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COAST



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D8.3: Impact Creation, Standardization and Project Liaison Plans

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Abstract:

This deliverable describes all COAST related impact creation activities in the months 1-11 and the plans for the following project runtime. Special emphasis will be put on the dissemination, standardisation and project liaison activities (including clustering and FIA activities).



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2	Synelixis Solutions Ltd	Synelixis	Contractor	Greece
3	Yahoo Iberia SL	Yahoo	Contractor	Spain
4	NEC Europe Ltd	NEC	Contractor	UK
5	Telefonica Investigacion Y Desarrollo SA	TID	Contractor	Spain
6	Fraunhofer HHI	HHI	Contractor	Germany
7	Politecnico di Torino	Polito	Contractor	Italy
8	Technische Universitaet Berlin	TUB	Contractor	Germany
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Acronyms and Abbreviations

ALTO	Application Level Traffic Optimizer
BOF	Birds-of-a-Feather
CAGR	Compound Annual Growth Rate
CCI	COAST Content Identifier
DASH	Dynamic Adaptive Streaming over HTTP
DLNA	Digital Living Network Alliance
DNS	Domain Name Service
DPI	Deep Packet Inspection
HD	High Definition
IPTV	Internet Protocol TeleVision
IETF	Internet Engineering Task Force
IETV	Internet Enabled TeleVision
ISP	Internet Service Provider
LAN	Local Area Network
MPEG	Motion Pictures Expert Group
MVC	Multi-view Video Coding
MVD	Multi-view Video plus depth
P2P	Peer-to-Peer
PC	Personal Computer
PDA	Personal Digital Assistant
QoS	Quality of Service
RT	Real-Time
RTSP	Real Time Streaming Protocol
RTP	Real Time Protocol
SLA	Service Level Agreement
STB	Set Top Box
SW	Software
TV	Television
UMD	Ultra Mobile Device
URL	Unified Resource Locator



1. Introduction

This deliverable describes all COAST related impact creation activities in the months 1-11 and the plans for the following project runtime. It outlines the past activities of general project result dissemination in conferences, books and journals, as well as, standardization activities and liaisons with other EU projects.

Moreover includes the plan for the second year of the project lifetime.



2. Dissemination of Project Results

2.1. Objectives and Strategy

This section presents the plans devised to disseminate the knowledge produced by the COAST project. The COAST partners are aware that the project success relies on the partners' ability to internally circulate the generated knowledge and make it available to the public. To this end, the partners committed to internally share and publicly disseminate and market the project results. The dissemination strategy aims at making available the scientific results achieved in the frame of the COAST project to the widest possible audience, which spans from the scientific community to professional, reaching out also for the broad public.

The work package leader of WP 8 supervises the dissemination activities of the partners and leads the dissemination efforts. The content dissemination task leader will make sure that all the project scientific results are published as they are produced and are periodically reported to the Commission.

2.2. Past Dissemination Activity

This subsection provides detailed information about dissemination activity achieved by the project in terms of scientific and academic publications in the period that ranges from the beginning of the project to the time of the submission of this document (Month 12 of the project). The list of the achieved dissemination results is organized in terms of tables. Each table is specific to a specific type of publication (book chapter, journal paper, conference article.)

Chapter Title	Authors	Volume Title
Towards a Content-Centric Internet	Th. Zahariadis, P. Daras, J. Bouwen, N. Niebert, D. Griffin, F. Alvarez, G. Camarillo	Towards the Future Internet – Emerging Trends from European Research, IOS press, 2010, ISBN: 978-1-60750-539-6, pp. 227 – 236
Future Media Networks Research Challenges 2010	Th. Zahariadis, M. Perdikeas, (Contributors)	http://cordis.europa.eu/fp7/ict/netmedia/docs/publications/fmn2010.pdf
Efficient Streaming in Future Internet	Th. Zahariadis, Ch. Katsigiannis, A. Jari, R. Fracchia, J. Vehkaperä, F. Alvarez, Th. Filoche, H. Koumaras	Towards the Future Internet – Emerging Trends from European Research, IOS press, 2010, ISBN: 978-1-60750-539-6, pp. 237 – 246

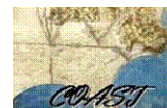
Table 1: Book Chapters



Article Title	Authors	Journal Title
Seamless Content Delivery over Mobile 3G+/4G Networks	Th. Zahariadis, K. Grüneberg, L. Celetto	Springer Journal on Mobile Networks and Applications, DOI:10.1007/s11036-010-0259-1 (available on-line since 16 July 2010)
TURINstream: A Totally pUsh, Robust and efficieNt P2P video streaming architecture	A. Magnetto, R. Gaeta, M. Grangetto, M. Sereno	IEEE Transactions on Multimedia, vol.PP, no.99,pp.1-1,doi:10.1109/TMM.2010.2077623
Peer-to-peer Streaming of Scalable Video in Future Internet Applications	T. Zgaljic, E. Quacchio, N. Ramzan, S. Asioli, L. Celetto, E. Izquierdo, F.Rovati	IEEE Communication Magazine accepted for publications to the special issue on Future Media Internet, March 2011
A Survey on Content-oriented Networking for Efficient Content Delivery	J. Choi, J. Han, E. Cho, Ted "Taekyoung" Kwon, Y. Choi	IEEE Communication Magazine accepted for publications to the special issue on Future Media Internet, March 2011
Future Media Internet Architecture	Th. Zahariadis, F. Alvarez, P. Moore	Accepted for publication in Springer Multimedia Tools and Applications

Table 2: Journal Publications

No	Type	Article Title	Authors	Conference
1	Presentation	Content Aware Searching, retrieval and Streaming in Future Internet	E. Quacchio	NapaWine Workshop, Torino (Italy), January 21th, 2011
2	Paper/ Presentation	Fast application-level video quality evaluation for extensive error-prone channel simulations	R. Skupin, C. Hellge, T. Schierl, T. Wiegand	15th IEEE International Workshop on Computer Aided Modeling, Analysis and Design of Communication Links and Networks (CAMAD 2010), Miami, U.S.A., 3-4 Dec 2010
3	Presentation	Next Generation Search	R. Baeza-Yates	FIA Ghent, Session VIII: Search as an architectural component," Ghent, December 2010
4	Presentation	Search in the COAST Project	B. Cambazoglu	Networked Media Fall 2010 Concertation Meeting, Search Engines Cluster, 30 November



No	Type	Article Title	Authors	Conference
				2010.
5	Paper/ Presentation	A GStreamer based framework for adaptive streaming applications	E. Quacchio	GStreamer conference, Cambridge (UK), October 26th , 2010
6	Paper/ Presentation	Unveiling the BitTorrent Performance via the Mobile WiMAX Networks	X. Wang, S. Kim, Ted "Taekyoung" Kwon, H.Kim, Y. Choi	To appear in Passive and Active Measurement Conference (PAM), Atlanta, US, March 20-23, 2011
7	Paper/ Presentation	P2P Streaming with LT Codes: a Prototype Experimentation	A. Magnetto, R. Gaeta, M. Grangetto, M. Sereno	Workshop on Advanced video streaming techniques for peer-to-peer networks and social networking, Florence, October 29, 2010
8	Paper/ Presentation	Architectures for Future Media Internet	M. Alduán, F. Álvarez, Th. Zahariadis, N. Nikolakis, F. Chatzipapadopoulos, D. Jiménez, J. M. Menéndez	The 2 nd International Conference on User Centric Media, Palma de Mallorca, September 1-3, 2010
9	Paper/ Presentation	Caching Search Engine Results over Incremental Indices	R. Blanco, E. Bortnikov, F. Junqueira, R. Lempel, L. Tello, H. Zaragoza	The 33 rd Annual ACM SIGIR Conference, July 2010
10	Paper/ Presentation	Query Forwarding in Geographically Distributed Search Engines	B. Cambazoglu, E. Varol, E. Kayaaslan, C. Aykanat, R. Baeza-Yates	The 33 rd Annual ACM SIGIR Conference, July 2010
11	Paper/ Presentation	Weak Consistency as a Last Resort	M. Serafini, F. Junqueira	The 8th International Workshop on Large-Scale Distributed Systems for Information Retrieval, Geneva, Switzerland, 23 July 2010
12	Paper/ Presentation	Content aware searching, caching and streaming	Th. Zahariadis, F. Junqueira, L. Celetto, E. Quacchio, S. Niccolini, P. Plaza	The 2 nd Internat. Conference on Telecommunications and Multimedia, Chania, Crete, Greece, 14-16 July 2010



No	Type	Article Title	Authors	Conference
13	Paper/ Presentation	Host-Oblivious Security for Content-Based Networks	J. Jeong, Ted "Taekyoung" Kwon, Y. Choi	International Conference on Future Internet, Seoul, Korea, June, 2010
14	Paper/ Presentation	Decentralized and Autonomous Content Overlay Networking (DACON) with WiFi Access Points	D. Ko, K. Cho, M. Lee, H. Kim, Ted "Taekyoung" Kwon, Y. Choi	International Conference on Future Internet Technologies (CFI) 2010, Seoul, Korea, June 2010

Table 3: Conference Publications and Presentations

2.3. Dissemination Activity Plans

The dissemination activity for the next months of the COAST project is illustrated in this subsection. The proposed dissemination plan aims at maximizing the visibility of the project among the researchers in the field of COAST using three tools.

First, a **special session in an international conference or workshop** will be organized with the purpose of gathering the top researchers in the many fields the COAST project spans over. A conference special session gives high visibility to the work presented, and this is a good way to disseminate and promote the project results. The topic of "content-awareness" is a good match to many multimedia conferences, where content-awareness can give a distinctive flavour to conventional multimedia applications, fostering the development of content-centric applications.

Secondly, a **special issue** will be organized in one of the flagship international scholarly journals devoted to multimedia and computer communications, with the purpose of collecting the most brilliant scientific production of the many fields the COAST project spans over. A journal special issue is often the natural consequence of a successful special session, and allows the publications of high-quality technical papers that detail and justify design choices for content-aware multimedia systems.

Thirdly, a **final workshop** will be organized at the end of the project to illustrate its achievements to a broad audience composed by academics and industrial subjects. The final workshop will allow to demonstrate the latest project results, with a half-day or one-day time slot fully dedicated to the theme of content-awareness.

2.3.1. Special Conference or Workshop Session

At least one special session dedicated to the COAST topics will be organized in some of the highest-level conferences/symposiums in the field of multimedia and computer communications. The purpose of organizing a special session is highlighting the relevance of the topics covered by the COAST project and stimulating the research in such areas.



The organizers of the special session will be selected mainly among the members of the COAST consortium. However, to the end of increasing the project visibility and reaching out for a broader audience also in non-EU countries, it is possible that organizers will be selected also outside the participants to the project. A good balance between academic and industrial components will be sought both in the special session organizing team, and among the authors of the papers presented during the session.

The following table encompasses a list of top-conferences that are deemed suitable to the purpose. For each conference, the date and the special session proposal deadline is reported.

Name	Location	Date	Special Session Proposal Deadline
ACMMM 2011	Scottsdale, Arizona, USA	Nov 28-Dec 1	March 14, 2011
EUSIPCO 2012	Bucharest, Romania	Aug 27-31	December 4, 2011
ICC 2012	Ottawa, Canada	Jun 10-15	May 16, 2011
ICME 2012	To be defined	Sep 11-14	To be defined
MMSP 2011	Hangzhou, China	Oct 17-18	March 10, 2011
ELMAR 2011	Zadar, Croatia	Sep 14-16	February 15, 2011
MMSP 2012	Probably North America	To be defined	To be defined
SIGIR 2011	Beijing, China	Jul 24-28	January 28, 2011
CIKM 2011	Glasgow, UK	Oct 24-28	March 28, 2011
WSDM 2012	Seattle, Washington, USA	Feb 9-12	To be defined
WWW 2012	Lyon, France	Apr 16-20	To be defined

Table 4: Special Session Candidate Conferences

2.3.2. Journal Special Issue

At least one special issue dedicated to the COAST topics will be organized in some of the flagship journal in the field of multimedia and computer communications. The following table encompasses a list of high impact journals that are suitable to issue a special issue focused on the COAST topics.

Journal Name	Journal Editor
IEEE Transactions on Multimedia	Circuits & Systems Society, Signal Processing Society, Communications Society and Computer Society of IEEE
ACM/IEEE Transactions on Networking	Computer Society and Communications Society of IEEE, SIGCOM of Association for Computing Machinery
ACM Transactions on Multimedia Computing, Communications and Applications	SIGMM of Association for Computing Machinery
The International Journal of Computer and	Elsevier



Journal Name	Journal Editor
Telecommunications Networking	
EURASIP Journal on Wireless Communications and Networking	Hindawi
Multimedia Tools and Applications	Springer
Peer-to-Peer Networking and Applications	Springer
Multimedia Systems	Springer

Table 5: Special Issue Candidate Journals

2.3.3. Final Project Workshop

An international workshop on the topics covered by the COAST project will be organised at the end of the project. Such workshop will be the major showcase of the project, providing great visibility to COAST. The workshop will be advertised in order to draw the participation of the most renowned researchers in the scientific fields covered by COAST. The most important results of COAST will be presented at an audience composed by the most prestigious researchers in the field, thus ensuring a broad dissemination of the project results and the maximum visibility for the project.

2.4. Project Web site

The COAST website (www.coast-fp7.eu) is a major dissemination point for COAST. The website is structured to allow an easy navigation across the different sections. The different sections can be accessed through the top menu in the main page. The top menu can be found in the following 1.

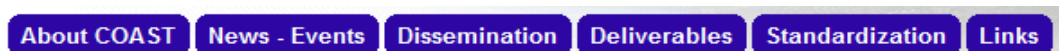


Figure 1: web-site sections

The web-site contains several common characteristics across different sections (e.g. the same banner, the menu, the FP7, EC and COAST logos).

Especially the following section target project dissemination:

News- Events

- . |_ Activities
- . |_ Events

Dissemination

- . |_ Overview
- . |_ Journals & Books
- . |_ Conferences
- . |_ Presentations

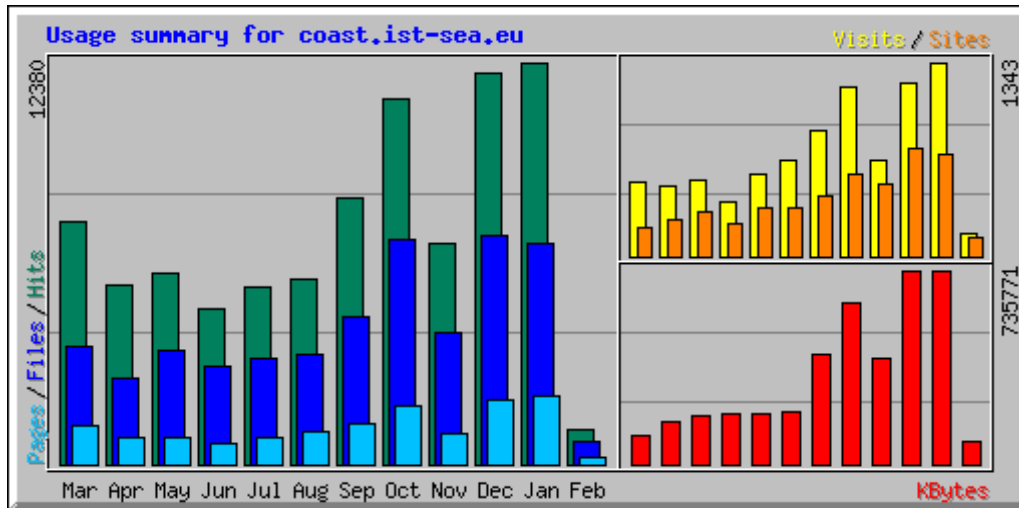
Deliverables

- . |_ Reports
- . |_ Administration deliverables



- . |_ Other deliverables
- Standardization
- . |_ Overview

COAST web page is updated frequently in order to attract more visitors. As it can be seen in Figure 2, the COAST web site has been visited in the 1st year by 8526 visitors who have downloaded more than 4GBytes data (overall approx. 50.000 files have been downloaded).



Summary by Month										
Month	Daily Avg				Monthly Totals					
	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
Feb 2011	270	178	60	38	134	84491	153	240	715	1082
Jan 2011	399	219	67	43	699	733822	1343	2096	6797	12380
Dec 2010	389	226	63	38	741	735771	1205	1963	7018	12066
Nov 2010	227	134	31	22	497	401687	669	958	4038	6820
Oct 2010	362	222	58	37	562	615588	1165	1822	6896	11247
Sep 2010	273	152	41	28	417	413734	865	1252	4560	8204
Aug 2010	184	109	32	21	342	202046	658	998	3401	5724
Jul 2010	175	104	25	18	340	189338	562	798	3237	5437
Jun 2010	160	100	20	12	232	187842	381	624	3017	4800
May 2010	189	112	26	17	302	183172	528	826	3486	5860
Apr 2010	183	89	28	16	249	158533	483	840	2674	5515
Mar 2010	240	116	38	16	197	106596	514	1203	3617	7443
Totals						4012620	8526	13620	49456	86578

Figure 2: Web-site Statistics and access

This shows how popular the COAST web site is. In the 2nd year we plan to continue updating the web site content and try to make it a reference point for more web visitors in order to maximize COAST impact to the community.



3. EC Projects liaisons

The COAST project consortium has managed to gain high visibility within the Networked Media and Search Engines Unit, the NEM platform, the Future Internet Assembly and the industrial and academic worlds. This has been achieved via a targeted list of activities where COAST has played a key role. The following sections will provide more details.

3.1. Network Media Concertation Meetings

COAST has been actively participated in all important events and activities of the Networked Media Unit. In more details:

Since the fall 2009 concertation meeting (St. Malo, September 2009) the COAST project has successfully participated in the Media Delivery Platforms (MDP) Cluster, which was led by the COAST project technical coordinator Th. Zahariadis.

In the spring 2010 concertation meeting (Brussels, 4 February 2010), Th. Zahariadis presented the project objectives and technical approach in a) the plenary session, b) the Search Engines cluster focusing on the search engines innovation and c) the Future Media networks cluster focusing on the network architecture innovations.

In the fall 2010 concertation meeting (Brussels, 29 November 2010), S. Niccolini (NEC) had a keynote presentation in the plenary session describing the Future Internet Architecture (FIArch) group activities. Moreover, B. Cambazoglu (Yahoo!) had an invited presentation in the Search Engines Cluster meeting, while Th. Zahariadis participated at both days events.

The COAST plan for the 2nd year is to continue actively participating at the concertation meetings and try to find the common and complementary areas with other projects of the unit in order to maximize the potential impact as explained in the next section.

3.2. Bilateral project liaisons

Initially the COAST has made an analysis and evaluation of the various projects that run in the EC Unit. Among them, we plan to select the ones that either fall into the Search Engines cluster or at the Future Media Networks cluster and have close relevance to COAST. After common areas have been identified, further bilateral liaison plans will be drawn in order to increase the COAST project impact.

3.2.1. Liaison with Search Engines Cluster projects

Among the various projects that are members of the Search Engines cluster, we have selected as candidate projects for liaison with COAST the following:

PetaMedia: The Network of Excellence **PetaMedia** (<http://www.petamedia.eu/>) links up four national networks' research in enabling Internet technologies for accessing multimedia content, in particular video and aims to improve the quality of search results for digital video by at least one order of magnitude. The purpose of joining four national networks is to achieve larger momentum, to integrate available resources, and to further develop complementary expertise necessary for pushing new paradigms in enabling efficient and effective access to multimedia content in emerging network structures. The collective research effort that thus comes available will be directed towards integration of existing MCA and SP2P technologies, and towards identification and exploration of potentials and limitations of MCA/SP2P combinations.



I-SEARCH (<http://www.isearch-project.eu>) aims to create the first search engine able to handle multimedia and multimodal content (text, 2D image, sketch, video, 3D objects, audio and combination of the above), which can be used as queries and retrieve any available relevant content of any of the aforementioned types. I-SEARCH will overcome the limitations of current content-based multimedia retrieval methods through the realization of a novel Rich Unified Content Description (RUCoD), which will integrate descriptions of all of the above types of content, real-world information (GPS, temperature, time, weather sensors, RFID objects), emotional cues and social descriptors, in order to better express what the user wants to retrieve. I-SEARCH will develop a novel generation of multimodal search engines providing users with natural and expressive interfaces. I-SEARCH will also introduce efficient tools for visualising the search results in order to enhance the presentation layer of search engines. Several aspects, such as user profile, end-user terminal, available network bandwidth, interaction modality preference, will be taken into account to achieve the optimal presentation result.

LivingKnowledge (<http://livingknowledge-project.eu/>) considers diversity as an asset and makes it traceable, understandable and exploitable, with the goal to improve navigation and search in very large multimodal datasets (e.g., the Web itself). LivingKnowledge will study the effect of diversity and time on opinions and bias, a topic with high potential for social and economic exploitation. We envisage a future where search and navigation tools will automatically classify and organize opinions and bias and, therefore, will produce more insightful, better organized, easier-to-understand output. LivingKnowledge employs interdisciplinary competences from, e.g., philosophy of science, cognitive science, library science and semiotics. The proposed solution is based on the foundational notions of context and its ability to localize meaning, and the notion of facet, as from library science, and its ability to organize knowledge as a set of interoperable components (i.e., facets). The project will construct a very large testbed, integrating many years of Web history and value-added knowledge, state-of-the-art search technology and the results of the project.

GLOCAL: A key idea underlying the Integrating Project **GLOCAL** (<http://www.glocal-project.eu/>) is to use events as the primary means for organizing and indexing media. Events have a local and a global dimension. The local dimension involves the assignment of tags (conceptualizations) to media (personal experiences). The global dimension involves the sharing of general event structures and specific event descriptions, which enables social sharing and networking of events, tags and media. Within networked communities, common (global) descriptions of the world can be built and continuously enriched by a continuous flow of individual (local) descriptions.

3.2.1.1 COAST Liaison Plans in Search Engines Cluster

In the 2nd year of the project, we plan to select among them (or even new ones that will be accepted from Call 7) and try top liaison in order to maximize input. So far, the project that seems most complementary to COAST is iSearch, where low level descriptors for searching are defined. So far, COAST has adopted the approach of using hash values for the content, yet other low level descriptors could be used instead as we consider that as an orthogonal problem.

3.2.2. Liaison with Future Media Networks Cluster Projects

Among the various projects that are members of the Future Media Networks cluster, we have selected as candidate projects for liaison with COAST the following:

NAPA-WINE (www.napa-wine.eu) project aims to provide a careful analysis of the impact that a large deployment of both general P2P-TV and P2P-HQTV services may have on the Internet, through an in detailed characterization of the traffic they generate. Moreover, it aims to provide guidelines for P2P-TV developers regarding the design of systems that minimize the impact on the underlying transport network while optimizing the user perceived quality.



ALICANTE (*Media Ecosystem Deployment Through Ubiquitous Content-Aware Network Environments*) is an IP project that was accepted in FP7 call 4. ALICANTE aims to enable efficient access to multimedia services and audiovisual content. ALICANTE adopts a layered approach: On top of the traditional network layer, ALICANTE proposes two virtual layers, one for packet processing (CAN layer) and one for content delivery (Home-Box layer). This two levels solution aims to fully support adaptation for the multimedia flow delivery over multi-domains.

COMET (www.comet-project.org) project was accepted in FP7 call 4. It aims to define a content-oriented Internet architecture to simplify content access supporting content distribution in a network-aware fashion. COMET will provide a unified interface for content location and access, whatever the content's temporal nature (pre-recorded or live), physical location (centralised or distributed), interactivity requirements (elastic or real-time), or any other relevant features. It also aims to apply the most appropriate end-to-end transport strategy for each type of content, supporting all different types of distribution (unicast, anycast, multicast, peer-to-peer) and mapping the content requirements to the appropriate network resources for achieving the best quality of experience for the end users.

The **ENVISION** (Enriched Network-aware Video Services over Internet Overlay Networks) is a STREP project that was accepted in call 4. It aims to develop intelligent cross-layer techniques that will increase the degree of cooperation between ISPs and the networked applications, optimise application overlay networks to make best use of the capabilities of the underlying networks and the participant end users and enable dynamic adaptation of the content to meet the networks and users capabilities.

The **OCEAN** (Open Content Aware Networks) project (www.ict-ocean.eu) aims to design a new open content delivery framework that optimizes the overall quality of experience to end-users by caching content closer to the user than traditional CDNs do and by deploying network-controlled, scalable and adaptive content delivery techniques. OCEAN will build innovative self-learning caching algorithms that meet the specifics of the highly unpredictable location and time-dependent consumption patterns and dynamically adapt to the rising popularity of future delivery services. New media-aware congestion control mechanisms based on slight, but controlled quality degradation will provide a better alternative than mere blocking of user requests.

3.2.2.1 COAST Liaison Plans in Networked Media Networks Cluster

So far COAST has been discussing with various projects of the Unit including Napa-wine, ALICANTE, OCEAN and COMET targeting potential bilateral liaison activities. The clear points of differentiation between COAST and these projects are that COAST adopts: a) a key role for the Search Engines in the content discovery chain, b) a Deep Packet Inspect mechanism for identification of content/content popularity and c) a topology detection mechanism, which could be additionally used for optimized content delivery. In more details:

- COAST participated in Napa-wine workshop (Torino, 21 January 2011). E. Quacchio (STM) presented the COAST approach and the evolutions from project SEA. However, no further liaison plans are foreseen as the Napa-wine project is about to be completed. Moreover, as explained latter COAST and Napawine have common contributions in IETF.
- COAST and ALICANTE had a number of discussions and ideas exchange in the area of Network Architecture. The difference is that COAST adopts a more decentralised approach, while ALICANTE is following a strict end-to-end network management approach for resources allocation. Moreover, ALICANTE is focused on the home network, adopting a Home Access Box, while COAST is not limited to the (extended) home environment.



- COAST and COMET have just started exchanging information. There is a common objective of the network architecture, though still it is too preliminary to make a decision on a potential liaison activity.
- COAST and OCEAN have started checking on potential areas of liaison. So far, it seems that the network awareness developed in COAST could be also provided (as a black box technology) to the OCEAN project, while OCEAN could potentially offer additional testing facilities to COAST. As a first step of collaboration a common workshop is planned for June 2011 in Berlin.

3.3. The FIRE Initiative

The FIRE initiative aims to offer facilities for testing and evaluation by building a pan-European testbed, integrating a number of LAN, GRID and mobile testbeds (PanLab, One Lab, G-Lab) and interfacing PlanetLab.

Though from the very beginning, COAST has identified a concrete testing environment, it will also look for the possibility to utilise the FIRESTATION Open Call and utilise the FIRE infrastructure.

In order to evaluate the new opportunity of FIRE testing infrastructure, COAST consortium will evaluate the FIRESTATION call for “testers” and draw a complete use case, while the technical manager of COAST, Theodore Zahariadis (Synelixis) and the technical manager of FIRE, Anastasius Gavras (Eurescom) have already been discussing this possibility.

3.4. Groups and Events Participation

3.4.1. Future Media Internet Architecture Think Tank

COAST has been actively participating in the Future Media Internet Architecture Think Tank (FMIA-TT). The activities in this group are led by Th. Zahariadis, while Giovanni Pau has also participated in most of the TT meetings and PhC. Via the FMIA-TT, COAST project had the opportunity to discuss important issues of the project with Van Jacobson (Parc) and also shared experiences with representatives of the ALICANTE (Ch. Timmerer), the COMET (G. Pavlou) and the Envision (D. Griffin) projects towards a common architectural approach.

It is worth to note that the architecture included in the FMIA-TT white paper, adopted by the wide majority of the FMIA-TT members is based on the COAST network architecture.

3.4.2. Events Participation

COAST participated in the ICT-2010 (Brussels, September 2010) event with a poster presentation, while Th. Zahariadis had also an invited speech.

COAST participated in the NEM summit 2010 (Barcelona, October 2010) event with a poster presentation. In parallel to the NEM summit 2010, the Future Content Networks (FCN) workshop took place where Synelixis, Yahoo! and NEC participated and contributed.

Within these events COAST had the opportunity to exchange ideas with the research community and industrial stakeholders and look for liaisons with other research projects. The plan for the 2nd year is to continue participating in significant events and seek for a unified approach in common areas of research.



3.5. Future Internet Assembly

COAST has been one of the first projects that have supported the **Future Internet Assembly (FIA)** initiative, as Th. Zahariadis has participated in a number of preparation events in Brussels and a number of phone conferences, which have been organized by EC.

Moreover, Th. Zahariadis co-organized the session VIII: "Search as an architectural component," in the FIA Ghent event. The session was chaired and moderated by Dr. Loretta Anania (EC– DG INFSO), while the keynote speakers included Dr. Francesco Nucci (Engineering) and Dr. Ricardo Baeza-Yates (Yahoo!). The later also presented how COAST meets the Yahoo! research plans.

3.6. Future Internet Architecture (FIArch) Group

The FIArch Experts Reference Group is composed of representatives of the most relevant FP7 research projects in relation to FI architectures and renowned experts from industry and academy covering in a complementarily way all areas related to the Future Internet Architecture. The work of the group is coordinated by the FP7 CSA projects in the area of Future Internet: NextMedia, IOT-I, SOFI, EFFECTS+, EIFFEL, Chorus+ and Paradiso 2, and supported by the EC Units D1: Future Networks, D2: Networked Media Systems, D3: Software & Service Architectures & Infrastructures, D4: Networked Enterprise & Radio Frequency Identification (RFID) and F5: Trust and Security.

The aim of FIArch group is to focus on a few key architectural issues, which are shared and agreed by a considerable representation and coverage of FI stakeholders, including FP7 projects and may contribute towards an EC research roadmap towards Future Internet Architecture.

This project is coordinated by Th. Zahariadis. Additionally in the group two experts from the Network Media unit have been invited. The first one is S. Niccolini (NEC) who is actively involved in the COAST project and the second is A. Rosas (TID) who also takes into account COAST, as TID participates in the COAST consortium.

The plan for the 2nd year is to continue participating in the FIArch group and seek for a unified FI architecture approach.



4. Standardization Plans and Activities

This section summarizes the future plans and current activities for contributing COAST results to various standards bodies. For each standard body a separate section is given, detailing the plans, and activities for a particular standards body.

4.1. IETF Standardization

The Internet Engineering Task Force (IETF) is an open standards organization with the goal “to make the Internet work better by producing high quality, relevant technical documents that influence the way people design, use, and manage the Internet” (<http://www.ietf.org>). The IETF is the home of many protocols used today in the Internet for any type of application or service.

4.1.1. Approach of the IETF Standardization

Participants of the COAST project either plan or are already contributing to bring results of the COAST project to the IETF standardization. The participation in the IETF standardization follows an *active* approach, where early results out of COAST are submitted to working groups (WG) of the IETF by means of writing Internet Drafts, contributing to mailing list discussions, and presentations at the IETF meetings.

This active contribution ensures early feedback on COAST results from the IETF community, feeding of results to the standardization, as well as, the possibility to see what the current development in the area of Internet protocols are.

4.1.2. Application Level Traffic Optimization (ALTO) Working Group

Peer-to-peer applications, such as bittorrent peer-to-peer file-sharing or peer-to-peer live streaming, are a source of major source of traffic in the global Internet and also within the IP-based networks of network operators (the so-called Internet Service Providers – ISPs). These peer-to-peer applications are the cause of relative high aggregated throughput, causing unexpected costs to the ISPs and congestion in the network, as they are build to enhance their own system throughput to a maximum (file-sharing), are throughput intensive (file-sharing and video streaming), or are running all day long (file-sharing, as compared to web browsing).

These peer-to-peer applications cause unexpected costs to the ISPs, but on the other hand the ISPs do not have any means to legally influence these applications. This called for a new service called Application Level Traffic Optimization (ALTO) where ISPs can provide guidance to peer-to-peer applications, but also any type of application such as Future Content Networks (FCN). This guidance should allow the ISP to guide traffic originated by the peer-to-peer applications according to the ISP's preference.

The IETF ALTO working group is standardizing a query-response protocol between the applications and an ALTO server (hosted by an ISP or any third party) which allows the above described guidance. The working group has a draft protocol almost ready and works also on add-ons to the protocol, such an extension for Content Delivery Networks (CDNs) and how to discover an ALTO server, amongst other issues.

The COAST project is already active contributor to the ALTO working group with a draft on “ALTO server discovery” (draft-kiesel-alto-3pdisc, <http://tools.ietf.org/html/draft-kiesel-alto-3pdisc>). The draft describes how (peer-to-peer) applications can discover and possibly select an ALTO server to ask for further guidance. This is so-called ALTO server discovery. The draft is joint work with the ENVISION project (<http://www.envision-project.org>).



For the future, the COAST project envisions to contribute to the discussion on how the ALTO protocol has to be extended to match the needs of today's CDN networks and also Future Content Networks. The contributions to the draft-kiesel-alto-3pdisc will be also continued.

4.1.3. Peer-to-Peer Streaming Protocol (PPSP) Working Group

By today there are numerous different peer-to-peer streaming systems, for instance, PPLive or UUSee, just to name a few. These peer-to-peer streaming systems are used in any type of environment, such as fixed-line networks or mobile networks, and use a significant part of the available resources in a network. Those systems use protocols which are typically proprietary. The network operators/ISPs on the other hand do not have any "handle" on these protocols, i.e., they cannot or can only with a lot of effort access the signalling protocols of the systems, nor can they influence the system behaviour.

The Peer-to-Peer Streaming Protocol (PPSP) working group has the goal to standardize a common peer-to-peer streaming protocol that can be used by a large set of peer-to-peer streaming systems. A standardized protocol will allow the ISPs to measure the protocol usage and to interact with the protocols by, for instance, installing network caches and letting these caches use a single standardized protocol which interacts with other nodes.

The PPSP working group is a rather young group, currently exploring the technical field of peer-to-peer streaming protocols and related protocols. The main work is on specifying the problem space and the requirements for the protocols to be standardized in the future.

The COAST project, jointly with the NAPA-WINE project (<http://www.napa-wine.eu>), is contributing to this early stage by providing a draft which discusses "Design Considerations for a Peer-to-Peer Streaming Protocol" (draft-seedorf-ppsp-design-considerations, <http://tools.ietf.org/html/draft-seedorf-ppsp-design-considerations>).

The COAST project plans to continue the contributions in this early stage of the working group and also to contribute to the protocol specification later on.

4.1.4. Decoupled Application Data Enroute (DECADE) Working Group

The Decoupled Application Data Enroute (DECADE) working group works in the same area as the ALTO and PPSP working groups, but on a complementary issue: Caching of data in the network, the so-called *in-network caching*.

There are many in-network caching solutions available on the market to cache peer-to-peer file-sharing or video streaming traffic, as well as HTTP or FTP caching. However, most of these solutions cache data without that the peer-to-peer applications are aware of the caching and do not allow the applications to explicitly interact with the caches. The interaction with the caches comprises, detecting them, reading their cached content, or uploading content to them.

The DECADE working group works on such a protocol between the in-network caches and the applications (mainly peer-to-peer file-sharing at the point of writing of this document).

The idea of in-network storage fits well the vision of the COAST project and needs further investigation to see how results of COAST fit to the work in DECADE. The plan for the COAST project is to monitor the DECADE working group for now and to see later on how the FCN idea can be brought to DECADE or how the FCN work is influenced by DECADE. DECADE focuses right now on peer-to-peer file-sharing application usage and does not yet consider general purpose content delivery networks.



4.1.5. Audio Video Transport (AVT) Working Group

The Audio/Video Transport Working Group of IETF is in charge of maintaining the Real-time Transport Protocol (RTP), a protocol for real-time transmission of audio and video over unicast and multicast UDP/IP. It also develops and maintains individual payload formats for different codecs such as AVC/SVC/MVC.

The COAST project has contributed significantly to both the RTP Payload Format for SVC Video and the RTP Payload Format for MVC Video. These payload formats allow for multi-session transmission of scalable and multiview video, respectively. The SVC payload format will soon be promoted to RFC. The drafts in the AVT working group are:

1. S. Wenger, Y.-K. Wang, T. Schierl, A. Eleftheriadis, "RTP Payload Format for SVC Video", Internet Engineering Task Force (IETF), Audio Video Transport Group (avt), 26 April 2010, <http://tools.ietf.org/html/draft-ietf-avt-rtp-svc-21>.
2. S. Wenger, Y.-K. Wang, T. Schierl, A. Eleftheriadis, "RTP Payload Format for SVC Video", Internet Engineering Task Force (IETF), Audio Video Transport Group (avt), 26 August 2010, <http://tools.ietf.org/html/draft-ietf-avt-rtp-svc-22>.
3. S. Wenger, Y.-K. Wang, T. Schierl, A. Eleftheriadis, "RTP Payload Format for SVC Video", Internet Engineering Task Force (IETF), Audio Video Transport Group (avt), 8 October 2010, <http://tools.ietf.org/html/draft-ietf-avt-rtp-svc-23>.
4. S. Wenger, Y.-K. Wang, T. Schierl, A. Eleftheriadis, "RTP Payload Format for SVC Video", Internet Engineering Task Force (IETF), Audio Video Transport Group (avt), 8 November 2010, <http://tools.ietf.org/html/draft-ietf-avt-rtp-svc-24>
5. Y.-K. Wang, T. Schierl, "RTP Payload Format for MVC Video", Internet Engineering Task Force (IETF), Audio Video Transport Group (avt), 9 October 2010, <http://tools.ietf.org/html/draft-ietf-avt-rtp-mvc-01>.

4.1.6. Content Distribution Network Interconnection (CDNI) BOF

During the forthcoming IETF meeting in Prague (27/3-1/4/2011), the CDNI BOF (Birds-of-a-Feather) session will take place. This session is based on the assumption that there is an emerging requirement for interconnecting content delivery networks (CDNs) so they can interoperate as an open content delivery infrastructure for the end-to-end delivery of content from Content Service Providers (CSPs) to end users.

This BOF session will discuss the proposed development of IETF standards to facilitate such CDN interconnection. These standards might include protocols for

- exchange of metadata between CDNs,
- exchange of transaction logs & monitoring information,
- exchange of request-routing information,
- exchange of policies & capabilities, and
- content management/flushing.

COAST will participate in this BOF and check if can contribute in the transition of the BOF to an IETF working group.



4.2. ETSI TISPAN

ETSI, the European Telecommunication Standards Institute, looks in its technical body TISPAN at specifying Next Generation Networks (NGN) since 2003.

4.2.1. Approach of the ETSI TISPAN Standardization

Participants of the COAST project either plan or are already contributing to bring results of the COAST project to TISPAN. The participation in the TISPAN standardization follows an active approach, where early results out of COAST are submitted to TISPAN by means of writing formal contributions, contributing to mailing list discussions and participating in technical meetings at TISPAN meetings.

This active contribution ensures early feedback on COAST results from the TISPAN participants, feeding of results to the standardization, as well as, the possibility to see what the current development in the area of Telecommunications.

4.2.2. TISPAN NGN with IPTV CDN

The TISPAN NGN architecture separates between a Service layer and a Transport layer and draws upon a modular approach. TISPAN NGN Release 1 Specifications set the basic ecosystem for the NGN.

TISPAN Release 2 specifications introduced support of IPTV services. TISPAN – like other SDOs – defined two different architectural approaches: one reusing 3GPP IMS for session control, billing, user identification etc, the second one being a dedicated sub system for IPTV. Both approaches have in common that they aim to fulfil the same requirements but they differ in the means. As such, the TISPAN IPTV services may appear the same to the user, despite being implemented in different architectural choices and ultimately using different protocols for realizing IPTV.

TISPAN Release 3 IPTV specifications expanded on the Release 2 IPTV definitions and added advanced features and services such as IPTV Content Markers, Playlist generation, Targeted Advertising e.g. based on relevant SCTE or OMA standards, user generated content, shared service control and media synchronization between different receivers.

Since their first definition in Release 2, the approach of both IPTV architectures in TISPAN was to split a control part from a media delivery part. The latter resembles a traditional Media Server approach. During TISPAN Release 3, it became evident that more advanced approaches to the delivery aspects should be defined in TISPAN as well and thus, TISPAN started in Release 3 also to define the architecture of an IPTV specific Content Delivery Networks (TS 182 019) which aims to replace the aforementioned Media Servers in both IPTV architectures. The CDN of TISPAN targets to meet the unicast related IPTV service requirements and its architecture is about to be finalized. The protocol details are at an early stage of being defined currently.

Here, COAST is contributing to the discussions on interconnection of separate TISPAN CDNs. The COAST projects plans to continue the contributions to the protocol discussions.

4.2.3. ETSI MCD (Media Content Distribution)

ETSI MCD (Media Content Distribution) is the ETSI technical committee in charge of guiding and coordinating standardization work aiming at the successful overall development of multimedia systems (television and communication) responding to the present and future market requests on media content distribution MCD created a specific work item on interconnection of heterogeneous CDNs ("CDN Interconnection, use cases and requirements") in March 2010. MCD very recently



created a working group to progress this work item. However, no protocol level work has yet started in MCD for CDN Interconnect.

NEC, as COAST partner, attended the ETSI TISPAN2-#25bis, ETSI MCD#08 and joint ETSI TISPAN/MCD meeting, in Biel/Bienne, Switzerland, in November 29th – December 03rd 2010.

COAST is monitoring this activity, together with the IETF activity on CDN interconnection (see Section 4.1.6).

4.3. Moving Picture Experts Group (MPEG)

The Moving Picture Experts Group (MPEG) is a working group of ISO/IEC in charge of the development of standards for coded representation of digital audio and video and related data. MPEG is widely known for its standards on compression and decompression of moving pictures and audio which are deployed in numerous applications.

4.3.1. Approach of the MPEG Standardization

MPEG projects relevant for the COAST are mainly:

- ISO Base Media File Format [ISO/IEC 14496-12] and derived standards such as the AVC File Format [ISO/IEC 14496-15] which also includes features SVC and MVC.
- Dynamic Adaptive Streaming over HTTP [ISO/IEC 23001-6].

The ISO Base Media File Format is a flexible and extensible format to store timed media information for a presentation. It is also used for Dynamic Adaptive Streaming over HTTP (DASH), where media files are transferred in a segmented way. The DASH activity mainly specifies a Media Presentation Description which is used by the client to identify and locate segments to be downloaded for the presentation of a specific media content.

A relevant contribution by the COAST project has been presented during the 94th MPEG meeting in Guangzhou, China. Its technical approach has been incorporated into the DASH Committee Draft. The input provides solutions for

- signalling of the number of target output views for an MVC representation;
 - signalling of the relative view locations for the purpose of view switching and depth adjustment.
1. Karsten Grüneberg, Ying Chen, Yasuaki Tokumo, Thomas Schierl, *3D Video Support in DASH*, MPEG doc ref m18598, 14 Oct 2010, Guangzhou, China.

4.4. Digital Living Network Alliance (DLNA)

Digital Living Network Alliance (DLNA)¹ is a collaborative trade organization established in June 2003. It counts more than 250 member companies in the mobile, consumer electronics, computer manufacturers as well as in the component and software development companies. The main goal of the alliance is to develop and support standard-based technologies that give to users the possibility to share and enjoy multimedia contents among compatible products. DLNA regularly publishes Interoperability Guidelines defining specifications and protocols for products interoperability,

¹ Digital Living Network Alliance, DLNA, www.dlna.org



aiming to enlarge the set of mobile and home network devices to be included in a DLNA-defined network. Through a specific DLNA Certification Program, products of the member companies can obtain official DLNA certification and logo that guarantees completion of testing requirements compatibility with other DLNA products.

4.4.1. Approach of the DLNA Standardization

Interoperability among home and mobile terminals is an important topic, in particular when dealing with video streaming services that should be seamlessly offered and consumed over a wide set of heterogeneous devices. In COAST such matters are taken into account by adopting and developing technologies capable to support scalable media codec formats such as the Scalable Video Coding (SVC) standard. For this reason, two partners of COAST consortium (STM, member of the DLNA alliance, and HHI) recently submitted to DLNA an addendum proposal aiming to define media format profiles that include SVC video bit-streams. The proposal was accepted and SVC will be included as optional media format in the next amendment of DLNA guidelines:

DLNA Networked Devices Interoperability Guidelines, Addendum to Volume 2, Media Format Profiles

DLNA guidelines are available for free to DLNA Member and to purchase for non-DLNA member from DLNA web site.

The effort provided by the COAST partners in DLNA increases the possibility of a widespread adoption of SVC coding standard which is a key video technology, essential for the delivery and adaptive aspects foreseen in COAST.



5. Summary and Outlook

This deliverable describes all COAST related impact creation activities in the months 1-11 and the plans for the following months of the project. We have summarized the dissemination output and plans in Section 2. Section 3 reports on the participation of the COAST project in the concertation meetings, bilateral project meetings, participation in various groups and the Future Internet activities of the European Union. The output and plans of the standardization activities in the IETF, ETSI TISPAN, MPEG, and DLNA is listed in Section 4.

The plans stated in this document for the future dissemination of project results, liaisons, and standardization are made based on the current understanding of the project's expected output. These plans may be adapted to the actual project outputs.

The COAST project will continue its good track of dissemination and standardization activities and is open for further collaborations with other EU projects, as well as, international activities.