Project consortium

Multidisciplinary team of 8 partners (4 research institutes, 2 companies, 2 public operators) from 6 different countries, with complementary competencies.

Computer vision & audio processing researchers

- Multitel asbl (MULT), Belgium (Coordinator)
- Idiap Research Institute (IDIAP), Switzerland
- Institut National de Recherche en Informatique et Automatique (INRIA), France
- Thales Communications France (TCF), France

Surveillance system designer

- Thales Italia (THALIT), Italy

Public transport operators (metros)

- Gruppo Torinese Trasporti (GTT), Italy
- Régie Autonome des Transports Parisiens (RATP), France

Human ethologists (sociologist)

- University of Vienna (UNIVIE), Austria

Project information

Project reference FP7/2007-2013 n° 248907
Instrument CP-IP

Duration 42 months (February 2010 - July 2013)

Budget 5 471 851 €
EU contribution 3 717 998 €

For more information, please refer to
www.vanaheim-project.eu

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SEVENTH FRAMEWORK PROGRAMME

VANAHEIM

Video/Audio Networked surveillance system enhAncement through Human-cEntered adaptIve Monitoring

Project funded by the European Community's Seventh Framework Programme FP7/2007-2013 Challenge 2- Cognitive Systems, Interaction, Robotics under grant agreement n° 248907

www.vanaheim-project.eu

Automatic sensor selection for videowall management

Current situation

CCTV video streams never watched (e.g. in Turin, 28 monitors for 800 cameras).

- Monitors show empty scenes/spaces, while others cameras look at scenes in which something (even normal) is happening)
- Probability to watch right streams at right time is very limited

VANAHEIM proposal

Mechanisms for selecting relevant/salient audio/video streams in control rooms

- Models to characterise video streams content
  - Trivial scenario when dealing with “empty vs occupied” scenes
  - Challenging problem when almost all scenes are occupied
- Need for unsupervised modelling is even more explicit for audio streams (“mosaicing” of data is impossible due to transparent nature of sound)

Goal: **Development of autonomous content-based audio/video sensor selection system for control rooms**

Human-centered monitoring using audio/video analysis

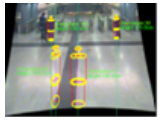
Current situation

Human behaviour modelling not ready for real-scale environment

- Scene understanding based on location features not sufficiently reliable
- Need for robust human-centred features

VANAHEIM proposal

Investigate 3 levels of human behaviours analysis in surveillance data



Individual level

Detect and characterize an individual person with his/her activities

Group level

Detect small group of people and identify interactions in it

Crowd level

Monitor (dynamics of) crowd and/or flows of people

Goal: Two applications

- Event detection applications for safety/security
- Environmental reporting for situational awareness

Long-term statistics building for planning applications

Current situation

Transportation terminals subject to capacity issues

- Need expressed by managers for analysis of passenger dynamics
- Bottleneck is high variety/complexity of passenger behaviours

VANAHEIM proposal

System able to identify and characterize structures inherent in *collective behavior*

- Continuous monitoring of user information
  - locations, routes,
  - spatio-temporal activities (walking, waiting...),
  - interactions with others passengers and/or equipments,
  - contextual data (time of day, density of people...)

Goal: **Estimate trends of large-scale human behaviour at an infrastructure level**, e.g. to

- Localize common loitering areas and/or highly frequented aisles
- Identify traffic patterns in the infrastructure, etc.