ITEA 2

INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

Project Profile

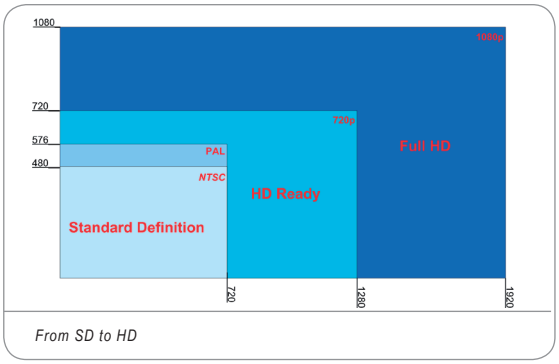
Deploying next generation high-definition television

From professional production to the home user

HDTVNext intends to investigate and develop the next generation high-definition television (HDTV) platform and the means of deployment, building on the use case studies in both the HD@Home and HD Video on Demand ITEA projects. HDTVNext will develop an HDTV 1080p 50-Hz end-to-end chain from the professional content creation to the final end user at home. This end-to-end chain will offer a complete European solution.

High-definition television is emerging through three areas In Europe. At the start of the high-definition chain, the professional sector is taking advantage of the possibilities offered by new compression technologies to multiplex more signals in a given bandwidth to send HDTV programmes in place of standard definition ones. In the middle of the chain, the distribution area is in the process of replacing analogue signal transmission by use of digital techniques as part of global analogue-to-digital switchover. And, at the end of the chain, the user-access area is deploying new flat screens using progressive scan to replace previous generation TV sets that made using cathode ray tube displays.

However, these areas are not moving coherently. Professional, distribution and domestic TV sectors are evolving independently. For example, TV sets are Full-HD while no 1080p broadcasting or multicasting, and no 1080p content distribution is yet available. New formats such as the Chinese-developed Audio Video Standard (AVS), H264 or MPEG-4 advanced video coding (AVC), and VC1 – the SMPTE 421M standard initially developed by Microsoft – are emerging with no real coherence, requiring trans-coding between applications. Moreover, the emergence of new streaming tools on video-sharing websites such as YouTube or Dailymotion will quickly saturate the Internet bandwidth.



From SD to HD

DEFINING THE FUTURE HD CHAIN

HDTVNext is defining the future of high definition on the TV and demonstrating a coherent HDTV 1080p 50-Hz end-to-end solution to synchronise content creation, distribution and user access areas.

Full high definition involves four challenges:

1. Defining a coherent structure for the deployment of the future HD video 1080p format at 50 frames per second. This format must be:
   - Flexible enough to easily acquire audiovisual programmes from different sources, such as video cameras mixed for self-produced programmes;
   - Scalable enough to target different bandwidth capacity, from fibre cable to broadcast relay, considering the increase in streaming applications; and
   - Compatible enough to be displayed on Full HDTV sets.
2. Ensuring the quality of experience from the content creation to the end user by providing a larger bandwidth to consumer interfaces and by increasing the depth of the colour space on the screen. Quality of service will be achieved by using scalable encoding techniques to adapt the content to different uses inside or outside the home.
3. Mastering the new 3 Gb/s interface of the 1080p encoder.

HDTVNext
(ITEA 2 ~ 07005)

Partners

Activa Multimedia
Barco
DS2
Energy Sistem Soyntec
ESI
Grass Valley France
Information & Image Management Systems, S.A.
LRSM
Maxisat
Mobilera
NXP Semiconductors France
NXP Semiconductors NL
ON2
Pace France
Philips Innovative Applications
ROBOTIKER-TECNALIA
Telefónica I+D
Thales Communications
Thomson R&D
Trinnov Audio
UAB
VITEC
VTT – Technical Research Centre of Finland

Countries involved

Belgium
Finland
France
Spain
The Netherlands
Turkey

Project start

April 2008

Project end

March 2010

Contact

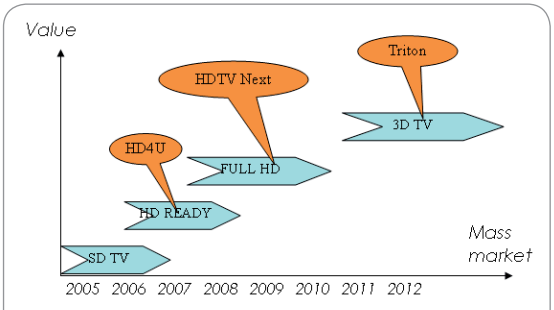
Project Leader :
Dominique Défossez
NXP Semiconductors – France

Email :
Dominique.defossez@nxp.com

ITEA 2

INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

Project Profile



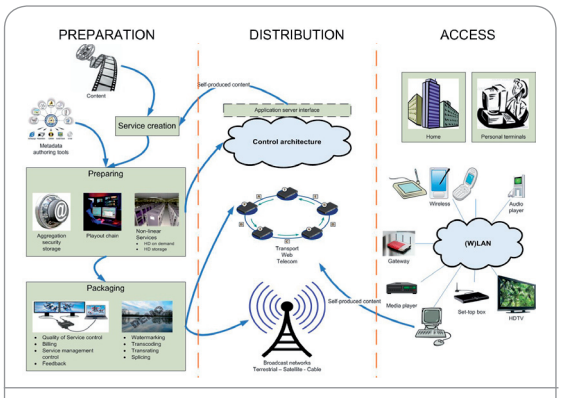
Multiple innovative mechanisms for inter-domain security policy

4. Ensuring interoperability and backward compatibility, especially with the already existing HD terminals. The goal is to implement compression schemes combining both MPEG-4 AVC for conventional HD – 720p and 1080i – and MPEG-4 scalable video coding (SVC) for 1080p50.

STEPS TO FUTURE HIGH DEFINITION

The project will first ascertain the appropriate use case studies that unify production, distribution and user access. The technical constraints will then be identified from these selected case studies. The appropriate format will be selected taking the marketing interests into account. The partners will develop the demonstration in two main areas:

1. HD at Home, which will show how a consumer can access new display and storage capabilities developed for broadcast entertainment; and
2. HD on Demand, which will enable a non-linear consumption of HD content from a VoD server.



End-to-end chain architecture

COHERENCE OF THE END-TO-END HD CHAIN

The major visible results of HDTVNext are expected to be:

- An increase in picture resolution and overall quality thanks to use of 1080p formats;
- Optimisation of audio content rendering in the home for HD content with access to other sources for entertainment and communication with a focus on common participation in media creation, distribution and sharing;
- Facilitation of the consumption and production of 1080p50 HD content by ensuring a backward compatibility with the first HD generation and by integrating into the demonstrators the means of managing self-produced contents from fixed, mobile and/or wirelessly-connected terminals;
- Integration of HD content into a multiple viewing, multiple task home environment with the usage of rich interactive media to control the experience of non-linear content – HD Content On Demand services; and
- Ensuring compatibility between the different elements of the end-to-end HD video chain, including new terminals such as portable video players.

Based on the unifying 1080p video format, HDTVNext will identify and demonstrate new services that could provide new sources of revenue for Internet providers, telecommunications operators and TV broadcasters. These services could include:

- Self-production of HD audiovisual programmes – production;
- HD video on demand – distribution; and
- HD@Home – consumption.

EVERYONE TO BENEFIT FROM HDTVNEXT

Considering the chain flow, it will be the content creators that are the first group to benefit from HDTVNext. They will take advantage of aggregating live or pre-recorded content coming from different sources into single programmes ready for delivery. Non-linear editing techniques will allow merging in mass broadcast productions, and community or personal access to unrolled content – multicast or unicast video on demand.

The second group of users to benefit will be the distribution actors such as broadcasters, who are expecting the emergence of the 1080p technology to enable development of new services.

The final group to benefit are the community of end users that can take advantage at home of their Full-HD television to enjoy the smooth progressive techniques, using different sources: broadcast, multicast, Blu-ray players, game consoles, etc.

ITEA 2 Office
High Tech Campus 69 - 3
5656 AG Eindhoven
The Netherlands
Tel : +31 88 003 6136
Fax : +31 88 003 6130
Email : itea2@itea2.org
Web : www.itea2.org

■ ITEA 2 – Information Technology for European Advancement – is Europe's premier co-operative R&D programme driving pre-competitive research on embedded and distributed software-intensive systems and services. As a EUREKA strategic Cluster, we support co-ordinated national funding submissions and provide the link between those who provide finance, technology and software engineering. Our aim is to mobilise a total of 20,000 person-years over the full eight-year period of our programme from 2006 to 2013.

■ ITEA 2-labelled projects are industry-driven initiatives building vital middleware and preparing standards to lay the foundations for the next generation of products, systems, appliances and services. Our programme results in real product innovation that boosts European competitiveness in a wide range of industries. Specifically, we play a key role in crucial application domains where software dominates, such as aerospace, automotive, consumer electronics, healthcare/medical systems and telecommunications.

■ ITEA 2 projects involve complementary R&D from at least two companies in two countries. We issue annual Calls for Projects, evaluate projects and help bring research partners together. Our projects are open to partners from large industrial companies and small and medium-sized enterprises (SMEs) as well as public research institutes and universities.

Σ! 3674

HDTVNext
(ITEA 2 - 07005) October 2008