

Progress Report Passepartout ITEA04017

July 2005-December 2005 Edited by Keith Baker on 27th January 2006



Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 2 of 48

This document will be treated as strictly confidential. It will only be public to those who have signed the ITEA Declaration of Non-Disclosure.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 3 of 48

TABLE OF CONTENTS

Exe	cutive Summary	4
1	Introduction	5
1.1	ITEA domains and technology categories addressed	6
1.2	Market Relevance	7
2	Progress	8
2.1	Technical Results	8
2.2	Dissemination	8
2.3	Project Consistency	8
2.4	Project Relevance	9
2.5	Progress Highlights	9
3	Cooperation	10
3.1	Cooperation in the project	10
3.2	Collaboration with other projects	10
4	Exploitation Forecast	11
5	Plus/Minus Report	13
6	Risks	14
7	Manpower	16
8	Milestones	18
9	Appendix	21
9.1	Technical progress	21
	9.1.1 Progress report Work Package 1: Standards Technologies and Innovation	21
	9.1.2 Progress report Work Package 2: Content & Tools	25
	9.1.3 Progress report Work Package 3: Networks and Platforms	34
	9.1.4 Progress report Work Package 4: Integrating the final demonstrator	41
9.2	Dissemination	48

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 4 of 48

Executive Summary

Technical progress / results achieved

Completion of the majority of the deliverables of WP1 has been the major technical achievement of the period. Now that all planned deliverables have been completed the partners have shared a much broader common vision of the state of the art, the innovations the project will produce and the business relevance of those innovations.

The other WPs of the project have all now commenced. WP3 and WP4 making the most progress in the common efforts to respectively create platforms and to define the various demonstrations. WP2 wrestles with a much broader set of issues related to content scalability, Network and terminal adaptation, and user profile specification; these are proving to be a tough set of challenges when asked address yet at the same time unify a common vision to the project.

Major dissemination activities

The project has produced a number of technical articles and standardization input technical and academic communities. Within the context of the ITEA programme a major workshop was held with projects in related topics in Brussels in December. This workshop was a success and continuation of the concept with greater involvement from the MEDEA+ programme projects: Blaze, Planets and TSC, is a goal for 2006. This will stimulate greater interaction with the engineers and researchers across an important cross-section of partners in both programmes.

The project partners also provided major contributions to the ICCE2006 in Las Vegas with a special session on Reactive media and a tutorial on IPTV technology. Projecting a strong image of European innovation in the consumer electronics sphere. For the future both this IEEE conference and related CE industry and broadband technology oriented events in Europe will be exploited. This includes a major EBU workshop on broadcast and P2P technology in the coming period.

Managerial issues

The Change request submitted to the ITEA office has been approved. The project expects to maintain the current FFP as the project plan for the remainder of the project's duration.

No project partners or sub-consortia are reporting problems or issues with respect to funding from Public authorities either in the past period or in the coming period. No partners show any major shortfalls in effort dedicated to the project.

Approval of the PCA continues with the appropriate officers within the companies and institutes, and should be completed prior to the first review.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 5 of 48

1 Introduction

Industrial Goals

Past	Passive	Separate	Standalone	Aggregated
Future	Reactive	Converged	Networked	Personalised
Present	Prosumer creates own content, but enjoys only some interactivity outside PC	Internet and other networks divided and poorly managed	Connected digitally, but no network management possible	Only passive (TV) and active (PC) modes exist: Proto-Time- shifters arrive
Future	Users and communities using reactive- interactive principles	Fibre, Blu-Ray, UWB and WiMax networks dominant	Media center as staging areas for providers to feed multiple in-home devices	Consumers have control of content in form and presentation

Figure 1 Roadmap.

The project is based on a roadmap derived from Pricewaterhouse, on the progression from current strategies for media creation and consumption to a future of ambient experience of media in the home as outlined in Figure 1.

From a technical point of view the project is driven by four technologies and the synergy that the consortium can exploit between these.

- HDTV and scalable content
- Blu-Ray and Mediacenter (PVR) technologies
- Reactive and interactive content flows
- Wireless access network (WIMAX)

Other key technologies such as DRM, GRID systems, wireless sensor networks, etc will be derived from co-operation with other projects in the ITEA programme, MEDEA+ projects or national programmes including *Poles of Competitive* or *Poles of Excellence*.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 6 of 48

1.1 ITEA domains and technology categories addressed

ITEA Technology Domains:

Major:	Home
	Focus on the use of scalable HD content in an ambient experience home.

Minor: Enterprise Tools, standards and flows to create reactive content.

ITEA Technology Categories:

Content capture, creation and authoring

The project will address the issue of content capture creation and management in the multimedia markets by bringing together SME enterprises in France, Spain, The Netherlands, Finland and other European countries to create an effective value chain. By providing input from the terminal and middleware stack vendors the task of creating attractive, efficient content for the market will be simplified for both the toolmakers and tool users. The tool vendors will address the issue of asset acquisition, digitizing, editing and composition for object oriented TV production processes with a specific focus on the linguistic adaptation issues.

Data & content management

Creating proactive AV content using object oriented streaming technology will be a goal of the project. This will allow open formats of object TV (MPEG-4/-7) lean-back and browser based multimedia (SMIL) to be combined with reactive technology in the terminal to optimize the interactivity to a level compatible with viewers expectation, i.e. advancing browsing onto new connected displays for viewing by groups and by individuals. Thus demonstrating that AV content can mediate interaction between creator and viewers, but not just on a channel level, leading to a better experience of AV exploiting some ambient intelligence concepts. This would include demonstrations of such applications in areas such as education and healthcare.

Network transport and protocols with network management

Streaming technology for advanced IP, DVB network protocols in conjunction with storage technologies will be addressed by the middleware and terminal vendors of the project. This would include demonstrations with home and service provider based servlets and agents with adaptations to device and user profiles. Adaptation will focus on the use of advanced media such as MPEG-4 and MPEG-21/SVC versus transcoding of formats by media-servers in the home context.

Resource management

Road maps for cost effective terminal and middleware will be addressed in the project in key areas of terminal architecture such as: dynamic resource allocation, real-time software components, graphics capabilities, virtual machine technology, and memory management. The priorities for innovation in resource management will be studied in this project and the results shared with the MEDEA+ projects: Blaze and Planets.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 7 of 48

1.2 Market Relevance

With a strong focus on the potential of major sport events the imagination of the European public for HD media is being stimulated by the consumer electronics and media industries in 2005. Both major partners (Thomson and Philips) in this project are playing a leading role in bringing the value proposition of HDTV to the media networks and to the network stakeholders. This campaign has been very successful in avoiding the pitfalls of HDTV in the USA, by creating clear demarcation between the elements of the home system necessary to distribute HD media via both vertical and horizontal markets. In particular, the efforts to stimulate both Pay-TV and FTA networks to participate in the promotion of streamed HD media have been effective. And the focal point of this success will be the Football World Cup in Germany in 2006.

On the basis of this clear demarcation of roles between media receivers and display devices in European households based on the EICTA standards for "HD-Ready" display devices and DNLA home-network standards, this project envisages the building of a true ambient experience using heterogeneous HD media sources is to be made possible.

In the role for intermediation between the interests of the media stakeholder and the legal but disputed rights of the consumer for "Fair-Use". The project continues to strike a balance between the diverse standpoints on the various rights issues related to this topic. The project is seeking technology from the open source community that has value in media centers and gateways supported by telecom and cable companies. At the same time, the integration of community generated content, Person to Person communication with Copyrighted content is under study. It is the intention of the project to support the activities of the EBU in seeking a compromise on this issue, that avoid the creation of closed and proprietary media boxes in the home.

Key technology of the project such as TV-Anytime, Blu-ray and SVP continues to make progress towards market exploitation, and in the period after the completion of the project is expect to have positive impact on the media networks and economies of the European nations.

The project partners continue to make strong efforts to remain engaged with the interests of the Broadcast industry and the emerging broadband entertainment industry in a unified solution to reactive media.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 8 of 48

2 Progress

2.1 Technical Results

The technical results of the project are covered in detail in the appendix of the report, which on this occasion are deep and cover the issues of the period in detail. The project leader would draw the reviewers' attention to the strong progress of WP4 in the period to bring focus to the matrix of sub-activities divided over the national sub-consortia and project tasks.

2.2 Dissemination

The project partners showed strong commitment to dissemination of its technology at the ICCE2006 with both a full session of four papers dedicated to the issues of object oriented and reactive media at the conference and a tutorial on IPTV from Thomson (Grass Valley) on topics covering IPTV and interactive media. Blu-Ray technology continues to enjoy public attention and contribution to the CES 2006 were prepared during the period.

Two presentations from the project were made to a joint ITEA/MEDEA+ workshop on European HDTV Technology. This workshop was held in the Philips Office in Brussels in December 2005. The event was highly praised by the attendees for the technical level of the presentation from the projects.

2.3 **Project Consistency**

All project partners have started activities. There has been no loss of partner participation during the period. And it can be reported that all partners are providing input to the technical and management processes of the project.

The Change Request to the original full project proposal submitted during this period has accurately captured the expectation of the consortium to execute the project in under two and half years. There is no expectation that the coming period will require any changes neither to the current Full Project proposal, neither in any subsequent period.

The project remains bound by a set of strong national consortia, with a strong will to cooperate between individual partner on both a bi-lateral and multiple lateral basis. Also the focus on the wider business issues of the companies, but with a respect for technical innovations provide by the scenario driven approach (Maxima Report) to the demonstrators is valued in the projects working relationships.

The vision of the project to provide Ambient Experience to the home in the context of this vision was proven to be valuable at the ITEA symposium in Helsinki in the discussion of the project with the public authorities.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 9 of 48

2.4 **Project Relevance**

In 2005 the European consumer electronics companies have contrived to provide the technology for HD media with a great leap forward by a tightly co-ordinated action with leading broadcasters. With the availability of low cost and large format LCD monitors in the home, the need for distribution technology: DVB, BD-ROM and IP to match the customer needs for media provide a new impetus. Ideally this set of distribution technologies must to avoid the "Structural Rigidities" of government and current media interests to avoid the pitfalls of the early failed "Analogue" switch-off and 16:9 initiatives, i.e. closely follow the DVD home-cinema revolution for MPEG2 16:9 digital content.

This project attempts to show the form of the integration of such coupled distribution networks in a single home network based system. The focus on the integration is not the broadcast media, which is covered by a sister project HD4U, but on the optical storage and IP based on P2P technology. The significant innovations in the project are the introduction of stronger coupling to PVR based media packaging, with superior interactive capabilities to navigate and control presentation of content from packages using scalable video codecs and advanced graphics. The project also explores the potential for merging copyrighted and home adaptation content in the bounds of Fair-use.

2.5 Progress Highlights

WP 1 complete, with the exception of the activities on standards, these activities will continue for the duration of the project, and be reported in a final deliverable.

WP2 has commenced with a much clearer vision of the goals based on the far ranging discussion between the partners in the extended period of WP1. Although more and better understanding the contribution of individual efforts to the utilization by new media concepts in the scenarios would aid the partners to bring focus into the work packages efforts.

WP3 has a robust architecture and a clear vision of the goals. Activities are being steered by a well-focussed team of activities leaders.

WP4 provided an excellent start to the project's demonstration, and clearly established its role as driving the focus on the common validation of the technology components.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 10 of 48

3 Cooperation

3.1 Cooperation in the project

The project continues to show a strong commitment to co-operation on a bilateral and multilateral basis. All of the Work-packages and PMT/PCC meeting have been well attended, and the partners present have shown a strong and robust interest in the content of deliverables and progress of the R&D activities. Individual national sub-consortia have the critical mass to function as focal points for co-operation, with the exception of Finland and Korea, both of which only have one partner. Nevertheless strong coupling between Philips and ETRI on the topic of TV-Anytime compensates for the single partner from Korea.

3.2 Collaboration with other projects

There is a strong co-operation between the four projects of the Eureka programmes focussed on HD Media: Blaze, HD4U, Magellan and Passepartout. There are many common partners in these projects, which will lead to a natural synergy between them at some stage. However, to demonstrate this synergy a common one-day workshop had been arranged for the projects in the Philips Offices in Brussels in December. Given that this event proves useful, the workshop will be repeated on a wide and more organized form in 2006, with a specific emphasis on the next steps after the World Cup 2006 leading to the Olympics 2008. For any repeat event the ITEA organization will be more closely involved in the public presentation, but due to the pressure of establishing the ITEA2 programme in 2005 this was not possible.

DRM is not an issued covered by this project, but is obviously an issue that needs attention for high value HD media networks. After the issues with the Public Authorities in 2004 for funding DRM related projects under Eureka in the context of large but in retrospect ineffective activities in IST IP projects. There is now a possibility of a new co-operation with a DRM related project under the MEDEA+ programme; this is the Trusted Secured Computing (TSC) project under the leadership of Bull. This project includes a full co-operation between French, German Dutch and Spanish partners. Co-operation between these projects has been agreed with the partners of the TSC project in the context of the Project proposal process with the MEDEA+ steering board. Although it must be noted that DRM and P2P are sensitive subjects for public subsidy with some national governments.

Use of Open source in the project has been strongly championed by the Spanish national consortium, which has demonstrated great vision and flexibility in such spearhead efforts. Philips supports this effort with it close co-operation in the Open-source projects in the ITEA programme (Osmose and OSIRIS) and broader efforts on the world scene to support Linux in the CE Industry.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 11 of 48

4 Exploitation Forecast

Blu-ray BD-ROM consumer electronics appliance market is expected to emerge in late 2006 and early 2007 in Europe and the USA. Philips will be involved in the creation of these first generation platforms in the context of this project, and the involvement will be different tiers in the hardware and software supply chains. Thomson has a broader involvement in the introduction of HD media because of its role in the content creation chain.

PVR media center will suffer significant cost pressure on the final product, and expectation that rival consortia of Japan-USA companies have created (HD-DVD v BD) weakened by focussing on the widest applications Console-PC-PVR. Philips position will be strengthened by a strong focus on supply chain management for products with a strong appeal under the design for Next Simplicity concept.

Wimax has seen announcement of products and systems for media networks at IBC 2005 in Amsterdam. The need to bring geographical regions outside the normal ADLS2+ catchment scheme will drive the introduction of this technology. The need to deal with regional broadband access issues will drive this technology in Europe and should have significant impact of rural broadband networks.



Worldwide Wimax Usage for Broadband

SVC

Progress towards the standardization of scalable video format continues in the various ISO/MPEG standard processes, and for the long term this remains a vital investment in European intellectual property for future generation of video codecs.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 12 of 48

Multi-lingual technology.

The economic and social dislocation caused within the EU by the lack of a single spoken or written language is a blind spot of the national history of the region. Heavy investment in R&D in this issue at EU level could provide a "Visionary" solution to the problem, which would alleviate the worst effects, yet respect the linguistic heritage of the people. Although an economic problem, which has an economic solution the social barriers can only be over come by commitment from governments to a long-term solution. No forecast can be made on this basis.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 13 of 48

5 Plus/Minus Report

+/-	Description	Impact	Action
+	Change Request to ITEA office	Accepted	None
+	Presentation at ITEA Symposium	Clear vision to PAs	Monitor
+	HD MEDEA Workshop in Brussels	Better synergy in Eureka	Consider 2006 workshop under ITEA2
+	Strengthening position of BD-ROM in Format War	Improved IPR position for Philips	None
+	Chinese standard for optical media	New allies for European industry	Monitor
+	P2P network forming alliance with Media industry	Use of P2P in combination with BD- ROM possible	Efforts to support a EBU sponsored P2P/Broadcast workshop
+	BBC to start trial of P2P network iMP	European broadcasters growing interest in P2P	Philips Applied Technologies discussions with BBC
-	Finnish consortium is small; Single partner	Lack of a clear role in the consortium	Bring partner into better contact with others
+	A lot of innovative ideas and proposals	Improve the interest and the originality of WP2 activities.	Move on to the implementation part.
+	Complexity of WP2.1 and WP2.3 activities, which involves a large number of actors and heterogeneous technologies.	The large field of technologies involved is a guarantee for creating and exploiting innovative synergies.	Encourage the cooperation between partners, create more sub-consortium and sub-activity meetings.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 14 of 48

6 Risks

Commercial exploitation of the projects results are not expected to suffer a greater than any normal risk factor to a commercial activity.

Format War

The issue of a "Format-War" over blue laser technology for optical storage has moved from the consumer electronic sphere of next generation optical storage players to the issue of the IP based distribution infra-structure of the home. Specifically the US cable market has been the attention of new alliances and mergers. Microsoft has made agreement with Cable Labs to provide One-way HDTV services to the Xbox360 and MS-PC media centers. At the same time Cisco has moved into the IP based cable infrastructure with its purchase of Scientific Atlanta, the second in the cable technology duopoly. Cisco had already made moves to bring optical storage/HDD clients into the company's technology bundle at Linksys by purchasing Kiss (an open platform European PVR vendor), and leaving TIVO (leading US PVR vendor) independent. Microsoft has by bringing consoles into the home HDTV PVR network integration triggered two trends, firstly it will trigger Sony to response with a tighter integration of PS-3 to cable services, and secondly this will bring high quality low cost graphics capabilities to a home platform. For European PVR technology providers of both chip-sets and middleware this will increase the pressure to provide better graphic capabilities to match the expectation created by games consoles. Graphics capabilities have been a weakness of the DVB driven STB/PVR technology from Europe compared to games consoles technology of USA-Japan, as demonstrated by the Cell Architecture of IBM, Sony and Toshiba.

Given that the **Format War** has moved to a merge of the console and the vertical cable TV market in the USA, the situation around the PC and the format battle has become another front line. The conflict of interest between Intel and Microsoft v HP and Dell on the Format War will truly show how independent of the technology vendors the US PC System houses can operate.

In the consumer sphere it remain to be seen if the Japanese continue to risk creating a opportunity for China to create it own standards, and then undermine the US-Japanese World standards by supplying the technology at low cost to the non-USA markets for consumer PVRs. A strong Chinese play for the world market would be very much driven by aggressive pricing of HD media to a massive world market already using HD-Ready LCD-TV in 2008 for the Olympics.

European consumer electronics industry and consumers interests need to balance the role of our markets and technology IPR (DRM, Codecs, middleware, etc) to the interests of the other three world economic blocks. However, this is not a topic of concern for this project, yet remains a risk.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 15 of 48

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 16 of 48

7 Manpower

Manpower expressed in person-years Effort expressed in person-years

Participants		1 st semester 2005	2 nd semester 2005	1 st semester 2006	2 nd semester 2006
Philips	planned	10	10	13	13
	spent	10.34	12.77		
Thomsons	planned	8.25	8.25	8.25	8.25
	spent	8.25	8.25		
Stoneroos	planned	3	3	3	3
	spent	3.3	3		
Prewise Oy	planned	2	2	3	3
	spent	2	2		
	planned	3.5	3.5	3.5	3.5
Telvent	spent	1	2		
	planned	0.9	1.7	3.4	3.4
V2_	spent	1.1	1.7		
C)///	planned	2.5	2.5	2.5	2.5
CVVI	spent	3.9	3.2		
	planned	2	2	1	1
IRUTIC	spent	2	2		
	planned	0.17	1.5	1.5	1.5
UPM	spent	0.17	1.5		
	planned	2.25	2.25	2.25	2.25
CRP Henri Tudor	spent	1.35	1.8		
	planned	2.7	2.7	3.1	3.0
ARTEMIS	spent	2.7	2.7		
	planned	1.6	1.6	1.5	1.5
TUE	spent	1.6	1.6		
Sub-Total	Planned				
	Spent		42.52		

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 17 of 48

Participants		1 st semester 2005	2 nd semester 2005	1 st semester 2006	2 nd semester 2006
Cartoon	planned	1.2	1.2	1.2	1.2
	spent	1.2	1.2		
UVIGO	1	1.5	1.5	1.5	1.5
	spent	1.0	1.5		
INRIA LORIA	planned	1.5	1.5	1.5	1.5
	spent	2.00	2.5		
	planned	2.00	2.0	2.00	2.00
ETRI	spent	2.00	1.0		
	planned	0.0	0.2	0.2	0.2
BCE	spent	0.0	0.2		
	planned				
Sub-Total	spent		6.4		
Final Total	Planned	46	46	52	52
	Spent	35	49.2		

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 18 of 48

8 Milestones

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 19 of 48



Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 20 of 48

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 21 of 48

9 Appendix

9.1 Technical progress

9.1.1 Progress report Work Package 1: Standards Technologies and Innovation

Reporting period: 1st July 2005 31st December 2005

WP1 Highlights

The major achievement of this period is the approval of WP1 deliverables by the project PMT: D1.1a: Technology roadmap, responsible Alan Mac Duff [Philips]

- D1.1b: HD/IP Technology framework, responsible Michel Kerdranvat [Thomson]
- D1.2: Content adaptation techniques, responsible Dick Bulterman [CWI]
- D1.3a : Scenarios, responsible Patrick Blandin [CRP HT]
- D1.3b : Authoring tools, responsible Patrick Blandin [CRP HT]

D1.1c "Standardization" is a document to be filled all along the project life with contributions to standardization. The framework of the document is stable with all relevant standardization bodies identified.

The documents have been achieved thanks to a clear definition of the role of each partner and their expected contributions. The definition of common templates for the partner contributions has facilitated the documents integration.

Progress report

WP1.1a: Technology roadmap

The Task leader for this activity is Alan MacDuff from Philips Applied Technology. During the Work Package 1 kickoff meeting in Brussels (March 10 and 11) where all WP1 partners contributed, an inventory was made of all the standardization bodies of the techniques used in the project. A mapping was made for all companies that used these techniques and the responsible companies for delivering input to the activity leader are chosen. Also an outline for the document was established at this meeting. The contributions for this document came in during the second half of the year. There was a small delay to the deliverable due to the fact no input was received for the MHP standard. This was due to the fact that the Finnish company Cardinal wasn't get funded and dropped out of the project, and also Thomson didn't have any plans to use MHP in the project. Discussions between Thomson and Philips during the work package meeting Paris (29 November), resulted in the decision to remove the MHP part of the document. After this, the document was approved by the PMT and the final version was distributed to all project members and put on the BSCW server at the TUe.

WP1.1b: HD/IP Technology framework

Thomson is in charge of this activity and the deliverable 1.1b was approved at Boulogne PMT meeting on November 30.The high level architecture of Passepartout has been defined and

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 22 of 48

the components have been identified. Each partner has described the components he will develop in the project with the corresponding innovation.

On the content creation side the following components will be developed:

MPEG-7 authoring tool[INT]Stoneroos iTV authoring tool[Stoneroos]Multilingual authoring tool[LORIA]Scalable Video Coding[Thomson]TV any-time authoring tool[ETRI]

On the distribution side the focus will be on wireless 802.16 based component by Thomson. While on the reception side the components will be the Blu-Ray disc player and the home server to be developed by Philips. Other components to be developed are standard components or components to be applied on top of the overall architecture at systems level such as:

SMIL to which CWI expanded considerable effort towards the development of enhancements to SMIL 2.1; these enhancements, which were accepted into the new version of the standard in December 2005, will allow the implementations during the project (particularly those in WP 2.2 and WP4) to support key mobility and interactive facilities,

DVB-IPI to which Thomson will contribute for the streaming aspects, MPEG-21 to which INT will contribute especially for the scalable 3D graphics, OSGI by Telvent and UPM, TV anytime by ETRI, OpenTV for the Stoneroos authoring tool, Blu-Ray by Philips.

WP1.1c: Standardization

Deliverable D1.1c is a living document that will open until the end of the project to create the possibility to update the document with the ongoing standardization activities.

Each partner involved in a standardization activity has filled the template provided by Thomson:

DVB-IPI [Thomson] SMIL [CWI] Blu-Ray ROM and Blu-Ray Java [Philips] TV anytime [Philips, ETRI] JVT-SVC, common group between ISO/MPEG and ITU-T, on scalable video coding [Thomson]

WP1.2: Content adaptation techniques

The Task leader for this activity is Dick Bulterman from CWI. During the Work Package 1 kickoff meeting in Brussels (March 10 and 11) where all WP1 partners contributed, an initial architecture for surveying content adaptation techniques was made. In this document, all participating partners contributed sections on the role, the current status and proposed extensions to the content adaptation technology required within the project. A final version of this document was completed on schedule in Q4 2005.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 23 of 48

WP 1.3a: Scenarios

For the deliverable of work package 1.3a, Thomson and Philips Applied Technologies jointly made a description for the High Level Scenario that will be used in the Passepartout project. This was a joined effort due to the fact that initially there were 2 high level scenarios, namely the Maxima scenario and the Minority Report scenario. The result was a combined scenario containing elements of both the previous versions.

In addition two other high level scenarios have been proposed by the Spanish consortium (Telvent, UPM, UV):

Personal interactive multimedia access at home: T-Maestro

The goal of these high levels scenarios was to provide a high level of abstraction on top of all the scenarios that will be demonstrated in Passepartout.

In a second step a number of scenarios focused on individual or group of partners have been derived to demonstrate the content adaptation concepts developed in the project. CWI contributed two scenarios for implementation initially in WP2.2, with the potential for further integration into the final project demonstrator.

The first scenario (developed jointly with V2_), provides a demonstrator of content control and adaptivity in the context of future interface devices. In this scenario, external sensors are coupled to user interaction activity, with the resulting values used to control viewed content. In the second scenario, an incremental content augmentation environment was defined in which end-users are able to add virtual edits and content enrichments to stored broadcast and external content (on high-density optical disks) via pen-based interfaces.

Thomson defined a "Scalable Video Carousel" scenario to demonstrative the capabilities of scalable video coding for the presentation of an interactive content on different types of terminals.

ETRI defined an "Educational package" to go beyond traditional broadcasting by the mean of PDR (Personal Data Recorder) function and EPG (Electronc Program Guide).

CRP Henri Tudor described "Personal Assistant for Intelligent Content Browsing" scenario that is based on user profiles to adapt the presentation of contents.

"T-Maestro" and "Avatar" of University of Video are scenarios on the combination of traditional AV contents and pedagogical data, adapted to user interest.

"Travel video blog" is proposed by Gradient to demonstrate future usages of exchange of video and data on travels between individuals.

"Dynamic and Interactive Handling of Multilingual Textual Information in Digital Media (MPEG-4 video" is proposed by Loria to demonstrate the multilingual tools that will be developed in the project in the application of sub-titling.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 24 of 48

In this document an analysis of the audio-visual market by Gradient foresees future evolution of producing and consuming contents that should be taken into account in the Passepartout scenarios.

WP 1.3b: Authoring tools

Work Package 1.3b focuses on content creation tools, in this context Philips Applied Technologies contributed to this activity by providing a description of the planned Blu-Ray Java development environment. The contribution contains an overview of the implementation environment as well as high-level functional requirements for the system as well as some data requirements.

CWI provided a description of the AMBULANT ANNOTATOR, an authoring tool that will support the CWI content augmentation scenario described in WP1.3a.

CRP Henri Tudor described the RAMO authoring tool extensions to be developed.

The "standardization software chain" described by Loria is a stand alone application running on different operating systems in order to facilitate the production of metamodel compliant with MLIF (Multi Lingual Information Framework) which is a common format for multilingual content.

"Atlas" is the authoring tool developed by University of Vigo to help courses designers for the purpose of the distant learning application.

In addition a contribution from BCE (RTL group) has been integrated to define the audio-video interfaces in the content production environment.

Cooperation/Meetings

ITEA

WP1 and PMT meetings:	Amsterdam, 13 th -14 th September 2005
WP1 and PMT meetings:	Boulogne-Billancourt, 29 th -30 th November 2005

Dutch Sub-consortium

September 12, Amsterdam (CWI) December 14, Eindhoven (Philips) November 11, CWI visit to Philips.

Conclusion

At the moment of writing this report no managerial issues or problems to be reported. All activities are currently on track to the approved FPP plans and the deliverables that should be available, are approved by the Project Management Team.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 25 of 48

9.1.2 Progress report Work Package 2: Content & Tools

Reporting period: 1st July 2005 31st December 2005

This report is covering the progress of Passepartout Work Package 2 (WP2) during six month of activity within WP2, from June to December 2005. This time period covers in fact, the beginning of WP2 activities.

The first issue to be highlighted concerns the FPP change request submitted in September 2005 and approved by the ITEA Office. This change request does not concern the global goals of the workpackage but only a re-definition of partner's contributions, which have been adjusted/refined for the sake of an improved clarity and visibility. The changes have also taken into account the latest developments/achievements performed within WP1 activities, on which WP2 partially relies. The list of contributing partners has also been updated and reported.

The WP2.1 developments are making good progress. This is since the related technologies and deliverables are based on mature, standardized technologies.

Concerning WP2.2 and WP2.3 activities, a lot of effort concerned the elaboration of requirements together with specification of functionalities, deliverables, and demonstrators. Three WP2 meetings have been organized (*cf.* 0 Cooperation in the workpackage). In this way, partners had the opportunity of presenting their contributions before the Consortium during plenary meetings. Activity leaders played a central role in structuring the tasks and ensuring the homogeneity and consistency of the corresponding activities.

The major decisions agreed by the partners concern:

WP2.2: Rather than providing two unique demonstrators for content sharing and augmentation purposes, partners will provide two *sets* of demonstrators.

WP2.3 : Sub-sets of technologies will be integrated within several blocks. The added value of these technology merging blocks will be illustrated by the sets of demonstrators to be developed.

Initial specification documents have been provided and the implementation part has been started and is in progress.

Major dissemination activities

Some first publications have been submitted and approved to major international conference (*cf.* 9.1.1). The other dissemination activities concern the participation to standardization bodies such as JVT and MPEG-4 (*cf.* 9.1.1).

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 26 of 48

Introduction of WP 2

WP Goals

WP2 has a strong content applicative focus. The aim is to conceive and develop concrete content libraries and authoring tools, for scalable media with advanced TV interaction capabilities. In order to respond to the EOPM (*Edit Once Publish Many*) paradigm, a central role within WP2 will concern the elaboration of appropriate content adaptation capabilities for dis-aggregated content distribution, i.e. TV-Anytime. Thus making it possible to achieve interoperable transparent access to advanced, distributed and interactive multimedia content by shielding users from network and terminal installation, management and implementation issues, while fully assuring the agreed/contracted quality, reliability and flexibility.

More specifically, the concept of content adaptation will be advanced through three major areas, related to:

- *Content scalability*, involving the elaboration of scalable video coding tools, integrating within the same stream and in a flexible/reusable manner multiple levels of detail of the same content, which might correspond to several network, terminal and user profiles,
- *Network and terminal adaptation*, requiring the specification and integration of appropriate terminal and network-related descriptors and descriptions schemes related to encoding/decoding capabilities, device and display properties, power and storage characteristics, quality of service...
- *User profile specification*, with the elaboration and development of both user and contentrelated description schemes. Such tools will consider several criteria such as user's age, rights, preferences, level of comprehension, program/presentation preferences, or length, complexity and characteristic of the program (multilingual aspects, language preferences... oriented to disabilities / restricted accessibility).

The results of WP2 developments will be used in WP4 for demonstrating the content adaptability feature within the framework of a real-life application as defined in the scenario on a home network using Blu-ray and WiMax access networks.

WP2 is structured within the following three activities : WP2.1 –Adaptation engine,

- WP2.2 Content Production, Augmentation and Sharing,
- WP2.3. Technology integration issues.

WP Progress

Activities of WP2.1

Thomson's contributions concern WP2.1 deliverables:

D2.1a Elementary media scalable video codec

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 27 of 48

This deliverable consists in the development of a "scalable video coding" software in

the context of JVT standardization (cf. 0 Dissemination).

D2.1a MPEG-4 Player with SVC capability

This deliverable consists in developing a software player able to support SVC streams. An existing MPEG-4 player will be used. This player offers a framework in which decoders can plugged. For that a SVC decoder is in development with the adequate interfaces. This player will allow to make real-time demonstrations of SVC video streaming over IP network.

Both deliverables are currently under development and the work is in progress.

Current work for Centre Henri Tudor aims at more precisely specifying the requirements and architecture for a semantic-RAMO framework, in the goal of developing the engine as well as the API permitting to author applications.

This engine will be demonstrated in activity wp2.1 and used in wp2.3. In the framework of wp2.3, actual Centre Henri Tudor's work is on elaborating a proposition of integration of the semantic RAMO engine in the architecture proposed by TU/e.

This proposition targets the inclusion of the engine as well as components needed for playing RAMO-based box applications and might in particular be demonstrated by implementing a prototype application based on the scenario proposed for wp1.3. Work on refining this proposition is currently in progress.

LORIA continued the design and development of the so-called MLIF "MultiLingual Information Framework". A "New Work Item Proposal" (NWIP) is under construction and expected to be submitted to ISO TC37 / SC4 subcommittee ("Language Resources Management") in January 2006. It should be noted that MLIF has already been presented to AFNOR (*Association Française pour la Normalisation* - ISO's French National Body) on December 7th, 2005. We have obtained several very positive comments about our proposal.

MLIF design also includes the specification of a platform dealing with elementary multilingual units (Data Categories ISO 12620) and a metamodel defining the way these multilingual units are related or associated to each other. These multilingual units may be embedded in several types of multimedia content as MPEG-4 or SMIL.

INT-ARTEMIS continued the work on the development of novel scalable 3D graphics techniques, within the framework of MPEG-4 AFX standard. These developments will be exploited for deliverable 2.1.a – Elementary Media scalable graphics encoder.

On the other hand, within the framework of WP2.2 activity, INT-ARTEMIS started the development of a content sharing demonstrator, according to the scenario "*Multimedia Content Syndication: Experience and Share the World*" proposed in WP1.3 and described in the scenario specification document.

Prewise contributions firstly concerned WP2.2 activities, where Prewise investigated the functionalities and possibilities of the new technologies in related to e-learning and e-support

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 28 of 48

type of applications. Prewise will provide iTV application integration model for Learning Management System purposes. A first study report has been achieved.

Within the framework of WP2.3, Prewise will develop a home/mobile version of LMS offering the content personalization features for iTV and new multimedia content technology adaptations and interfaces, LMS Integration to offline multimedia delivery platforms as well as to mobile multimedia platforms, and utilization methods for metadata. This task has been started, with the design and architecture part.

Within the framework of WP2.1 activity, CWI (together with TU/e) began their investigation of specific techniques for (1) achieving adaptive behaviors of assistant and recommenders programs, with support of interactive/rapid user modelling based on semantic Web functionality, and (2) adapting the distribution of the content to the available devices based on user preferences. CWI also initiated the design of a content authoring tool, to be integrated into the WP2.2b work (described below).

Concerning the WP2.1.a task, CWI's responsibility in this area was to investigate the development of automated content authoring for selecting portions of broadcast content based on user preferences stored in a PVR and sensor-based interaction. Work carried out has been mostly descriptive with respect to the specification of the technology for the pillow demonstrator as outlined in WP2.1 of the ETA International Passepartout description, which forms a subset of the performance piece by Thecla Schiphorst (Simon Fraser University, Vancouver, Canada) to be presented during DEAF 2006. In both cases the work has been progressing smoothly.

For the pillow demonstrator V2_ has started with the development of the hardware (2 sets of sensors – skin conductivity and pressure). This development is performed in close collaboration with CWI INS2, where at the same time the technical specification (modeling) of the key processes has been started, namely signal identification and interpretation, decision making about soft or hard adaptation of content or environment, and actual application of the adaptation strategy. Since beginning of October 2005 this work has been shifted to V2_.

The collaboration of CWI-INS2 and V2_ with Thecla Schiphorst (Simon Fraser University, Vancouver, Canada) to incorporate underlying semantic metadata within an interactive installation in a performance piece to be presented during DEAF 2006 is now settled. In addition the art concept is described, namely the mixing audio and video sources based on biometric feedback by users, generated through there use of sensor-enhanced pillows in an lounge environment. The aim is to provide a larger number of users with a variety of sensor-enhanced pillows and thus facilitate a collaborative way of expressing the group and/or individual mood in visual and audible media. At V2_ work on the gesture recognition for this installation has been started.

The current schedule is to provide a first demonstrator for ETA (pillow demonstrator as outlined in WP2.1 of the International Passepartout Description) by March 2006. This demonstrator will cover one pillow sensor-enhanced pillow for one user and two adaptation mechanisms. In July 2006 an improved version of this demonstrator will be available, namely several pillows for several users. In November 2006, the final art performance in collaboration with Thecla Schiphorst will be presented at DEAF 06.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 29 of 48

Activities of WP2.2

Concerning CWI contributions to the the WP2.2.b task, the focus of activity during the reporting period was the development of a series of requirements for the augmentation and sharing of user-generated content that was developed in concert with broadcast content. CWI worked on the task definition document for WP2; version 0.5 of this document was delivered at the WP2 meeting in Paris in November 2005. In addition, CWI worked on the translation of the scenario for content augmentation provided as part of WP1.3 to meet the specific needs of the WP2.2 demonstrator. CWI began on the development of a requirements document for the demonstrator, which will survey user needs, interface issues and required architectural support. The document is expected to be completed early in Q1, 2006.

The focus of the work on the Augmentation interface is to define a series of requirements that will allow home users to enrich broadcast or optical disk content to be saved, navigated, subsetted and enriched with text/ink/audio annotations and links to associated content. Prototype server/client architecture is being developed that allows scalable augmentation from conventional remote controls, low-power pen-based devices (such as the Nokia Internet Tablet 770), and full functional TabletPCs.

The WP2.2 activity investigates models and methods for manipulating content, both inside and outside of the physical media center as server. The central focus is integrating the needs of selected project scenarios in WP-1.3a that demonstrate how users can restrict or augment content provided over broadcast and interactive streams. The work in WP2.2 is separated in two broad demonstrator sets: WP2.2a and WP2.2b.

WP2.2a studies how multiple viewers of a common broadcast program can use personal devices to individually request restructured presentations related to the program and share them with each other. Work carried out has been mostly descriptive with respect to the specification of the technology for the pillow demonstrator as outlined in WP2. For the pillow demonstrator V2_ has started with the development of the hardware (2 sets of sensors – skin conductivity and pressure). This development is performed in close collaboration with CWI INS2, where at the same time the technical specification (modelling) of the key processes has been started, namely signal identification and interpretation, decision making about soft or hard adaptation of content or environment, and actual application of the adaptation strategy.

WP2.2b studies how individual users can take (protected) broadcast content and either extend it locally by associating new content containing text, audio or stroke animations, or restrict content by imposing (virtual) edit changes. The focus of activity during the reporting period was the development of a series of requirements for the augmentation and sharing of usergenerated content that was developed in concert with broadcast content. CWI worked on the task definition document for WP2 together with partners Thomson, Stoneroos, Chartoon, INRIA/Lorraine and INT/Artemis; version 0.5 of this document was delivered at the WP2 meeting in Paris in November, 2005. In addition, CWI worked on the translation of the scenario for content augmentation provided as part of WP1.3 to meet the specific needs of the WP2.2 demonstrator. Joint work began on the development of a requirements document for the demonstrator, which will survey user needs, interface issues and required architectural

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 30 of 48

support. The document is expected to be completed early in Q1, 2006. Within this framework, CWI designed an initial applications structure. CharToon investigated the possibility of using the SVG standard for implementing part of the animation player environment for ITV and coordinated with CWI the scenario to be used for the demonstrator that we will develop together with Stoneroos. CWI and Stoneroos investigated architectural considerations for integrating MHP streams into augmented content. Finally, Thomson demonstrated architecture for scalable video content in a multi-platform context.

Activities of WP2.3

Within WP2.3, CWI met with Stoneroos in Hilversum to discuss user needs for technology integration of existing MHP streams into the content augmentation system.

The TU/e team has been working on WP 2.1, 2.2 and 2.3.

In WP2.1 we have been busy with the definition of the overall personalization and adaptation architecture. In this context we have explored possibilities to employ semantic web technologies for the content, user and context modelling. We have implemented in the first prototype an approach to semantic enrichment of TV-Anytime metadata and packages. In order to be able to integrate broadcasting content with Web content and metadata, we have realized a translation of the TVA metadata schema into OWL and further realized a mapping to an existing topical thesaurus SKOS. This allows us to treat the incoming TV content in a much larger domain scope. Further, we have realized a mapping of the TVA-OWL schema to Time and Geo ontologies in order to provide a layer of dynamics for temporal and spatial reasoning of TV-Anytime content packages. In the context of the iFanzy and the Blu-IS demonstrators TU/e has designed and implemented a semantic search, using the user and context models to filter out only content relevant to the user and his/her current context. In the semantic search we have also used the existing pool of ontologies and the WordNet lexical thesauri for synonyms and word forms query refinement.

In W2.2 we have been exploring various user and context modelling techniques applied in a sensor-based input of user data. We are planning to use (and contribute to) the existing effort for defining User Modeling ontology and use this to achieve interoperability of the user and context model data between applications in the home environment (in the context of the move.me demonstrator).

In WP2.3 we have been focussing on a deeper understanding of the TV-Anytime packaging concept and providing translations from XMLTV format to TV-Anytime phase 1 metadata schema. Further, we have worked on the use of TV-Anytime packaged content for the iFanzy personalized program guide.

Co-operation

The TU/e team has been cooperating with V2 and CWI-INS2 in WP2.2 on the shared personalized experience scenario and demonstrator move.me. In WP2.1 TU/e has been working together with Philips on defining the overall architecture for the content modelling and adaptation, where TU/e has been primarily busy with the personalization and presentation components, where Philips was focusing on the content packaging components. Finally, within

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 31 of 48

the WP 2.3 the TU/e team has been collaborating with Stoneroos and Chartoon on the iFanzy demonstrator, both with respect to general architecture, design and implementation. Further, the TU/e team has established links with INRIA with respect to at a later stage involve multilingual treatment of the content at a presentation level, as well as with University of Vigo with respect to the T-learning scenario.

Dissemination

VCIP (Visual Communications and Image Processing) conference in Bejing on 12-15 July 2005 on Scalable video Coding: "Extended Spatial Scalability for Non Dyadic Video Formats: from SDTV to HDTV"; E.François, G.Marquant, J.Vieron, VCIP, Beijing, 12-15 July 2005.

At ICIP 2006 (International Conference on Image processing) Thomson will make a joint tutorial on SVC with HHI, Nokia, France Telecom, Sharp and RWTH (Aachen university)

A paper on ESS tool in SVC has been submitted by Thomson to PCS06 (Picture Coding Symposium).

D.C.A. Bulterman, User Centered Control within Multimedia Presentations, ACM Mulimedia Systems Journal (submission)

Bocconi, S., Nack, F. & Lynda Hardman.(2005) Supporting the Generation of Argument Structure within Video Sequences. In: Proceedings of the sixteenth ACM Conference on Hypertext and Hypermedia 2005, Graz, Austria, September 2005 (cd only).

Hardman, L. (2005) Canonical Processes of Media Production .In: Proceedings of the ACM MM 05 Workshop on Multimedia for Human Communication - From Capture to Convey (MHC 05), pp. 1 - 5, November 11th 2005, Hilton Hotel, Singapore.

Nack, F. (2005) Capture and Transfer of Metadata During Video.In: Proceedings of the ACM MM 05 Workshop on Multimedia for Human Communication - From Capture to Convey (MHC 05), pp. 18 - 22, November 11th 2005, Hilton Hotel, Singapore.

Full paper and a poster at the European Semantic Web Conference 2006 (November)

Full paper and 2 posters/demos at the EuroITV 2006 Conference (to be submitted in 2nd of January)

Workshops Organized: (WP2)

ACM Workshop on Multimedia for Human Communication - From Capture to Convey. (http://homepages.cwi.nl/~media/conferences/mhc05/mhc05.html).

Invited Talks:

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 32 of 48

D.C.A. Bulterman, Rethinking Media Distribution and Sharing, MS-Asia Research Symposium and Workshop, Beijing, China, July 2005.

D.C.A. Bulterman, Engineering Information in Documents: Leaving Room for Uncertainty, ACM Document Engineering 2005, Bristol UK, October 2005 (Invited Keynote Presentation)

D.C.A. Bulterman, Emphasis of Content in Networked Multimedia, CoNext Conference on Multimedia Networking, Toulouse, FR, October 2005. (Invited Panel Presentation)

Standardization activities

Thomson is deeply involved in the JVT standardization and contributes actively to the ad-hoc groups and meetings. JVT (*Joint Video Team*) is the common group between ISO/MPEG and ITU-T that has already defined MPEG-4 part 10 AVC / H.264. This group is currently aiming at defining the scalable feature to be added on top of MPEG-4 AVC / H.264. The schedule is the definition of the scalable video compression algorithms by mid 2006 in order to have an international standard by beginning of 2007.

At JVT July meeting in Poznan (Poland) Thomson proposed the unified tool developed for **Extended Spatial Scalability (ESS)**. The proposal has been adopted as **normative** and the software modules integrated in the new software model JSVM (JSVM3: Joint Scalable Video Model version 3). The JSVM is the software model developed in common by the experts of JVT in order to provide a common basis of work. Evidence has been brought that this ESS solution definitely outperforms the previous one in case of non dyadic spatial scalability (size ratios between two spatial resolutions not equal to 2). Comparisons with simulcast-like solutions were also presented and showed the assets of SVC (contribution JVT-P020).

At JVT October meeting in Nice (France) Thomson submitted a new proposal for generalizing ESS for inter-layer ratio greater than 2. It has been adopted in normative part of SVC standard. In parallel to the meeting, we have presented several demos of our lab developments including results on ESS results. These demos have received a very good feedback from the JVT and MPEG experts.

Thomson is co-chairing an ad-hoc group to add the capability to encode interlace picture format. A development schedule has been defined commonly with the Adhoc group participants. Several participants are willing to contribute on this topic, especially on interlayer prediction (HHI, LG, Sharp, Thomson, ICT). Thomson was in charge of developing the Picture Adaptive Frame/Field function in the JSVM3.1. The integration was made in December and delivered to the JVT group. A proposal for tests conditions on the different configurations has been written and delivered to the Adhoc Group on interlace tools.

ARTEMIS pursued its participation to the ISO-MPEG-4 and MPEG-7 standardization groups and actively contributed to MPEG-4 AFX (*Animation eXtension Framework*) and MPEG-7 3D shape working items.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 33 of 48

ARTEMIS co-chairs the scalable graphics compression MPEG sub-group and is editor of the MPEG-4 AFX standard.

During the reporting period, ARTEMIS proposed several contributions to the MPEG committee (*cf.* 9.1.3), relative to the issue of 3D scalable representations, within the framework of the following on-going Core and Evaluation Experiments:

CE3 Spatial- and SNR-scalable 3D surface coding,

EE1 3D Mesh Compression Framework,

EE3 IndexedWedgeSet.

The proposed technologies have been accepted and promoted within the MPEG-4 AFX standard.

Cooperation in the workpackage

The following meeting

WP2 Working meetings and PMT meetings: Amsterdam, September 2005, Boulogne, November 2005.

WP2 internal meeting: Evry, September 2005.

Meetings within the Dutch consortium: September 12, Amsterdam (CWI) December 14, Eindhoven (Philips) November 11, CWI visit to Philips. December, CWI visit to Stoneroos December, CWI meeting with Thecla Schiphorst

Conclusion

At the moment of writing this report no managerial issues or problems to be reported. All activities are currently on track and the deliverables that should be available. The WPs activities continue to advance on a broad front, but in the coming period efforts will need to be made to achieve more convergence and coherency.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 34 of 48

9.1.3 Progress report Work Package 3: Networks and Platforms

Reporting period: 1st July 2005 31st December 2005

General activities

In the first reporting period, work package 3 was started with activity 3.1. During this period, activity 3.2 has started on July 1, and activity 3.3 on October 1.

3.1 activity is closed and the deliverable of this activity is approved and available on the BSCW server of the TUe, and has been approved by the PMT and PCC of the project. The BSCW server used for communication and archiving documents within the project.

3.2 activities are ongoing, the plan is to finalize this deliverable at the end of 2005. WP3.3 has just started and will continue until July 1.

3.4 activities will be close the Work Package in H4 of the project (July 1 until December 31 of 2006), the result will be the platforms for the demonstrators that will be delivered by Work Package 4.

Technical progress

Work Package 3.1 contains description of all hardware and software/middleware components that are being developed in the context of work package 3. The deliverable, a document containing a description of all the components by the contributing partners, has been finalised and distributed. All different partners are currently working on the development of the promised components, which all will be used for implementation of the WP4 demonstrator(s) and the storage, personalisation and adaptation topics from WP2. Although WP3.1 is mainly centered around an ambient multimedia platform defined by Philips, there are many different components, so it was agreed by the partners in WP3.1 that several demonstrators will emerge from the defined components.

Work Package 3.2 is about TV-Anytime and OSGi, during the meeting in Amsterdam in September, Philips and ETRI mutually agreed that ETRI will be focusing on the broadcast site of TV-Anytime while Philips will focus on the storage based related work in TV-Anytime. Philips defined the architecture for the storage based multimedia platform together with the TUe. Philips will implement the TV-Anytime packaging concept, while the TUe will continue to work on the personalization and recommendation system on top of the packaging system. The Spanish partners (Telvent and UPM) will focus on a platform capable of demonstrating the OSGi middleware. The platform will probably be a PC platform and the most work will go into the development of the software components.

Work Package 3.3 is about the implementation of the components defined in WP3.1 and the implementation of the (wireless) access ports for the media center. This activity has been kicked off during the PMT meeting in Paris in November 2005. The main issue mentioned

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 35 of 48

during this meeting is that the WiMax developments of Thomson will focus on communication between peripherals and not on WiMax as an access to broadcast.

During the reporting period the Spanish sub-consortium (Telvent, UPM, UVigo) has provided the architecture of the platform that will be used for the final demonstrators in WP4 using the scenarios defined in WP1.

In the context of the deliverable D3.1, "Definition of Hardware and Middleware", the Spanish sub-consortium has provided the description of the components that will be later developed in other WP3 activities and in WP4. The following components have been identified: OSGi Desktop (a framework for GUI applications), OIAL (OSGi Input Abstraction Layer, that provides a unique way for applications and services to receive user interactions), OMAM, OCA.

Dissemination & communication

On September 13 all partners joined the work package meeting in Amsterdam organized by the CWI. The meeting was organized on this specific date due to the International Broadcast Conference (IBC) preceding the meeting. Many visitors of the consortium visited the related congress.

On November 29, a work package meeting in Paris was held, during this meeting Michel Kerdranvat from Thomson Kicked off WP3.3 and deliverable of WP3.1 was approved. Also the progress of WP3.2 was reported and seems to be good on track.

The consortium has been invited for a special workshop on the ICCE symposium in Las Vegas in January 2006. A total of 5 papers have been submitted and 4 have been accepted, 1 paper from Centre Henri Tudor in Luxembourg, 1 from Institute Nationale Telecom (Artemis) in France and 2 from Philips Applied Technologies in the Netherlands.

During a meeting of the Dutch consortium, both the TUe and Philips Applied Technologies agreed on continuing the partnership, also discussions between V2_ and Philips Applied Technologies resulted in a possibility for joining forces on the Human Computer Interaction part as both parties are working on related subject with different technologies.

Over the course of the second semester V2_ has consolidated solid partnerships with TU/e and CWI-INS2 concerning their hardware contribution for WP3.1. The 3 partners have agreed to work together so that TU/e and CWI-INS2 can implement their adaptation and personalisation topics from WP2 onto the V2_ biometric pillow hardware.

At Spanish sub consortium level:

Close collaboration with the rest of the Spanish sub-consortium of Passepartout (Telvent, UPM, UVigo). The aim is to get a unified demonstrator sharing the architectural principles and middleware pieces.

The open nature of the platform leads to some synergies with the ITEA-OSIRIS project, aimed at the development of Open Source middleware. Those synergies are being currently explored.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 36 of 48

Kick-offMadrid, 4th July 2005Architecture definitionSeville, 1st December 2005

The ongoing work of the Spanish partners (Telvent, Upm, Uvigo) regarding interactivity and personalization has been presented to the New Internet Application Award from the Telefónica Chair for Next Generation Internet at the UPM, and has been awarded with the first prize.

Two papers ("AVATAR: An Improved Solution for Personalized TV based on Semantic Inference" and "Controlling the Smart Home from TV") form the University of Vigo have been accepted in the International Conference on Consumer Electronics (Las Vegas, USA, January 2006). These papers describe different elements of the semantic reasoning approach applied in the personalization framework implemented in the project.

WP3.1

For this task a description of the hardware and software/middleware was delivered. The input for this activity has been delivered by the following partners: Philips Applied Technologies, V2_, Thomson, Stoneroos, UPM and Telvent.

The document describes all the components as follows: a general definition of the component with all its features, the used interfaces, its requirements for the platform, the current status of the developments and the developments planning for the coming period. 7 hardware components are defined in this way and 11 software components. The components have a large diversity, and therefore it is to be expected that multiple platforms will be developed from these components.

Philips has defined an ambient multimedia platform, the platform will be integrated in a piece of furniture and it will have several large rendering devices as well as some wireless connected portable devices. The user interface will be done via hand gesture recognition. The interactivity on the large rendering devices will be done either by a remote control, or by the accelerometer devices from V2_.

V2_ has furthermore added the description of a biometric pillow, which can be used as a tool in personalisation and content adaptation scenarios.

The defined software is centered around the packaging concept by Philips. The packaging software will be the main, but not the only UI software for the ambient multimedia platform. Stoneroos has contributed with an electronic program guide.

The Spanish partners have defined a separate middleware platform based on OSGi.

All partners are currently developing their defined components. These should be ready around Q3 2006 in order for them to all be integrated in the WP4 demonstrators. At this moment it is not yet clear how the different components will be integrated with each other. On the one hand Philips and V2_ are discussing possible integration of the accelorometer device in the multimedia platform, whereas the Spanish partners have agreed to build a separate middleware platform.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 37 of 48

V2_has taken over the task leadership of VTT due to dropping out of the project by VTT since the Finish government does not fund them. The end date of this deliverable was October 1, at that moment all contributors delivered their contribution, in October the deliverable was distributed to all participants and a conclusion was added. In the PMT meeting in Paris (30 November 2005) the final version of this deliverable was approved. The final version was distributed to all partners and placed on the BSCW server at the University of Eindhoven.

Besides the already mentioned cooperations it is worth mentioning that V2_ has a solid partnership with TU/e and CWI for implementation of WP2 issues. Also, to further cooperation between TU/e, Philips and V2_ two TU/e students have been appointed to monitor and assist the design process. Furthermore, V2_ is contributing the accelorometer device to the Dutch MultimediaN consortium. Also, V2_ is working together with the whisper research group from the Simon Fraser University in Canada on gesture recognition issues. Besides V2_ will contribute a paper concerning the biometric pillow to the ACM Multimedia in Santa Barbara, CA in November 2006.

WP3.2

The main activity for WP3.2 was working on deliverable D3.2.1, which defines a general advanced storage API. D3.2.1 suggests 2 different approaches for an advanced storage API:

A TV-Anytime based storage API, which is supported and developed by Philips, ETRI, and TUe, and

A so-called Open Multimedia Platform (OPM), which is developed by the Spanish subconsortia.

The main approach for D3.2.1 was to first investigate TV-Anytime packaging and OSGi technology in the context of multi-media storage. Second, in order to have some ideas concerning the functionality of the storage architecture, a scenario with different use cases were defined. Third, the architectures, for both the TV-Anytime and Open Multimedia Platform (OPM), are defined. Finally, this architecture is analyzed and tested using sequence diagrams, which loosely defines the API of the architectures.

Philips Applied Technologies and the TUe jointly developed the architecture for the TV-Anytime advanced storage API. This architecture consist of 3 layers:

Delivery an Storage layer, which deals with downloading, recording and storing of content items from the 3 main distribution channels, i.e., Broadcast, Internet and Blu-Ray.

Tv-Anytime layer, which deals with the metadata associated with the content items and especially with the packaging metadata. This layer communicates with Tv-Anytime webservices on the Internet.

Personalization and presentation layer, which deal with the personalization of content both for storing the content as well as presenting the content to the end-user. This layer builds

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 38 of 48

on work developed un work package 2, mainly the activities from TUe together with Stoneroos

The software architecture of the Open Multimedia Platform (OMP) has been defined and some of its components have been designed inside the D3.2.1 deliverable. The OMP will be the one used by some of Passepartout partners (Telvent, UPM and UVigo) for the final demonstrator in WP4. Also, the initial scenario in WP1 has been revised in order to support the common contribution of the Spanish partners for the final demonstrators.

Also, the development stage of these components has started. The components are: OMAM (OSGi Multimedia Acquisition Middleware, which is in charge of managing the multimedia content sources the users access to), the OCA (OSGi Content Awareness, that provides the infrastructure to deploy and control content-aware applications) and the Personalisation and Recommendation module.

Within deliverable 3.2.1., we also considered Peer to Peer technology as delivery technology, for this , results of the Magellan project are used and extended for use within the ambient multimedia environment.

The final version of D3.2.1 was delivered at the end of 2005.

Dissemination

During the PO phase of the project, both ETRI and Philips Applied Technologies investigated the Tv-Anytime concepts and possibilities to cooperate in this area. This resulted in a jointly written paper, named: "Delivering T-Learning with TV-Anytime through Packaging", presented at the IEEE International Symposium on Consumer Electronics in September 2004.

WP3.3: Implementation of the media center and its access port

Activities

On the wireless access port, the former period has dealt with the basic 802.16 system integration. It has consisted in the achievement and set up of the MAC software and of the network engine all together. Those are basic version in the sense that the bandwidth and buffer allocation mechanism are not in place per connection, but as a whole. Instead, the purpose of this first integration was to check the behavior of the wireless system when addressed by very high bit rate traffic.

Technical results

802.16 wireless port MAC software

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 39 of 48

This MAC software implements the 802.16 standard, as a premium design choice for wirelessly streaming audio and video in a deterministic way. The strength of this standard is that QoS was considered as a key constraint during the specification process, and therefore that QoS mechanisms are rooted in the different layers of the MAC and convergence sublayer. This is to be compared with Wifi history, when QoS is to be added afterwards with mitigated success. This indicates is that this is a fairly complex and versatile standard, with a lot of possible parameterizations. This is the reason why we have chosen a software approach, including very low-level mechanisms such as PDU (Protocol Data Unit) synthesis, analysis, and scheduling. This software design used a nano kernel able to switch between tasks in a sub microsecond delay.

As a major first result, the past period has given us the opportunity to see that our software based approach of the low MAC layer was relevant, and that the CPU supporting this function was only used at 50 % while streaming up to 60 Mbits in transmission, reception or a mix of both which is the typical situation.

The second outcomes of this period is that this low level MAC layer has been integrated with the control part of the MAC layer in charge of the so-called "network entry". We had the opportunity to integrate a basic ranging, and association process between the base station and a couple of remote stations, and establishment of uplink and downlink connections.

Network Engine

The here above mentioned MAC layer instantiation is coupled with a network engine. This engine runs on a Power PC with Linux and is charge of the bridging function in the Ethernet MAC addressing space, and the convergence sub-layer between Ethernet and 802.16 in the form of a Linux driver. As the major result of the past period, Linux has been installed on this CPU with its 802.16 driver in a basic form. Up to now, the driver implements the data pump with the MAC layer. It will also be in charge of forwarding parameters from the future interfacing tool, in order to manually configure the physical mode of the remote stations, the number, QoS class and guaranteed bit rate of some connections and general configuration of the MAC and physical layers.

Overall status and next step

It has been checked that the set <MAC + Network engine> is able to stream up to 60 Mbits in a basic best effort configuration. At this time, the physical layer is emulated. Next steps will deal with robustness improvement in the Linux driver at the convergence sub layer level, and with the integration of the physical layer with effective radio transmission. In particular, reliability of the MAC and network engine as regards to packet error, as likely to occur from the physical layer, will be improved.

Cooperation with other projects

In the Magellan project the management of the QoS is being implemented on top of the basic 802.16 mechanisms. The complete 802.16 platform is expected to be used in the final demonstrator.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 40 of 48

WP3.4

This activity will only start at the first of July 2006, so until this time no activities are expected. The main risk for WP3.4 is the progress of WP3.3 meaning the availability of components defined in WP3.1. The second risk will be the compatibility of the components; the interfaces of the components must be compatible. For stimulating integration we have selected Linux as the operating system and Java as the high level programming language for implementing most components due to its portability over Operating Systems.

Conclusion

At the moment of writing this report no managerial issues or problems to be reported. All activities are currently on track and the deliverables that should be available, are approved by the Project Management Team.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 41 of 48

9.1.4 Progress report Work Package 4: Integrating the final demonstrator

Reporting period: 1st July 2005 31st December 2005 Technical progress / results achieved

This report is covering the progress of Passepartout Work Package 4 (WP4) during six month of activity within WP4, from June to December 2005. This workpackage has just been started at the end of the reporting period but some work is already done in order to build good demonstrators.

Although the other WP4 activities have just started some work has been made, directly or indirectly, in this workpackage. In the Spanish sub consortium (Telvent, UPM, UVigo) the process for specifying the Open Multimedia Platform demonstrator has started. This work is aligned with activity WP4.1 (as defined in the FPP). Results from activity WP1.3 (scenarios definition) are being used as the key driver for the OMP demonstrator specification. It aims at leveraging WP3's ongoing work. In parallel, it has been started the design and development of the controlling applications (D4.2) that will let integrated the WP3 components into final demonstrator.

There is only one expected deliverable, D4.4 deliverable, "Business Model Story Book". It will be reviewed among the project life; it will be a living document. An initial proposal was made for building the first draft. All partners were invited to contribute to even if they are not WP4 partners.

Activities related to the WP4.4 have been launched and are in progress. This WP4.4 section is devoted to the socio-economic issues of the project. The different subparts are presented below. Three different subparts have been defined to structure this contribution:

AV sectors & market trends Business models & application scenarios. User tests

Major dissemination activities

There are not expected dissemination activities for this WP until the demonstrator are ready (They will probably be shown not only in the project review but also in the next ITEA symposium). However, Passepartout project was present into several dissemination events (Open Innovation Day at Eindhoven Philips High Tech Campus and the last ITEA Symposium in Helsinki).

Managerial issues, other issues

The WP4 kick-off was held during the last PMT meeting, at the end of November, The scheduling for contributing and the relationship between different activities within the workpackage was agreed.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 42 of 48

The partners lost due to funding problems did not have important impact on this WP.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 43 of 48

General Goals

The objective of this work package is both to implement validation tests that will exhibit and validate elements of the Passepartout architecture concept, and develop the final layer of controlling applications in order to create the appropriate test environment.

During this work-package, hardware/middleware with specific new functions and applications, resulting from the development activities in WP1 and the integration activities in WP3, will be validated. The plurality of technologies will be taken into account and integrated into the validation set of requirements. There will be several devices connected to the media-centre platform. They will be based on partner's equipment and connected to the platform via experimental wired or wireless networks.

Demonstrators should enable the project partners:

- Learn building together integrated applications and content,
- Demonstrate the industry what are the best contributions from content tools makers, digital content producers, as well as middleware and software developers,
- Validate and adapt the targeted Passepartout platform
- Test content produced in WP2
- Test several end-users criteria ranging from the services' accessibility to the userfriendliness of users interfaces.
- Assess the potentiality for product development, industrialization and commercialisation.

The main activities of WP4 are: defining the controlling application, defining the validators and integrating as necessary hardware and middleware from WP3 into a single combined demonstrator. Four activities make up this workpackage; each of one will provided one deliverable:

Demonstrator specification. In this activity the definition of the final demonstrator will be made based on the architecture of WP1, the application scenarios of WP2 and its implementation in WP3.

Conception and development of controlling applications WP3 components. Here the needed components for integrating the modules developed in WP3.

Integrate demonstrators. In this activity all the work made in other activities is put together in order to show the project's results.

Business model story book. This activity will provide a living deliverable among the project duration which will analysis the business model of the different proposed scenarios.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 44 of 48

Market Relevance

This work package has been created in order to validate the results of other work packages and the whole project, so it doesn't have relevance in itself, but it will try to show the results and the real scope of the technologies involved in Passepartout.

A new activity has been proposed for being added to the work package in order to provide a methodology for the business / market analysis of the different proposes scenarios and demonstrator that will be present at the end of the project (the last results of the WP4).

WP Progress

Technical Results

This work package was started at the end of the reporting period. No deliverables are expected during this reporting period except for the business model activity.

In order to implement a validation test, a global scope system analysis has been made in order to find what needs to be done. All results from other work packages need to be analysed as a whole in order to build a complete validation test which shows the results expected in Passepartout project.

During this reporting period the scenario for the demonstrator and the specification of the validation application has been defined in activity 1.3 and the selection for a suitable demonstration platform has been made in WP 3. In the activity 4.1 selections will be made and an inventory of all combination of components will be done. In work package 4.3 the actual integration will start and finalized.

In the Spanish sub consortium (Telvent, UPM, UVigo) the process for specifying the Open Multimedia Platform demonstrator has started. This work is aligned with activity WP4.1 (as defined in the FPP). Results from activity WP1.3 (scenarios definition) are being used as the key driver for the OMP demonstrator specification. It aims at leveraging WP3's ongoing work. In parallel, it has been started the design and development of the controlling applications (D4.2) that will let integrated the WP3 components into final demonstrator.

During the meeting in Paris on November 29, Philips Applied introduced activity 4.3. Since this activity is about the integration of the demonstrator, it is necessary to wait with this activity until most components are available. According to the schedule, this activity has to start in Q5 and it will be finalized in Q9 with the delivery of the final demonstrator. Staring in Q5 is possible, however this will only be an inventory of all components and scenario's, the actual integration can only be done after Q6.

The WP4.4 activity leader, Gradient, has made a proposal for building the first draft of the D4.4 deliverable, "Business Model Story Book". All partners were invited to contribute to the activity even if they are not WP4 partners. Since September, activities related to the WP4.4 have been launched and are in progress. This WP4.4 section is devoted to the socio-

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 45 of 48

economic issues of the project. The different subparts are presented below. Three different subparts have been defined to structure this contribution:

- **AV sectors & market trends (4.4.1)**: Different inputs will enable to bring significant insights as far as the evolution of the AV market is concerned. The table below lists these different "raw materials" from which our analysis will be conducted.
- **Business models & application scenarios (4.4.2)**: to exploit and enrich this scenario (and others among the different scenarios submitted by the partners) to define and associate potential business models.

User tests (4.4.3).

Following the redaction of an original scenario based on Video Blog (WP1.3), a video has been realised by Gradient to illustrate it. This video was shown during the last Passepartout meeting in December

Dissemination

This work package was created as a dissemination activity itself in order to show the potential business areas, which can be addressed by European industry. The main industrial objective of the consortium is to create a synergy between the terminal vendors middleware vendors, tool vendors and content providers/creators based on open standards.

However, Philips has participated in two dissemination events on which the expected results of Passepartout was shown:

October 8th, 2005, Open Innovation Day, Eindhoven Philips High Tech Campus October 13th & 14th, 2005, ITEA Symposium in Helsinki (also other Passepartout partners were present there)

Project Consistency

Although there have been some problems for some partners to get funding from their national authorities this does not have impact on this work package directly but indirectly (because this work package uses intensively the results of other work packages).

Progress Highlights

During the WP4 kick-off meeting held on 29th of November in Paris, the relationship and the scheduling for the WP4 was reviewed and agreed.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 46 of 48



Also the discussion about the viability of having only one demonstrator was arisen. This discussion is currently on going and the final will be finished when the demonstrator specification will be finished.

Cooperation

Cooperation in the workpackage

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 47 of 48

This workpackage has, in some way, the responsibility of promoting the collaboration between partners in order to build a common demonstrator. This demonstrator should show the independent results, achieved by different partners, working together.

The interaction among partners is stimulated thanks to the regularity of WP/PMT meetings. Social events help keeping good personal relations between the partners, beyond the technical aspects of the project.

Working meetings and PMT meetings:

13th – 14th September 2005, Amsterdam, Netherlands. 29th & 30th November 2005, Paris, France.

The cooperation in the activity 4.4 is a must; all partners must contribute to provide the needed information to study the business model for their scenario.

Collaboration with other projects

The open nature of the open multimedia platform, which will developed by the Spanish partners in WP3, leads to some synergies with the ITEA-OSIRIS project, aimed at the development of Open Source middleware. Those synergies are being currently explored.

Internal collaborations

Although the workpackage has just been started a clear cooperation between some partners has been reached. Close collaboration in the Spanish sub consortium of Passepartout (Telvent, UPM, Vigo University) that aims to get an unified demonstrator sharing the architectural principles and middleware pieces. In order to achieve the cooperation goals aforementioned, two Spanish sub consortium specific meetings have taken place in the context of WP4:

Madrid, 4th July 2005 Seville, 1st December 2005, together with the OSIRIS kick-off meeting to explore the synergies between both projects.

Conclusion

At the moment of writing this report no managerial issues or problems to be reported. All activities are currently on track and the deliverables are making good progress and should be available, to be approved by the Project Management Team as planned.

Progress Report Passepartout (ITEA 04017) July 2005 – December 2005 Page 48 of 48

9.2 Dissemination

Dissemination is covered in the individual WP description of the Appendix 9.1 in detail. Specifically the efforts of WP2 in the area of dissemination on the issues of content augmentation and adaptation are brought to the reviewers' attention. Similarly the efforts of the industrial partners in WP1 on standards are of note to the project's reviewers.