



# Overall Presentation

# DYVINE

**Dynamic Visual Networks**

Contract 034307

In-situ video monitoring

Co-funded by:



Sensor Web Workshop in Geneva, 15 and 16 May 2008



# General

## Dyvine context :

- European Commission – FP 6 (2002 –2006)
- Thematic priority/domain: IST
- Objective: improving risk management
- Duration: 2 years
- T0: 01/09/06

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# Objectives

**Design of a surveillance network based on visual sensors.**

**Monitor any kind of area threatened by natural or industrial disaster.**

**Provide end-users with a global situation awareness with large coverage and still detailed view.**

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# Objectives

## **Design of a surveillance network based on visual sensors**

1. Generic architecture dealing with a large number of visual sensors of various types. Incorporate legacy systems;
2. Robust to potentially hostile environments, reconfigurable in case of network connection loss;
3. Use of the necessary communication means to integrate the largest possible forest of sensors;
4. Information fusion to provide a human operator with the most comprehensive synthetic situation picture.













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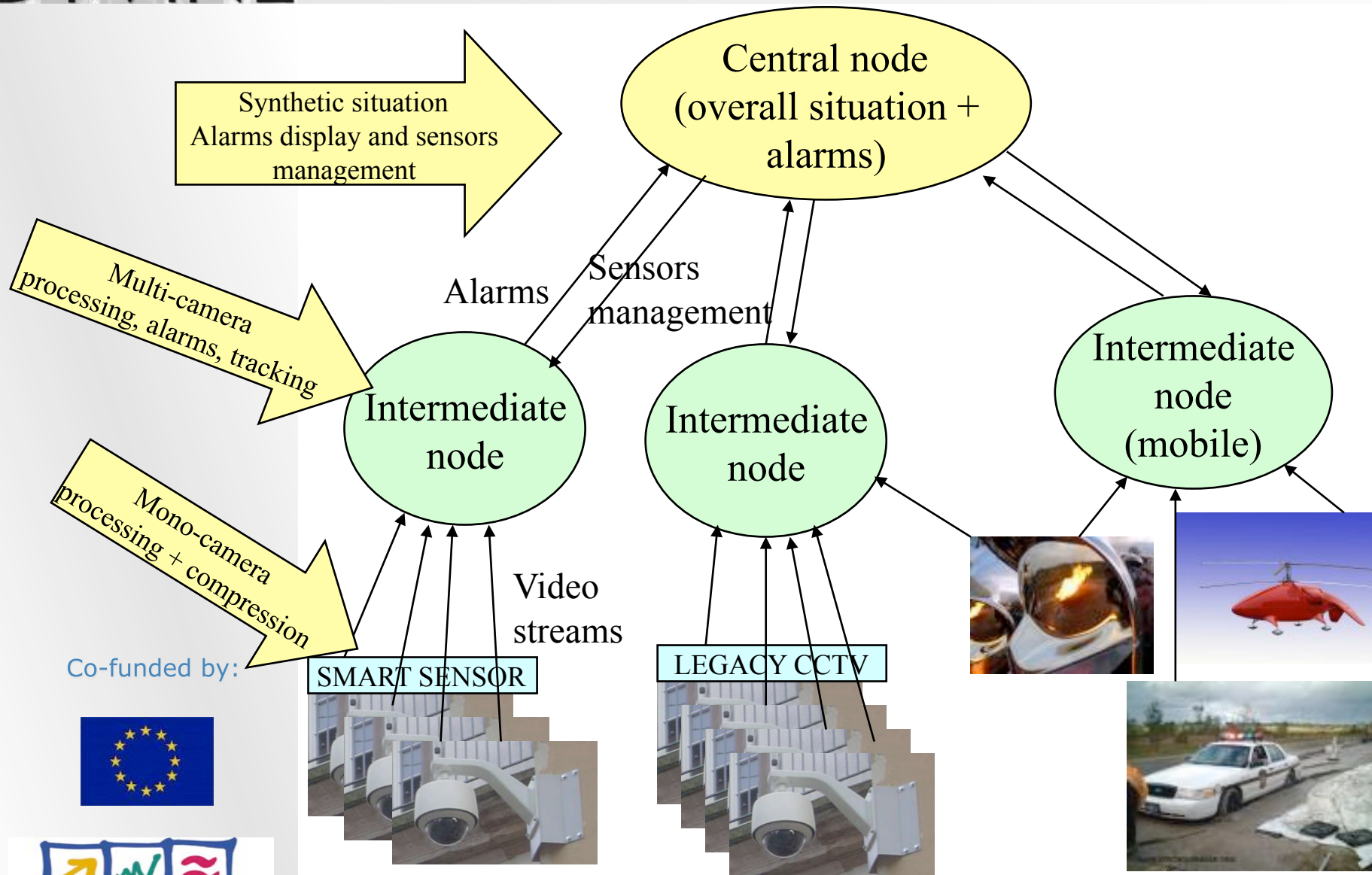


# Consortium

Participant n°	Participant name	Participant short name	Country	Participant Role
1	EADS Defence and Security Systems S.A.S	EADS	FR 	CO
2	EADS CRC	CRC	GE 	CR
3	MARTEC	MART	FR 	CR
4	REALVIZ	REAL	FR 	CR
5	Commissariat à l'Energie Atomique	CEA	FR 	CR
6	Katholieke Universiteit Leuven	KUL	BE 	CR
7	Surrey University	US	UK 	CR
8	Universidad Politécnica de Valencia	UPV	SP 	CR
9	WHITEBALANCE	WHB	GE 	CR
10	Ecole Polytechnique Fédérale de Lausanne	EPFL	CH 	CR
11	City of Segrate	SEGR	IT 	USER
12	City of Miraflores	MIRAF	PE 	USER



# General design and levels





# Challenges

- Data fusion
  - Alarms extraction, summary, presentation ...
- Computer vision
  - Detection, tracking, localization ...
- Network
  - Ad hoc network, wireless, reconfiguration ...
- Communication
  - Compression, QoS ...
- Legal aspects
  - Privacy ...

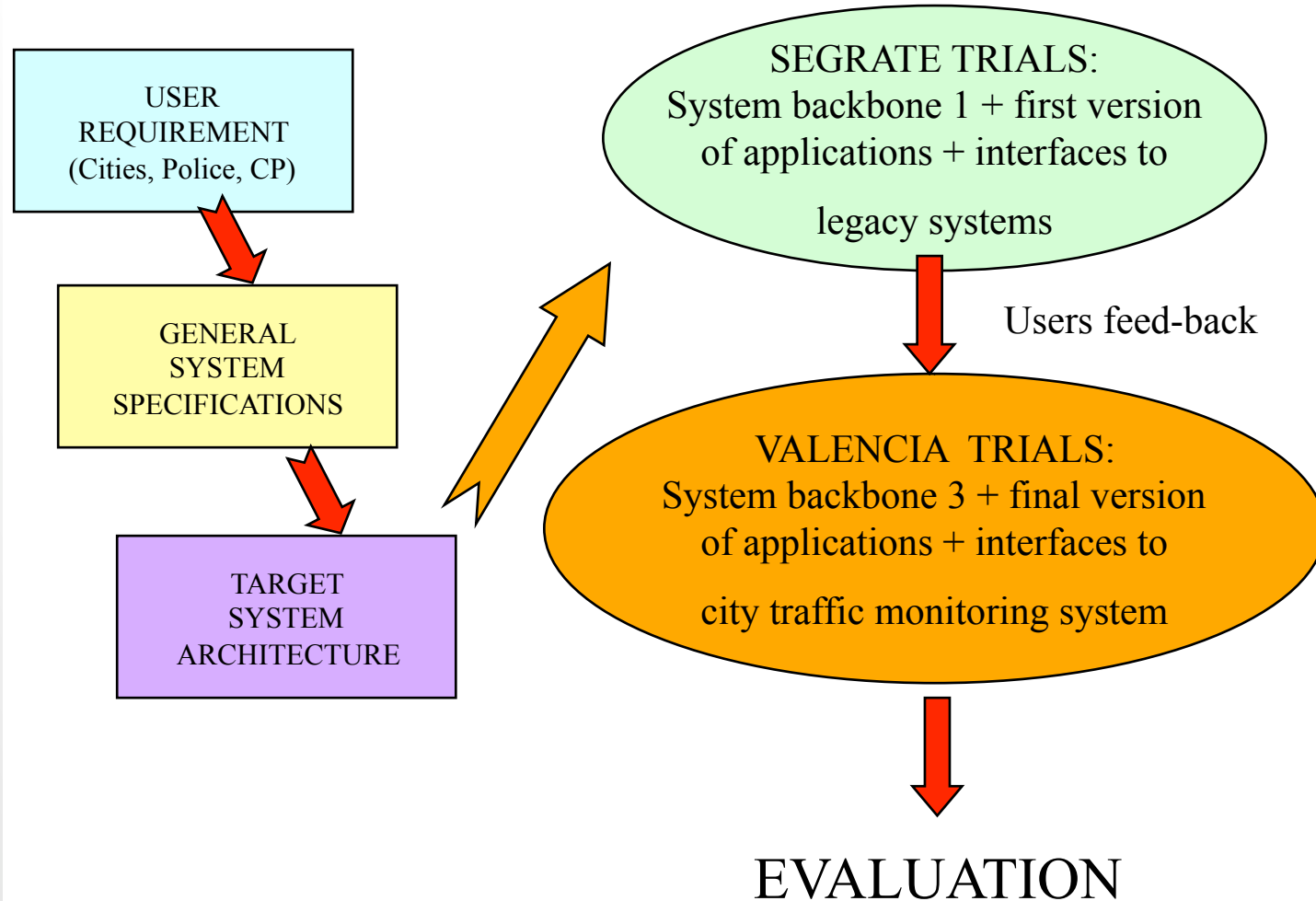
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# Step by step development



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# DYVINE Scenarios

## 2 scenarios for DYVINE:

### 1. Segrate (intermediary) :

- Truck on fire, causing a heavy traffic jam in the city

### 2. Valencia (final) :

- Day-to-day ops, Vigilance, Urban disaster, Crisis management

Scenarios established in full interaction with the users. DYVINE uses the existing network of cameras of Segrate and Valencia and adds news cameras (fixed or mobile) where needed.

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## Trials in Segrate 1/3



Mobile sensor in a car

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## Trials in Segrate 2/3



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Multi-camera sensor for panoramic video

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## Trials in Segrate 3/3



User interface with data fusion

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# Conclusion

## DYVINE

- A surveillance network based on visual sensors;
- Three-layer architecture for improved data fusion;
- Legacy sensors integration;
- Flexible network architecture;
- Intelligent events summary for global situation awareness.

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Thank you for your attention

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<http://www.dyvine.eu>

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# Implementation (1/2)

The project will be implemented in 6 major phases:

1. Scenarios and user requirements definition and analysis (T0 to T0+3);
2. System design process (T0+3 to T0+6). The output will be the generic architecture of DYVINE;
3. System components development, (T0+3 to T0+19) :
  1. Gateways to integrate the ground sensors;
  2. Gateways to integrate the mobile/airborne sensors;
  3. Wireless communications solutions to link the sensors to the system backbone;
  4. Data storage(s);
  5. Software modules for the exploitation and fusion of sensors data (image quality-compression module, identification and alarms modules, multi-sensor fusion and tracking module, sensors management module, situation awareness module).

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## Implementation (2/2)

### 4. System backbone integration :

- A first version of the components, will be integrated into the platform at T0 +13 to identify and correct where necessary possible technical problems;
- Final integration will be performed between T0+16 and T0 + 20.

### 5. Legal and standardisation issues. These tasks will interact with the technical tasks by :

- defining the constraints and recommendations that the system will have to take into account and
- giving a feed-back of the technical tasks in terms of system characteristics and performances to analyse if additional laws, specifications or standards should be proposed.

### 6. Tests in operational-like conditions for performances and exploitation validation :

- After initial integration (T0+14) : intermediary trials in Segrate (Nov. 2007);
- Real in-the-field trials after the final system integration (T0+21) : These trials will take place in Valencia (Spain) and will be supported by the existing video sensors networks of the city.

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# Trials in Segrate: the phases

Innovative  
image  
processing

System  
flexibility

1. « Virtual camera »
2. Image compression
3. Traffic jam detection
4. Traffic jam fusion
5. Fire detection
6. Fire fusion
7. Inclusion of mobile cameras/cars
8. Cameras on helmets with geo-location
9. Security perimeter monitoring

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