

# HIDE focus on System Interoperability

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# Something about myself

- Head of department in Ambient Intelligence
- Director of the European Biometrics Forum
- Expert on Biometric and Standardization for EC
- BioVision: Future of Biometrics through to 2010 (Roadmap)
- BioSecure: BioSecure Research Agenda 2007
- COST Action: Biometrics and Identity Management

# Trends

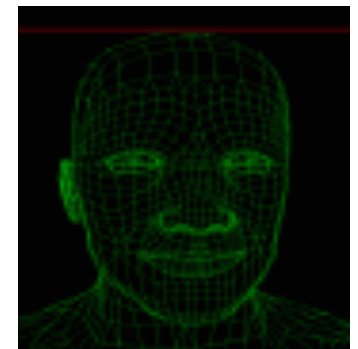
- Future Internet (web.3) and the internet of things
- Nanoscale integration, new materials (embedded systems)
- Driven by societal challenges (energy, environment, social)
- Security
- Identity Management

# Drivers for priorities

- Scalability, adaptability, learning (ambient)
- Functionality & performance at lower costs
- Reliability & Security
- New domains: lifestyle, care, transport, culture and learning, energy & environment
- Aspects: Bringing the user in the loop (empowerment), standardization, socio-economic dimension

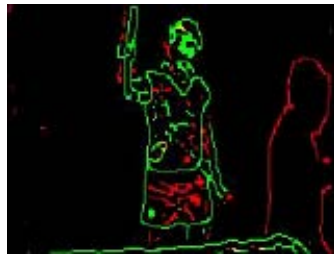
# Security calls

- Trends: Biometrics as part of security: integrated approach
  - Prevention & Protection (terrorists attacks)
  - Forensics
  - Protection of infrastructures (sea, air, land)
  - Information Security
- [security call2](#)
- [Call Text](#)



# The BioSecure Research Agenda

- Ben Schouten, Massimo Tistarelli , Carmen Garcia-Mateo , Martin Meints.  
[\*Overview of Research Topics in Biometrics and Identity Management\*](#); Lecture Notes in Computer Science, Springer Verlag 2008, to appear.



# Trends in Technology



(a)



(b)



(c)



(d)



(e)



(f)

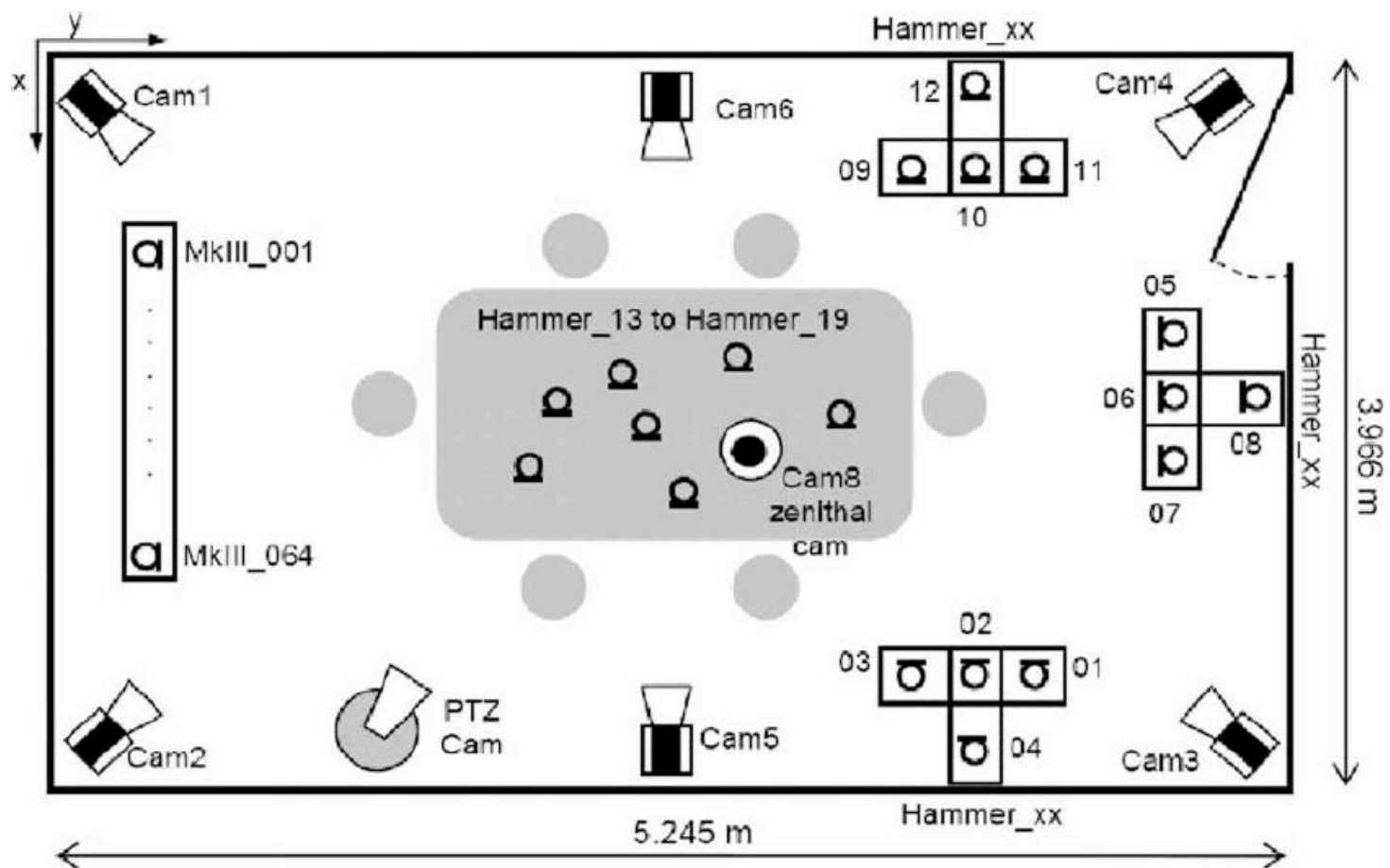
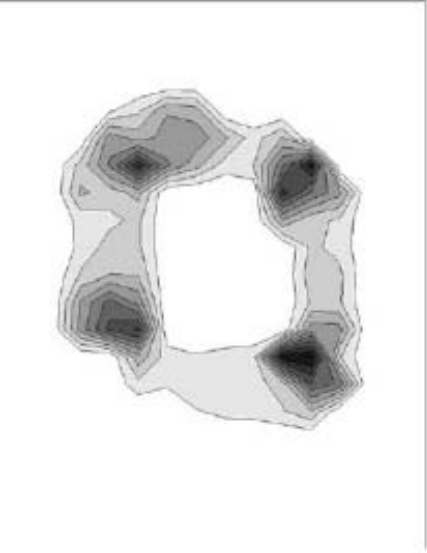
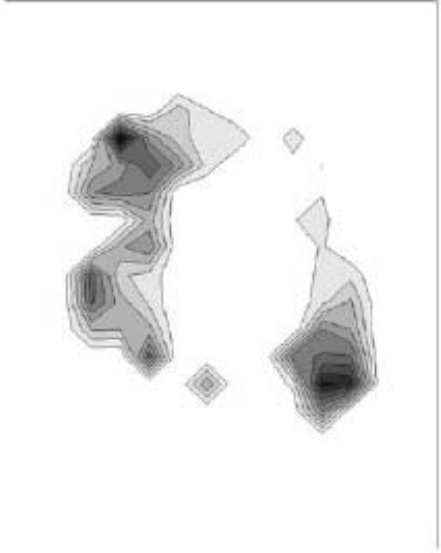
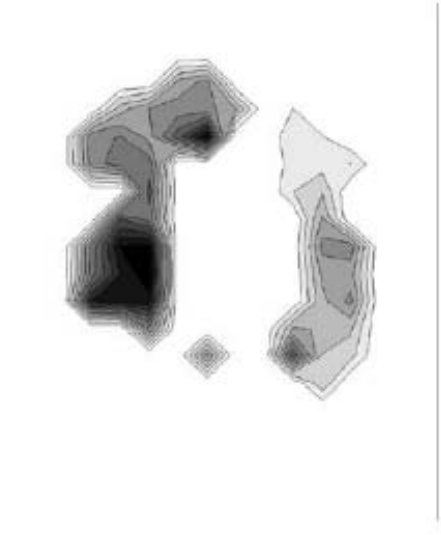


Fig. 1 The UPC smart room setup



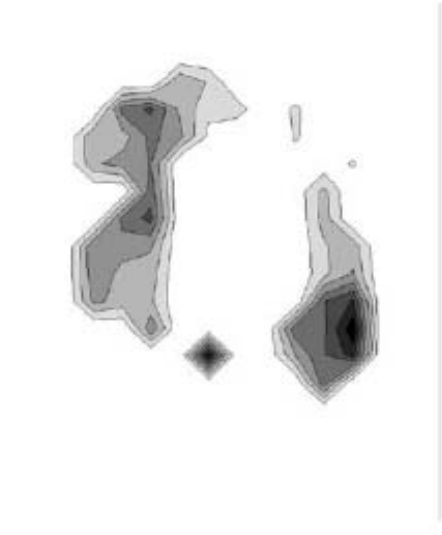
(a)

(b)



(c)

(d)



(e)

(f)



# Empowering the End-user in Biometrics

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*Abstract*—User empowerment in the context of information and communication technologies (ICT) means enabling the end-users to set up and/or tailor ICT solutions according to their own requirements. In this paper we argue that user empowerment is essential in biometrics for the acceptance and widespread use of biometrical applications, concepts, and technology. A key issue is a user's experience of being in control, and how interfaces, modes and modalities of interaction can support and empower the user, whether by direct interaction and control of devices, or via delegation. More importantly, the practices suggested in the paper are steps towards practical and legal regularization of use and circulation of biometric information.

*Index Terms*—User empowerment, biometrics, privacy.

## I. INTRODUCTION

We have to distinguish between **biometrical identifier** (e.g. the fingerprint data, comprising of the template and the supplied biometric during subsequent authentication, in raw and processed formats) and the **identity information**, which are any personal data associated with the end-user and obtained directly or indirectly.

## II. USER CONTROL AND END-USER EMPOWERMENT

Meints distinguishes between four different aspects that are relevant for acceptance of biometrics [2] (Also see [3], [4]):

- 1) **Perceived usefulness** influenced among others by:
  - a) Social status of the user and his openness for new

# Motivation

- Acceptance of Biometrics depends on:
  - Robustness
  - Privacy
  - User Convenience

# Motivation (2)

- Different objectives between user and end-user
- Suppose: the case of a doctor and patient, generally they share the same objective.
- In biometrics objectives of end user and user might be different.
- Question: Which tools and technologies are available to balance the difference

# What is User Empowerment

- Enabling the end users
  - to set up and/or tailor ICT solutions according to their own requirements.
  - essential in biometrics for the acceptance and widespread use of biometrical applications.

# Acceptance of Biometrics depends on

1. Usefulness (What does it offer me) which depends on:
    - ▶ Functionality
    - ▶ Willingness of the user for new technologies
    - ▶ Personal Freedom
  2. Ease of use influenced among others by
    - ▶ Usability
    - ▶ Interoperability
  3. Trust in the service provider (User) influenced among others by
    - ▶ Availability and quality of the service
    - ▶ Reputation of the service provider
    - ▶ Perceived fairness and proportionality
    - ▶ Non-intrusiveness of the service, privacy preservation and data security
    - ▶ Perceived control over devices, services and personal data
- ▶ Based on Meints (2007): Social acceptance of RFID

# Three kinds of Control

- **Information Control.** To be informed “where it is used for and what happens” (compare fear for surgery)
- **Behavioral Control.** That the user can influence the system
- **Decision Control.** The user has different options to choose

# Decision Control in Biometrics

- Requirements:
- Biometric identifier can be used multiple times to release (relevant) part of data
- Should it be possible to release the bond between biometrics data and identity data
- Different biometrics to choose for the end user
- Revocability of data

# Enabling technologies

- Technology for “biometric expiration date” (after which biometrics can not be used anymore) or cancelable biometrics (e.g. BioHashing)
- Possibility for end user to check correctness of data
- Biometrics and PKI; encryption (Philips)
- Certification for trust

# Conclusions

- Need for technologies for “balancing” the relationship of citizens versus authority (Trust)
- Publics awareness to counter attack “black box” thinking
- Allowing the user to have more control over the data.
- Standards and best practices. Legal structures

# Thank you for your attention

- Questions: [ben.schouten@fontys.nl](mailto:ben.schouten@fontys.nl)