

# Privacy Protection and Ethical Governance - Product (The Solution) and Process (Concept-Development) View -

PRESCIENT Workshop  
Assessing Ethical Impact Assessment  
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INSTITUTE  
PRODUCTION SYSTEMS AND  
DESIGN TECHNOLOGY

## Overview

- Fraunhofer IPK, Division Automation Technology, Department Security Technology
- Recent relevant projects Security Technology
  - Security, Ethics, privacy, quality management
- Privacy Protection and Ethical Governance from different views (product/process)
- Product view (responsible innovation)
- Process view (responsible research)
- Check-List, simple Code of Conduct
- FP7-ICT CA: RADICAL, FP7-SiS CA: ETHICAL
- Project Examples (Privacy by design):
  - ADIS (Automatically Detection of Scenes for Intervention)
  - FEARLESS (Fear Elimination As Resolution for Loosing Elderly's Substantial Sorrows)
- Future Work (Online Tools for Responsible research and innovation)





# Fraunhofer IPK

## Facts and Figures

- Founded in 1976
- 256 employees (scientists, service and students)
- More than 70 test areas and 7 special laboratories on about 7 100 m<sup>2</sup>
- Budget of 12.4 Mio. Euro in 2010
- Spin-offs and start-ups by 12 % of former staff members





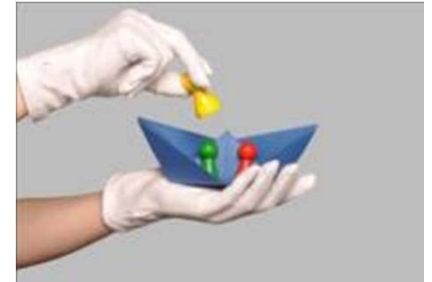
# Fraunhofer IPK

Customer-oriented  
research



## R&D Areas

- Corporate Management
- Virtual Product Creation
- Production Systems
- Joining and Coating Technology
- Automation Technology
- Quality Management
- Medical Technology



# Automation Technology



## R&D Areas / Services

- Process automation and robotics /

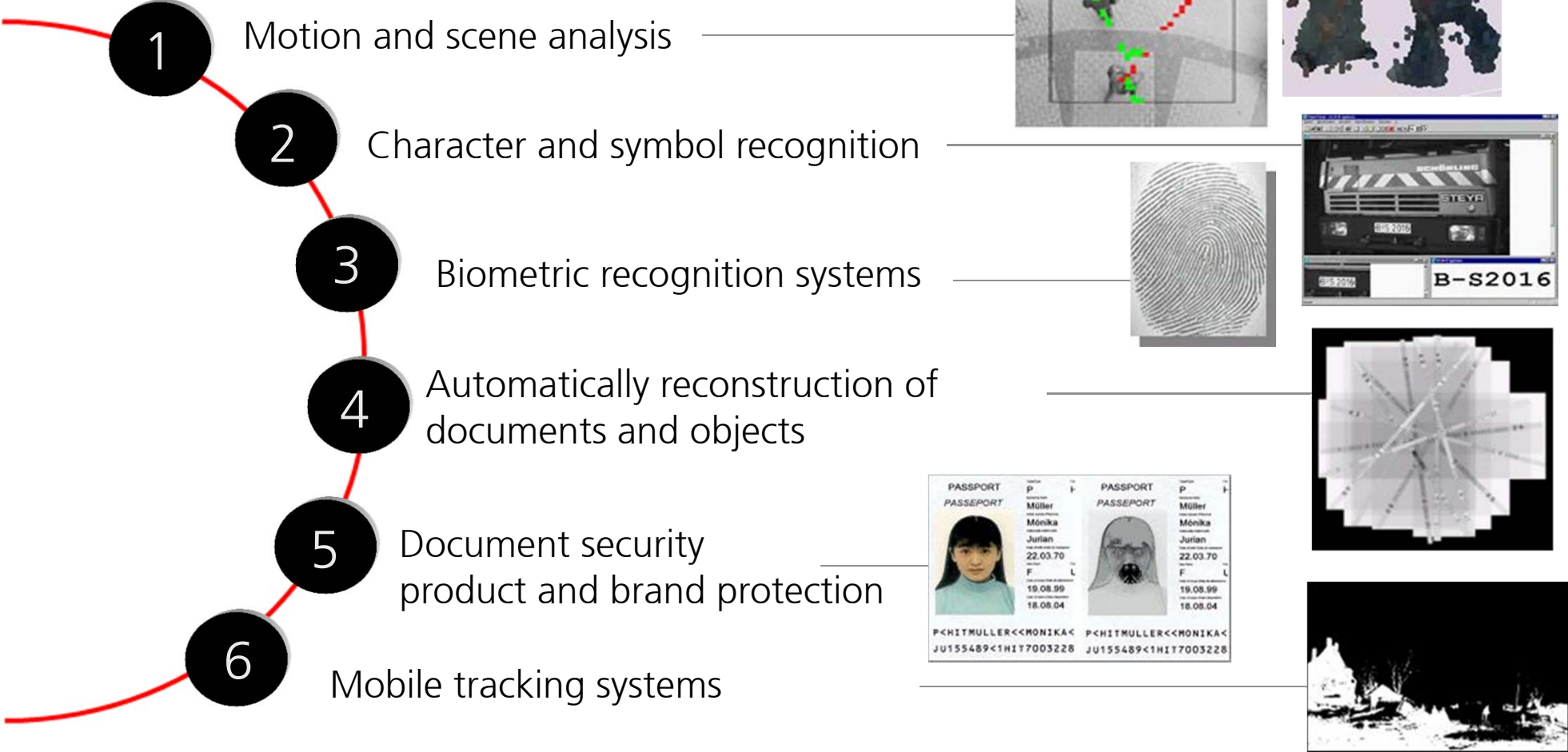
Development of automation concepts and innovative robotic and handling systems  
Process control and simulation  
Automation of industrial quality control

- Security technology /

Security service systems for people and buildings Forensic applications  
I&T safety and document security  
Automatic optical testing

# Department Security Technology

## Competencies



# Security Technology – Recent Projects



- ePuzzler: Technologies for virtually reconstruction
- Toolkit for Automatically reconstruction of documents
- Fraunhofer Innovation Cluster Secure Identity



- System to detect children pornographical contents in digital media
- ADIS (Automatically Detection of Scenes for Intervention)



- FEARLESS (Fear Elimination As Resolution for Loosing Elderly's Substantial Sorrows)



- RADICAL (Road Mapping Technology for Enhancing Security to Protect Medical & Genetic Data)

- ETHICAL (International debate on ethical implications of data collection, use and retention for biometric and medical applications)



- RESPONSIBILITY (Global Model and Observatory for International Responsible Research and Innovation Coordination)



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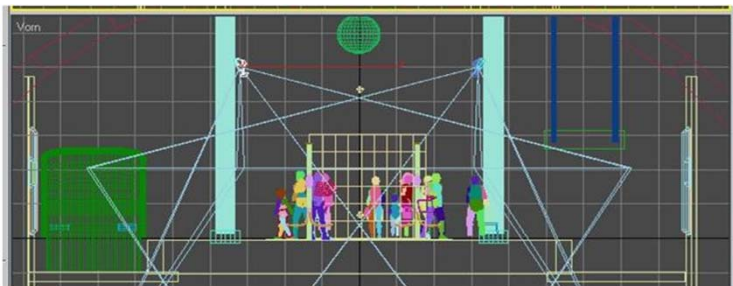
# Privacy Protection and Ethical Governance the Product view (the solution) and the Process view (concept, design, development)

Ethical acceptability  
Sustainability  
Societal desirability  
von Schomberg

## Responsible Research and Innovation

Concept and design of human centered complex systems  
Acceptance from all the stakeholders has to be planned:

- Users (operators needs and goals)
- Society (privacy and human dignity)
- Organisations (future and unintended implications)
- International cooperation and use



# Privacy Protection and Ethical Governance the Product view (the solution)

Balance between  
technology,  
application,  
practice

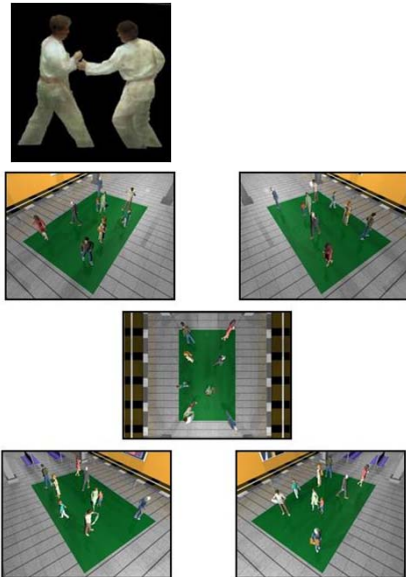
## Responsible Research and Innovation

- System requirements (purpose/quality/efficiency)  
availability, reliability, safety/security, usability
- System implications (abuse/violation/misuse/incidents)  
data security, confidentiality, privacy protection,  
stewardship, human dignity, trustworthiness,  
property, ownership, purpose and proportionality



# Privacy Protection and Ethical Governance the Process view (concept, design, development)

Often developers do not consider broader implication of future applications



## Responsible Research and Innovation

Measures to take during

- system and concept design  
interdisciplinary approach
- project proposal preparation phase  
consent, disclosure
- project implementation phase

Recommendations for research involving

- government-industry collaborations
- international data sharing

# Check-List or Simple Code of Conduct RRI

**r**  
**ADICAL**

**RADICAL**  
Road Mapping Technology for  
Enhancing Security to Protect  
Medical & Genetic Data

## Five basic principles were initially identified for ICT projects

(1) Information privacy

personal privacy and informational privacy, the freedom to act without outside interference

(2) Confidentiality

protection of sensitive data against theft, disclosure, improper use, using with consent

(3) Property and ownership

safeguard system against undesired/accidental or unauthorized malicious access

(4) Reliability and trustworthiness

strategies for errors due to false match rate, false non-match rate

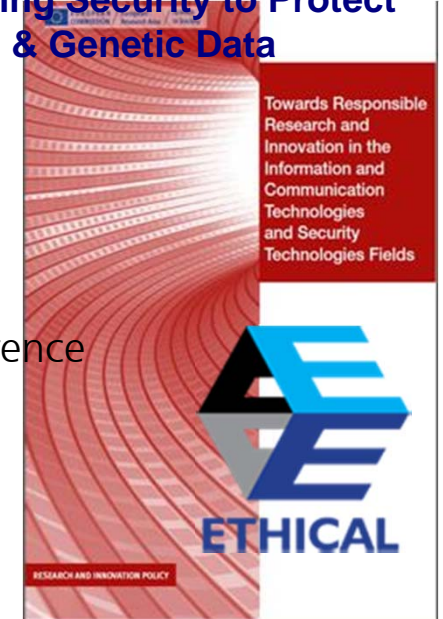
(5) Purpose and proportionality

How far can we go! Interdisciplinary discussion and a broad acceptance analysis!

>> *Commodification of data*

*(Mordini & Petrini 2007 : threats to privacy are not as great as the threat of personal data commodification.*

*...Is the society ready for this form of being digital?)*



**CHAPTER 7**  
Code of Conduct for FP7  
Researchers on medical  
and biometric data  
privacy

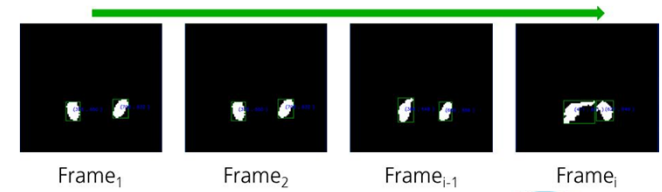
Zaharya Menevidis,  
Samantha Swartzman,  
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**Fraunhofer**  
IPK

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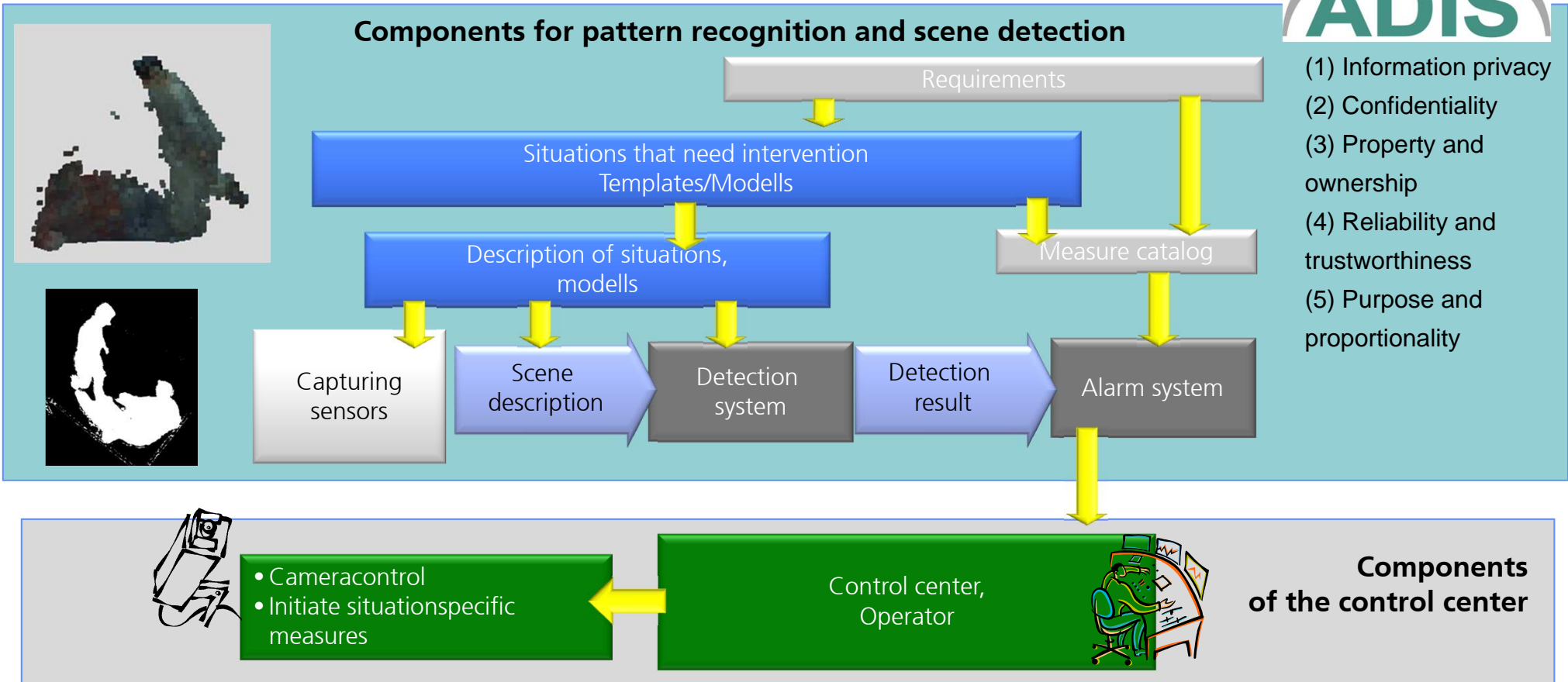
# Information Privacy, Anonymisation



## ADIS – Automatically Detection of Situations that need intervention



- (1) Information privacy
- (2) Confidentiality
- (3) Property and ownership
- (4) Reliability and trustworthiness
- (5) Purpose and proportionality



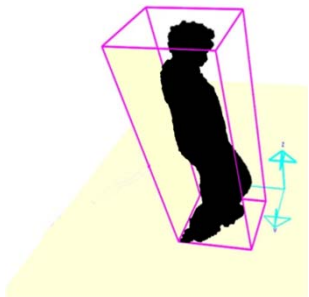
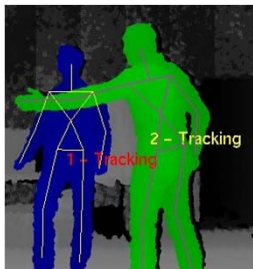
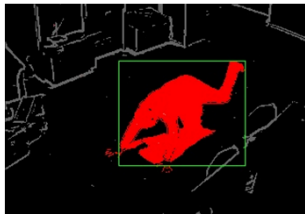
# Tracking and analysis with silhouettes and skeleton models



## ■ FEARLESS

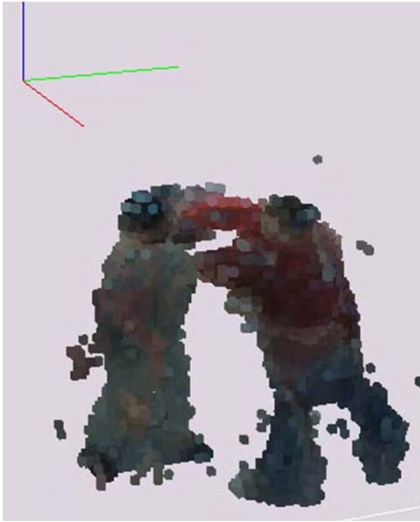
Fear Elimination As Resolution for Loosing Elderly's Substantial Sorrows

- designed to detect a wide range of risks with a single sensor unit (fall, fire, behaviour)
- enhancing mobility and enabling elderly to take active part in the self-serve society by reducing their fears.
- integration of important parts of the supply chain (i.e. network of electricians and electric shops).
- ensure the concentration on the end users needs and wishes

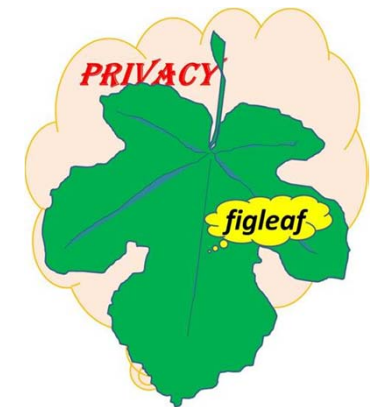


- (1) Information privacy
- (2) Confidentiality
- (3) Property and ownership
- (4) Reliability and trustworthiness
- (5) Purpose and proportionality

# Information Privacy by design



- Closed systems only for automatically pattern recognition and scene analysis without image output and storage
- Static optical sensors (cameras)
  - Without tracking of persons outside the declared sector
  - Informed consent
- Immediate analysis of the scene
  - No image storage
- Analysis of silhouettes and volume models
  - No persons can be recognised
- Without analysis of facial expression
  - No face zoom and face analysis



# Future Work

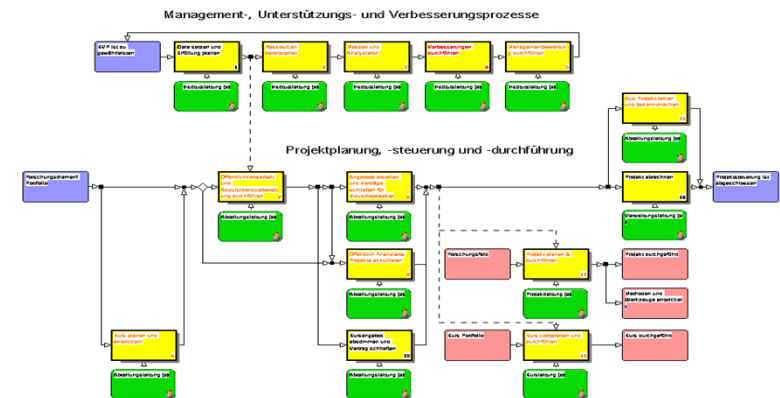
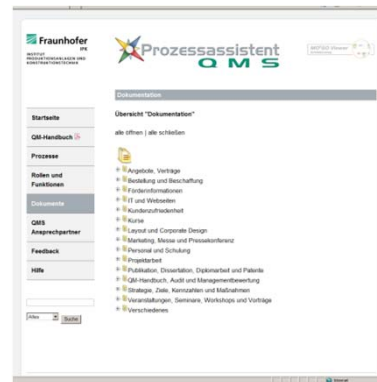
## Online Tools for Responsible Research and Innovation

that integrate our

- code of conduct,
- check-lists and
- best practices (our practical experience)

The base of the RRI-Tool would be our well established quality management system with

- process descriptions
- repository of ready to use documents and regulations



**THANK YOU FOR YOUR  
KIND ATTENTION**

*Aki Zaharya Menevidis  
Rome, 20/09/2012*

