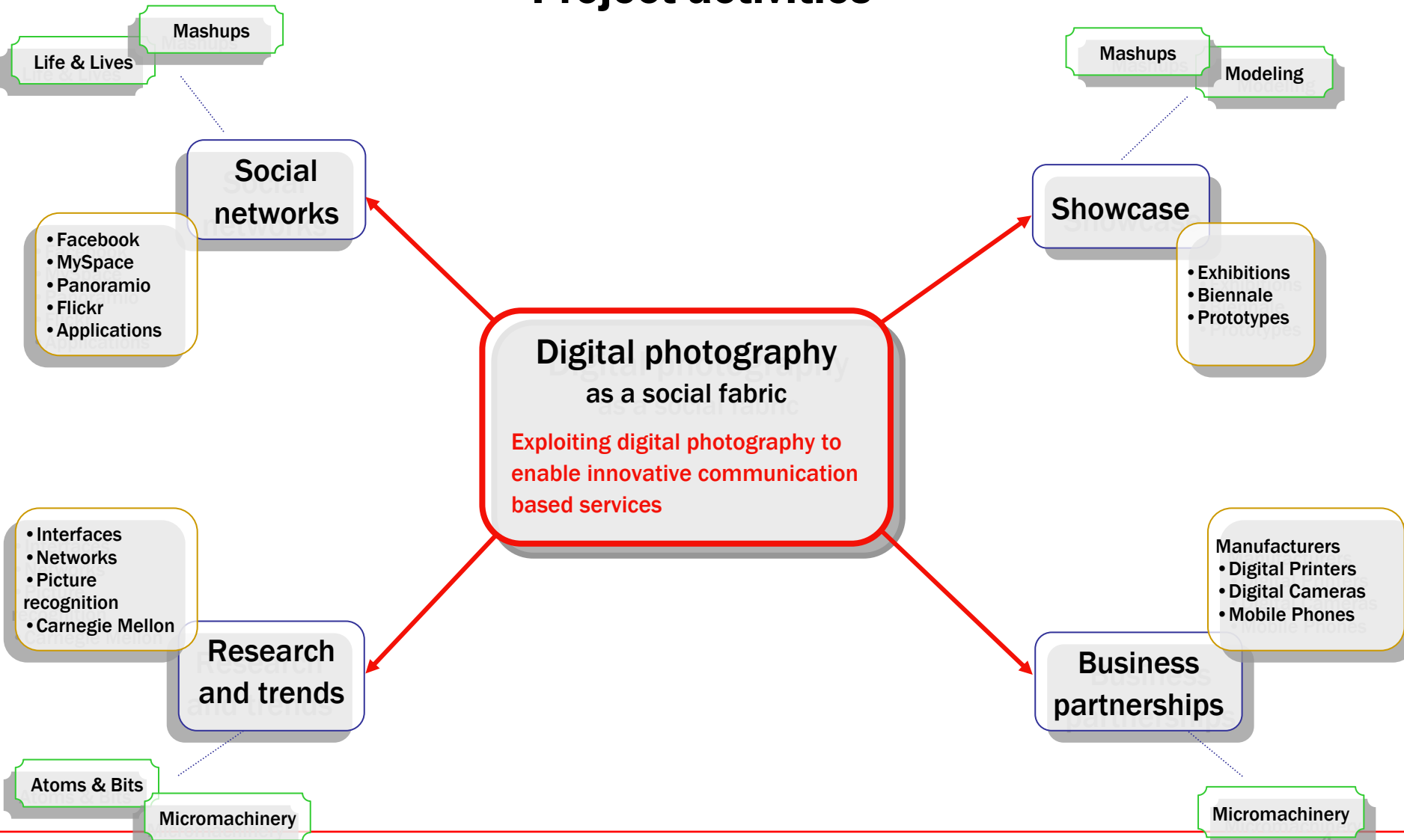
- ▶ What is the ecosystem and what role can telecommunications play in it? What can telecommunications platforms do to attract players and share services and information? Where is the value and how can it be shared among the various players? What privacy and ownership issues may arise and how can they be addressed? How can pictures be shared among DBs and terminals and be connected one with another?

Tasks and activities

- ▶ The main idea of the project is to conceive a **service concept** which will enable broadband and mobile users to **share** and **print** their pictures. Additionally, this service concept should be able to create a significant revenue opportunity for Telecom Italia and its potential partners.

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Project activities



Digital photography

Project activities (details)

Business partnerships

We are evaluating to entertain business relationships with the digital imaging industry's leading players:

- ▶ Color printers manufacturers
- ▶ On line printing service providers
- ▶ Mobile phone manufacturers
- ▶ Digital camera manufacturers

Research and trends

Additionally, cutting edge digital picture technologies are being evaluated to provide new business models:

- ▶ Barcode applications and enhancements
- ▶ Advanced picture recognition: pattern + text (OCR) to retrieve content from the web
- ▶ Location based picture recognition (Carnegie Mellon)
- ▶ Digital photography industry highlights: face recognition, GPS, interfaces
- ▶ 4k and ultra high definition: entertainment, business and scientific applications

Social networks

Digital picture sharing and tagging is one of the reasons for the increasing popularity of social networks:

- ▶ Panoramio, Flickr, Picasa: geotag enabled services (advertising, context aware services and information)
- ▶ Facebook and MySpace: applications and communication services
- ▶ Matrix: add photo effects to web communities for viral marketing campaigns

Showcase

Future Centre facilities in Venice will be a great location for technological showcases

- ▶ Barcode based video guide service (delivered) for exhibitions
- ▶ Demo room

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Research and trends: 2d barcodes

- ▶ Consolidated technology to access the web by scanning a code with a mobile phone equipped with a camera, a decoding client and a wireless connection (GPRS, UMTS...)
- ▶ Popular formats: QRCode, DataMatrix, EzCode
- ▶ Main applications: advertising, content download, mobile video streaming, polls etc. on newspapers, magazines, product labels, advertising signs, video content
- ▶ Where: Mass adoption in Japan, growing popularity in Spain and France, one service available in Italy (Gazza&Play-RCS Group, QRCode)
- ▶ Advantages: allow users to easily access a web page or content by scanning a barcode, without inserting URL; provide relevant information and description on a specific item/product; clients available on many phones
- ▶ Disadvantages: require tricky interaction; push mode has some limitations; still a niche service in Europe
- ▶ Future evolutions: patterns and OCR may replace barcodes as a means to access the Internet from a mobile phone.

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Research and trends: advanced picture recognition

▶ 2d barcodes are an easy, convenient way to recognize and associate information to objects and to access the web from a mobile phone. Nevertheless, more sophisticated and reliable object recognition technologies are being studied and evaluated at Future Centre with particular reference to:

- ▶ Geographic information and location based services
- ▶ Advanced EXIF management
- ▶ Face recognition

▶ IM2GPS: estimating geographic information from a single image

- ▶ <http://graphics.cs.cmu.edu/projects/im2gps/index.html>

▶ An Advance In Image Recognition Software

- ▶ <http://tech.slashdot.org/tech/08/05/24/2025210.shtml>

▶ Face Group

- ▶ http://www.ri.cmu.edu/labs/lab_51.html

▶ Quantum picture

- ▶ <http://www.quantumpicture.com/>

Digital photography

Research and trends: connectivity interfaces

- ▶ Presently, digital cameras provide high quality pictures but are not connected to fixed nor wireless broadband networks – files are stored locally with USB cables or adapters and then uploaded to the web with a computer
- ▶ Mobile phones feature network capabilities – most of them hi-speed connection like UMTS, HSDPA and Wi-Fi – but the picture quality provided is intended for web sharing not for large prints.
- ▶ In the next months, we'll be facing new technological changes and improvements to directly connect digital cameras to the network
 - ▶ Wi-Fi enabled cameras
 - ▶ Eye-Fi Secure Digital cards
 - ▶ Increasing convergence of good quality digital cameras and mobile phones
 - ▶ Additionally, increasingly reliable geographical information will be natively added to pictures' EXIF thanks to a combination of GPS and mobile network data.

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Social networks: FaceBook apps and more

- ▶ Future Centre is collaborating with Tilab to explore TLC based applications and microservices for social networks and communities with particular reference to **FaceBook**. Viral and word-of-mouth marketing can make communication services very popular among FaceBook members. The collaboration between Telecom Italia and developer communities can make it easy and cost effective to deploy TLC microservices based on widgets and mash up technology
- ▶ Future Centre is collaborating with Matrix to explore advanced web marketing tools based on photo galleries and communities by adding
- ▶ Advanced location based services are being evaluating. In particular, the project is analyzing the potential of **digital pictures**' geotagging and geographical information to create and deliver next generation LBS like, e.g., context aware information, targeted advertising, social network features, which could be facilitated both by the use of GPS information and image recognition technologies.

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Showcase: demonstrations and events at Future Centre

- ▶ September-October 2008: 2d barcode-based video guide service on iPhone has been deployed for an exhibition (Vapore d'acqua, pictures by Riccardo Perale) held at San Salvador facilities; exhibition's visitors are given an iPhone - equipped with ScanLife client - to access web pages, pictures and video content by scanning 2d barcodes located near the artworks.
- ▶ Content are optimized, managed and published using a CMS developed in Telecom Italia Lab (Turin).
- ▶ Barcode or similar technologies will be used to deliver video guide services for the Mostra Biennale di Venezia

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Technology trends

- ▶ While digital photo printing and sharing services are well consolidated, new classes of technological enablers may boost innovative and lucrative service concepts
 - ▶ **Tags:** Adding metadata (i.e. water, horses, holidays, Paris...) to the pictures makes it easier to search similar pictures in web photo albums and community.
 - ▶ **Voice comments:** Voice could be added to digital pictures to deliver a talking description, and to make and send multimedia greeting cards
 - ▶ **Barcodes:** 2D barcodes (Datamatrix, QRcodes...) may be added to both printed and digital pictures in order to enable valued added services like voice call, SMS, picture sharing.
 - ▶ **Image recognition:** innovative picture recognition technologies will make it possible to automatically identify where a picture has been shot.
 - ▶ **Geotagging** and location based services: GPS cameras will add geographic information to pictures, enabling a new generation of LBS (targeted advertising...)