



**HAL**  
open science

# Broadcast And Surveillance Technologies Over Networks

Mark Verhoeven, Corinne Ancourt

► **To cite this version:**

Mark Verhoeven, Corinne Ancourt. Broadcast And Surveillance Technologies Over Networks. Nano Electronics Forum, Nov 2016, Rome, Italy. hal-01433575

**HAL Id: hal-01433575**

**<https://minesparis-psl.hal.science/hal-01433575>**

Submitted on 17 Jan 2017

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



# Broadcast And Surveillance Technologies Over Networks

## General description

The main objective of the BASTION project is to research and develop new applications for the Broadcast Market, and for the Security and Surveillance Markets. Both applications will be built on top of the Internet Protocol network, which will allow distributing the applications over several physical sites. The cameras will be located on one or more sites, and the monitoring/control room will be on a separate site. The main benefit of this distribution is that it will enable increasing the efficiency for producing live Broadcast content by a factor of 2-3, by sending only camera personnel to remote sites, and having the main production team in the home studio to do several programs in a single day. Integrating high-quality and high-resolution (HD and higher) image sensors in a networked infrastructure to detect, recognize and identify Surveillance and Security issues when observing long distance or large-scale events.

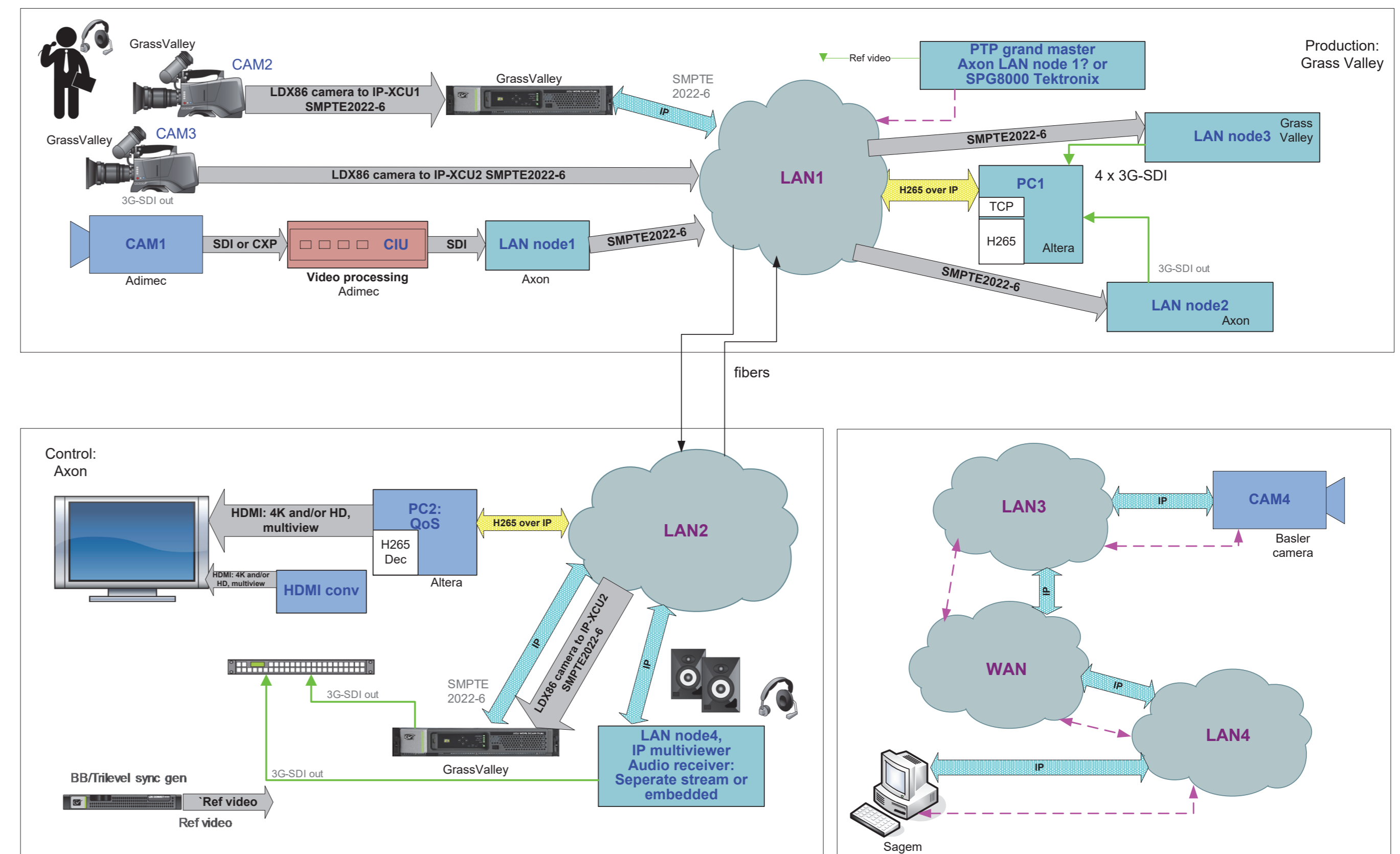
## Goals/Objectives

The most important technological breakthroughs that BASTION will provide are:

- Virtual Network technology to provide Quality of Service for video streams over the Ethernet network.
- CMOS imaging sensors with High Dynamic Range, ultra low noise, and combining visible UV and near infra-red light. Ultra-low latency H265 video codec.
- Unified design methodology for hardware and software.

## Societal impact/Results

- In BASTION we will work on surveillance cameras that will target the surveillance and protection of critical infrastructures (such as airports, public transportation). One of the key requirements is to define systems that protect from vulnerability in a cost/effective manner, without restricting the mobility of the people and without disturbing their daily life.
- BASTION will be a key enabler for **multimedia broadcast services** by focusing on the content creation side. The consortium contains the complete chain from the event that has to be broadcasted (e.g. world championship, Olympic Games) to the channel that is to be transmitted (4G, video over IP) to the consumers.
- In BASTION we will do a proof of concept for developing hardware in OpenCL. Both universities and industries will contribute to this, and will establish in this way an **open standard ecosystem** of OpenCL based hardware development.
- By moving to distributed studios based on video over the Internet Protocol, it will be easier to implement new video formats, since the new standards can be transported over the same physical network infrastructure. This infrastructure will enable **new video sources and content management**, like Ultra High Definition, 3DTV, slow motion, point of view cameras, surround video, audio, metadata, all kind of control signals, intercom.



### Partners:



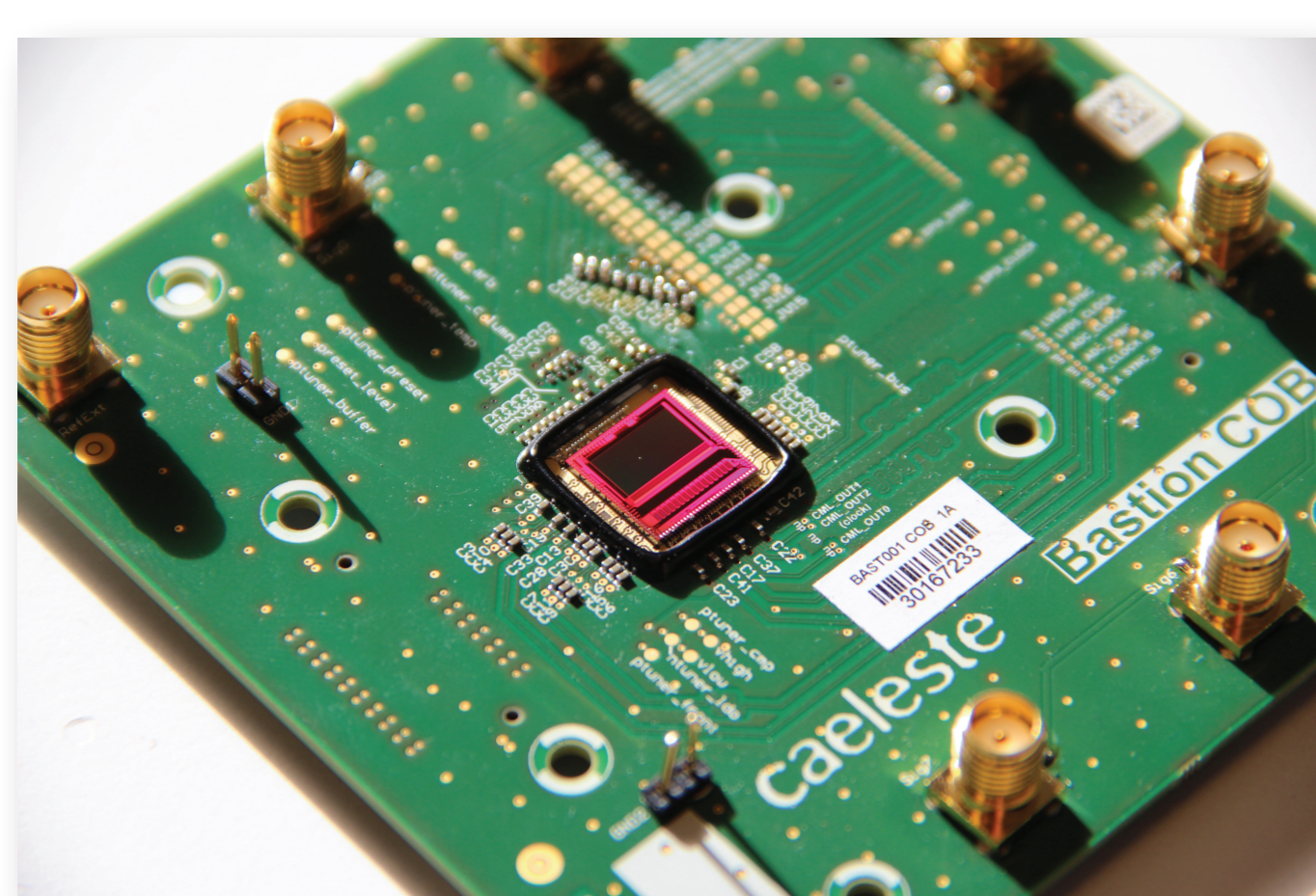
### Countries involved:

- Belgium
- France
- The Netherlands
- United Kingdom

## Additional information

The project will conclude by showing 2 demonstrators:

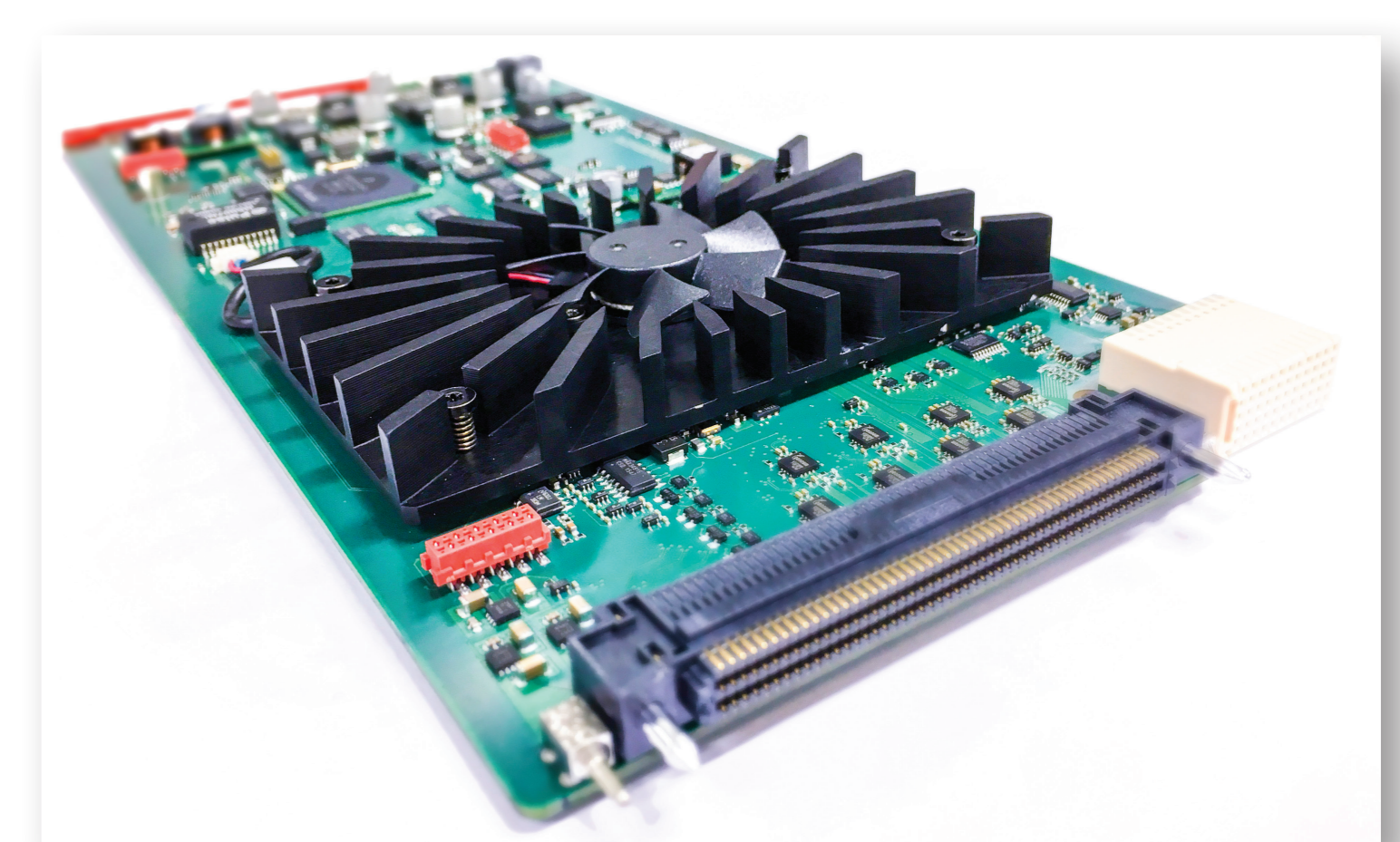
- A **broadcast** demonstrator consisting of several studios connected through the public Internet, containing Ultra High Definition cameras, low-latency high-quality H265 video compression, and layers to manage the network.
- A **surveillance and security** demonstrator consisting of High Dynamic Range sensors in visible, near Infra Red and UV wavelengths, at least quad HD cameras, compressed video over IP transport.



Chip-in-board sensor



ONYX-HDTV sensor



SDI to IP gateway hardware