Innovative Citizen-friendly Surveillance Concepts for Public Safety & Security

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Ad-hoc networked cameras for emergency response

2 paradigms: LOCCATEC project
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Participatory surveillance: citizens in the loop

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Where does the JRC fit in the European Commission?

President Barroso — 27 Commission Members

Commissioner Geoghegan-Quinn
Research, Innovation & Science

Joint Research Centre (JRC) — Research DG (RTD)

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Our Structure: 7 Institutes in 5 Member States

IRMM – *Geel, Belgium*
Institute for Reference Materials and Measurements

ITU – *Karlsruhe, Germany*
Institute for Transuranium Elements

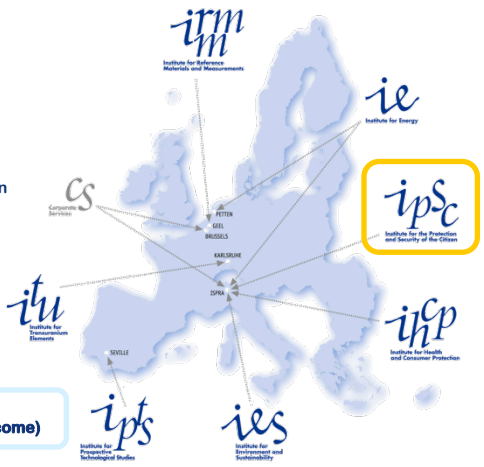
IE – *Petten, The Netherlands and Ispra, Italy*
Institute for Energy

IPSC – *Ispra, Italy*
Institute for the Protection and Security of the Citizen

IES – *Ispra, Italy*
Institute for Environment and Sustainability

IHCP – *Ispra, Italy*
Institute for Health and Consumer Protection

IPTS – *Seville, Spain*
Institute for Prospective Technological Studies



~ 2750 staff
~ 345 M€/y institutional budget (+ 60 M€/y earned income)

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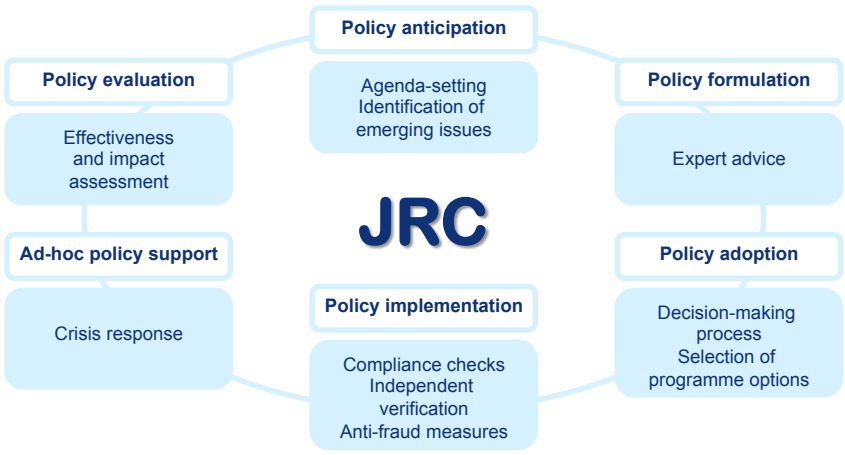
JRC Mission in the Policy Cycle



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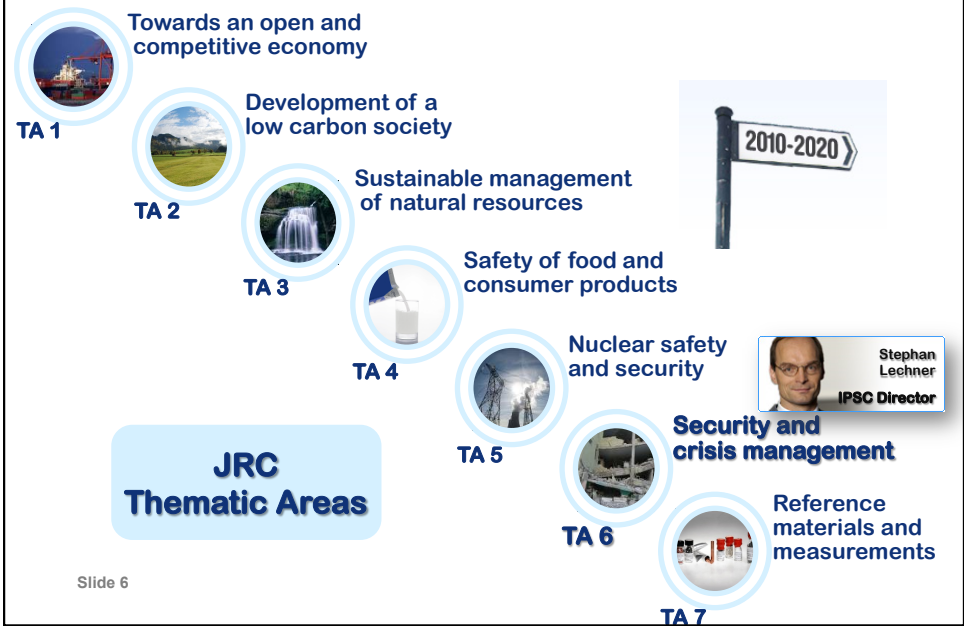

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Digital Citizen's Security unit

Security ethics
Electronic traces
Profiling

Data Protection
Privacy
Acceptance of emerging ICTs

Focus → **Security and safety impact of new information and communication technologies (ICT) on the citizen**

Objectives → **Broaden the technological approach to societal and legal dimensions**
Focus on the individual and his/her perception
Assess the implications

Impact → **EU 2020 Digital Agenda** (e.g. EU data protection framework)
Citizens rights (security vs. privacy)
Europe in the world (e.g. data sharing with third countries)

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SURCIT action

Novel intelligent, efficient and secure surveillance systems that will increase the safety and security of EU citizens without compromising their fundamental rights for privacy

- Systemic analysis: definitions, terms of reference, societal requirements, within a **Citizen Centred framework**;
- **State-of-the-art** of surveillance / monitoring ICT systems; new generation surveillance technologies / systems
- Functional **standards / specifications**, guidelines or best practices regarding the development and use of such systems.

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Emergency information management

Crisis in the modern era

Increasing complexity
Unpredictability

Prompt availability
Pertinent information
To the right people

← Basic needs

Inadequacy of centralized systems
London metro, Catrina, Costa Concordia .....

Lack of flexibility

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24 / 7 CCTV surveillance Issues

Time needed to extract useful information

Cost to set-up, operate and maintain

Threat to privacy

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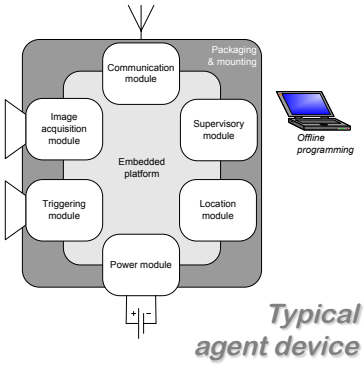
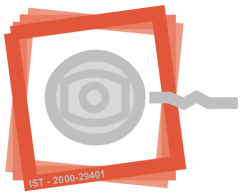
An alternative approach

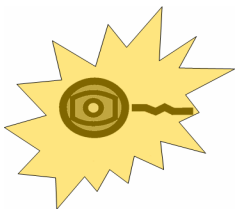
Autonomous,
Ad-hoc networked,
Sensor-based agents



Typical agent device symbolic

Many practical examples .....
Yet formidable problems !!!!





Conditional Autonomous Surveillance for Emergency Management

LOCCATEC & **ASPIS**

FP5 IST
completed in 2006

FP7 SST
started mid 2008

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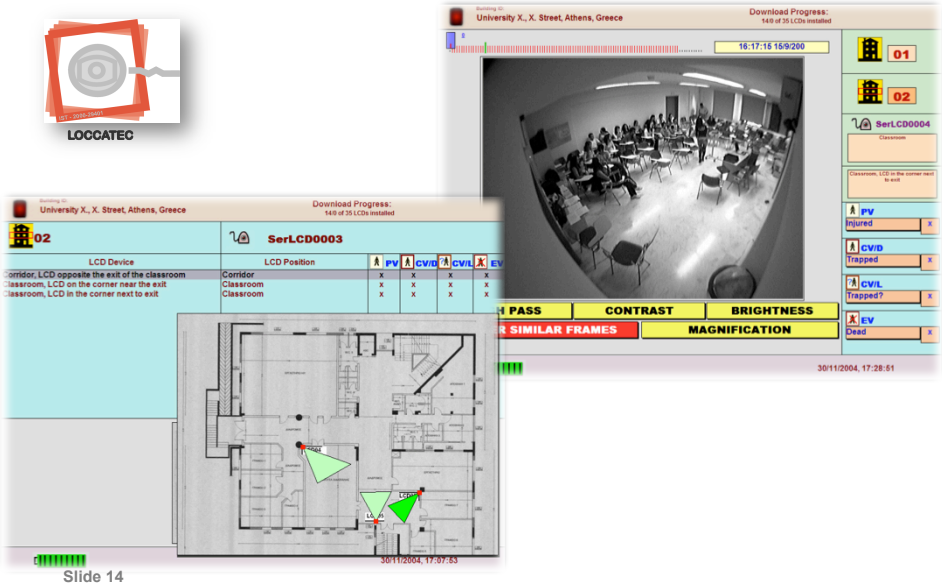

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ASPIS

Conditional autonomous surveillance in public transport

ASPIS - scope

Scalable, modular, surveillance/alarm system providing
prompt , pertinent information
to the emergency responders
without
compromising citizen's right to privacy

ASPIS records and transmits information only on the occurrence of an emergency event

ASPIS – 3 operational scenarios

1. **Underground metro / suburban rail**: on-board surveillance, on-board explosion / gunshots
2. **Ferry vessel**: doors / accesses to sensitive rooms / spaces
3. **Ferry vessel**: cabin occupancy under vessel evacuation conditions

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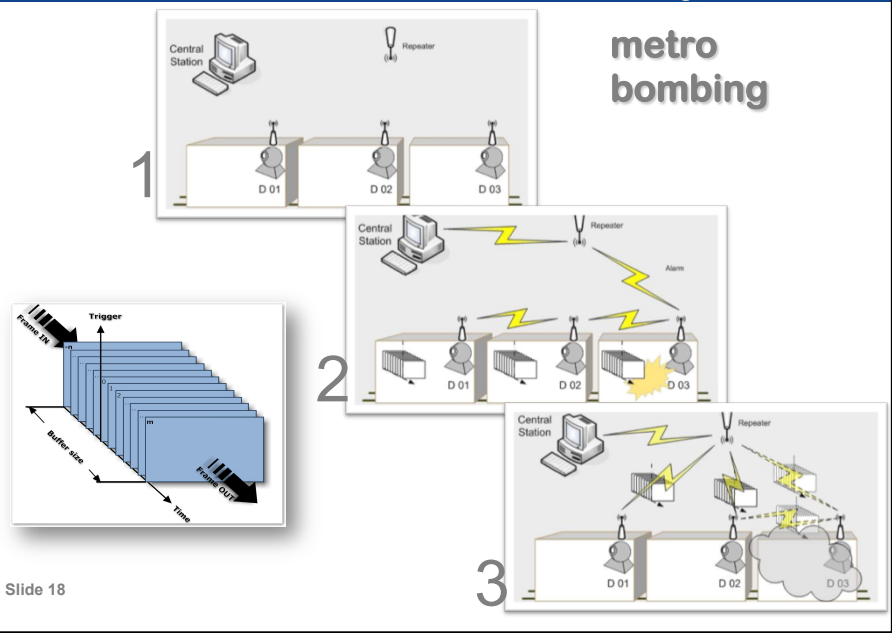

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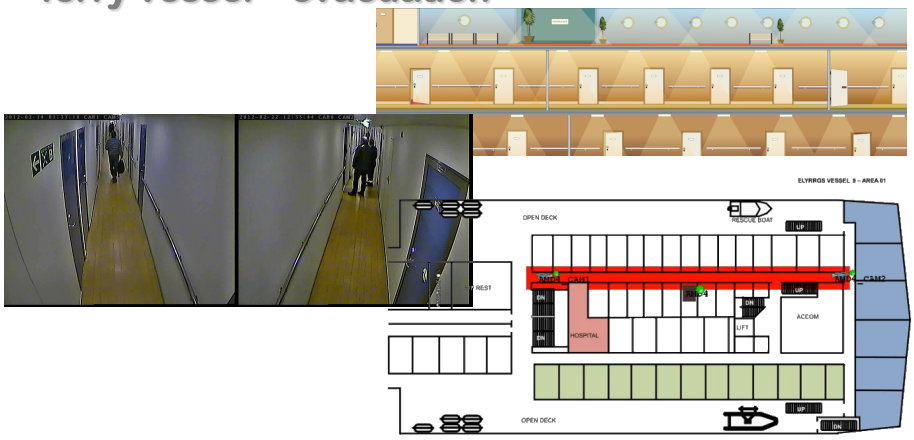
ferry vessel – evacuation



Under evacuation conditions, sailors ensure cabins are empty and activate ASPIS system at each corridor. Anyone passing through a corridor would trigger alarm and video tracking.

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ferry vessel – sensitive door

Sensitive doors are monitored by ASPIS cams from both sides. Upon opening, an alarm is triggered and pictures are sent and recorded on the bridge. Alarm persists as long as door is open !!

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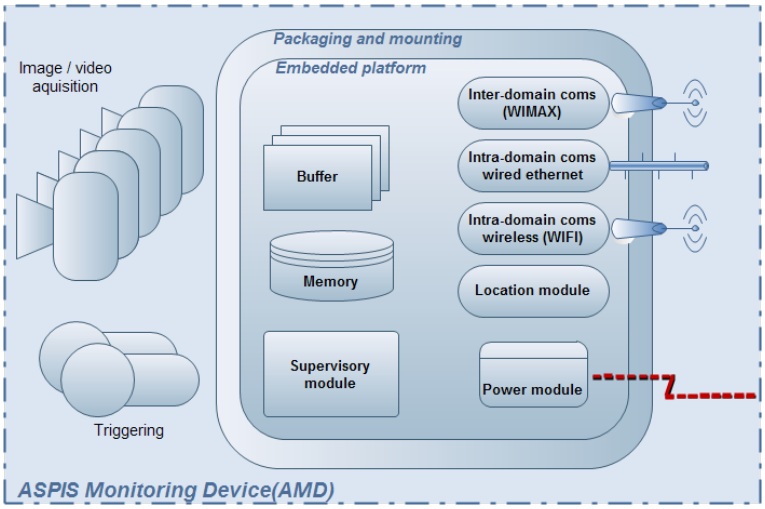
ASPIS monitoring device



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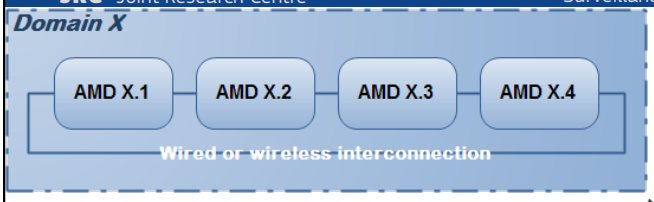
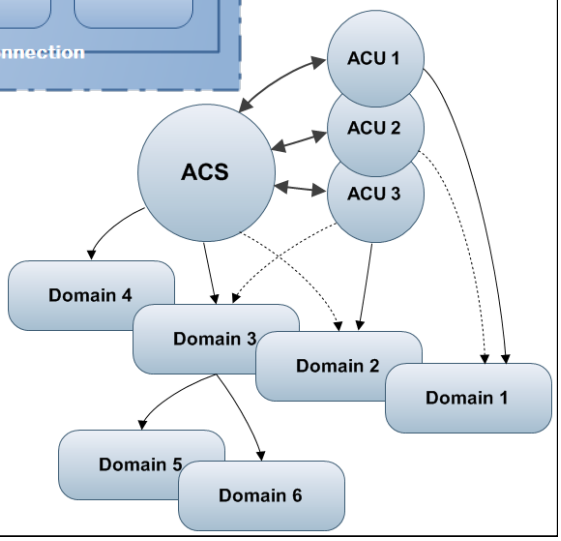


ASPIS domain



ASPIS network

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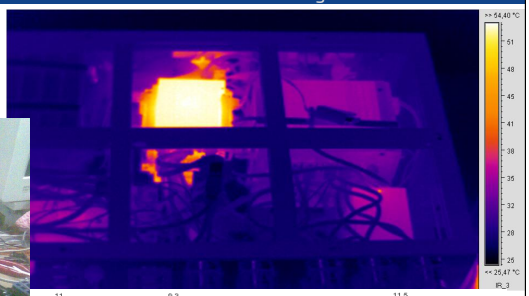
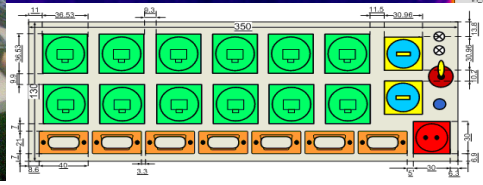
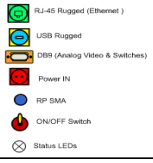
AMD box







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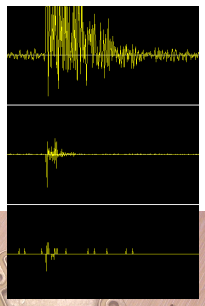
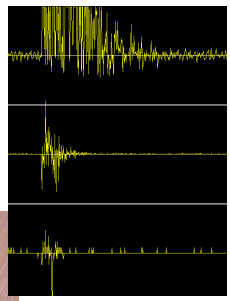
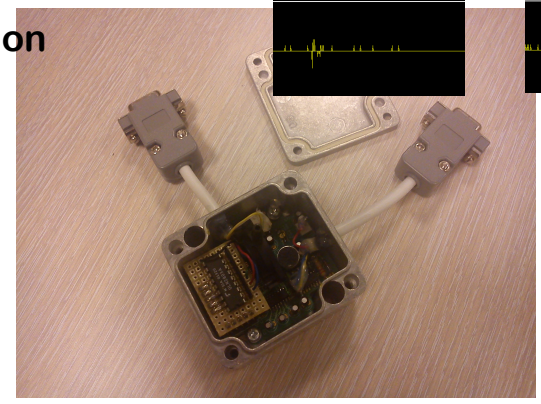
Triggering device

- Pressure
- Sound
- Vibration







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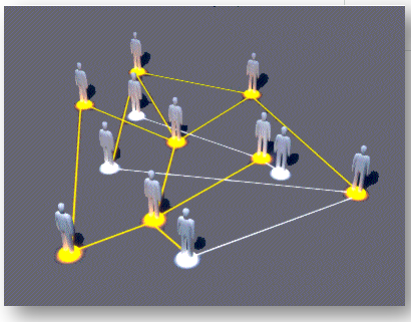
What's next ?

Human is the most sensitive and intelligent agent !

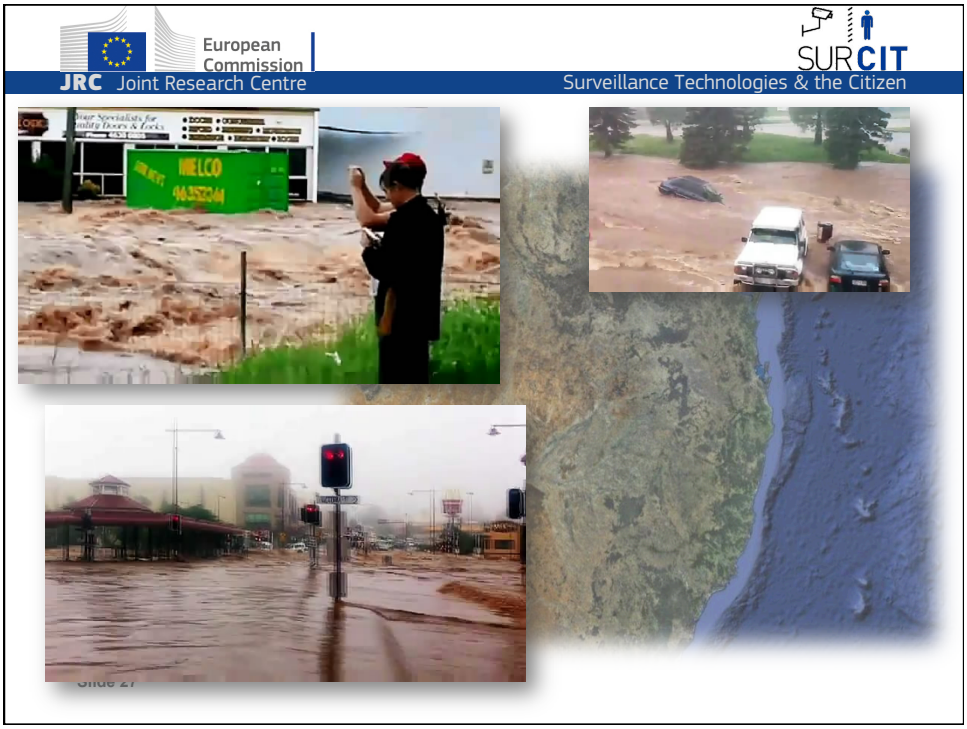
Nodes in a autonomous sensor network ?

Why not ????



Smartphones

- → Formidable monitoring tools
  - → Full HD video / audio recording & streaming
  - → Gyroscope / accelerometer
  - → Magnetometer
  - → USB / Bluetooth / WiFi connectivity to ad-hoc sensor modules
- → Formidable communication & networking capacity
- → Increasing processing & storage power
  - → Local & cloud
- → Widespread use
- → Increasingly new functionalities
  - → ticketing, ID, health, transactions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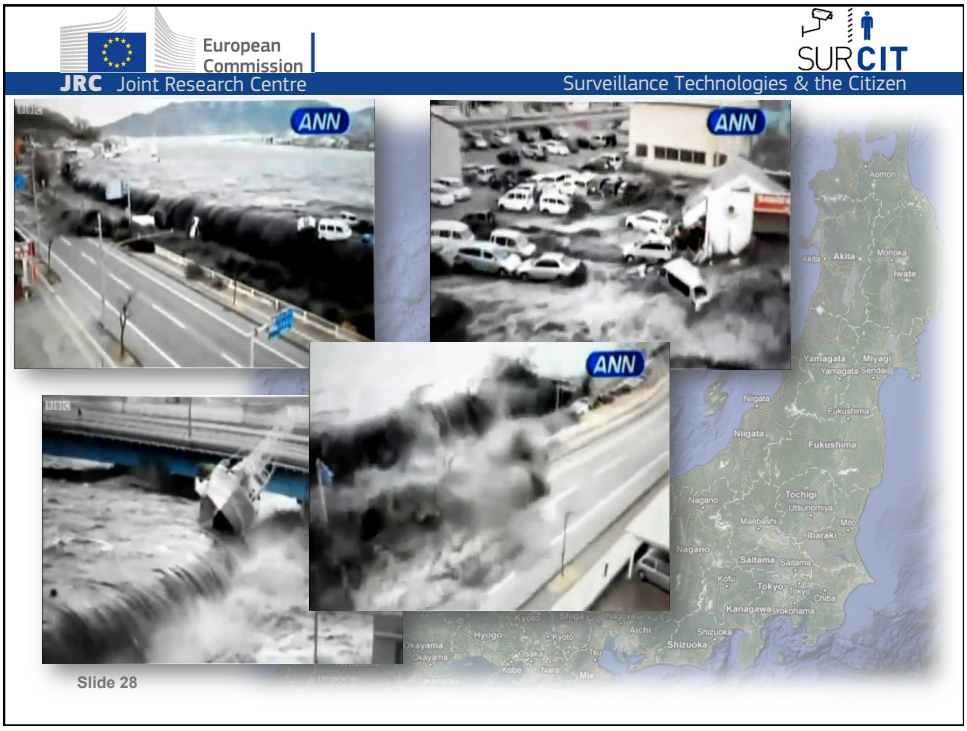
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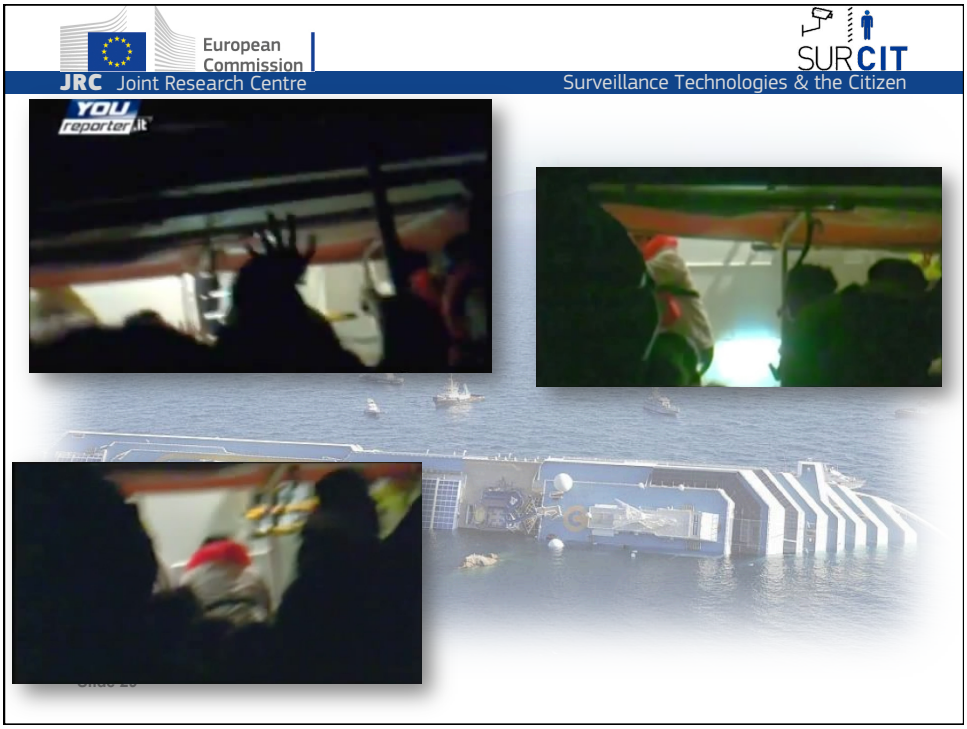
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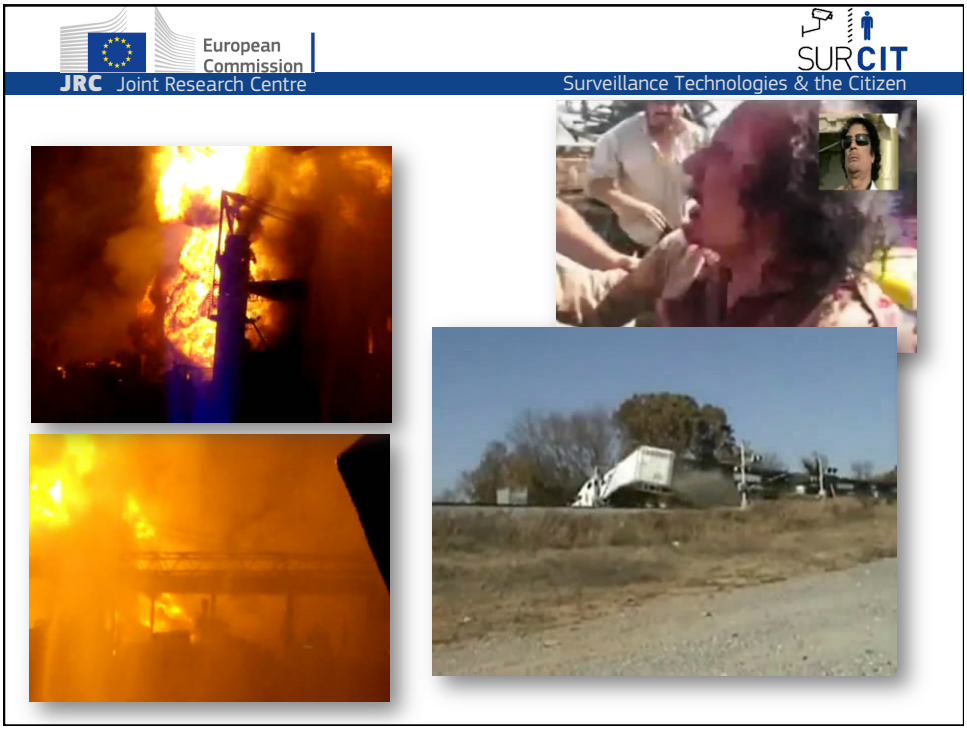
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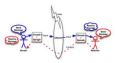
Participatory surveillance for emergencies

Organised, methodical use
of the
smartphone equipped citizens
for
surveillance / situational awareness
for
public order or other emergencies

Possible scheme

1. Alarm →
2. Grab mobile location data →
3. Choice of most useful smartphone →
4. Open priority channel →
5. Ask / impose(?) user's consent →
6. Stream data (video, sound ..) up →
7. Choose other smartphone → Go to 4.

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Claimed advantages

1. Technology exists
2. Tools from the shelve
3. Public becomes <u>active</u> actor
4. Adaptable to a wide range of situations

Needs

1. Procedures & protocols
2. Tests and demos
3. Regulations
4. Public acceptance

Risks

Issues

1. Conditions giving rise to location request
2. Prompt accessibility to mobile location data
3. Mutual trust

Safeguards

1. Procedures documented on client & server
2. Trusted authority / one stop shop
3. Preloaded client applications
4. Guarantees on anonymity

Thank you for your attention!

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