Document

Deliverable D7.2
Dissemination, Exploitation and Standardisation Plan

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Abstract

This document is POPEYE D7.2 deliverable – Dissemination, Exploitation and Standardisation Plan. It outlines the project strategies related to dissemination and exploitation of results, as well as the general lines concerning use of and contributions to standards and open sources.

Keywords List

Dissemination, exploitation, standards, open source, collaboration, peer to peer, mobile ad hoc network
Executive Summary

This deliverable D7.2 presents the initial outlines of POPEYE dissemination, exploitation and standardisation activities. Reflecting the partners view in the initial phase of POPEYE analysis and specification work, it sets the basis of for the general dissemination and exploitation activities that will be developed in the course of the project.

Specifically, D7.2 provides the following:

- a number of dissemination target, actions and channels to be implemented in the course of the project;
- a preliminary identification of the expected POPEYE results exploitable by the partners
- the project approach concerning the possible use of and contributions to standards and open source;
- the initial partners exploitation intentions, providing the bases for later development, according to project achievements and market / exploitation analysis

D7.2 provides the initial view and plans concerning dissemination, exploitation, standards and open source related strategies of POPEYE. The corresponding activities will be fully reported in the corresponding documents “Year 1 Exploitation, Dissemination and Standardisation Report” (D7.3, March 2007) and “Year 2 Exploitation, Dissemination and Standardisation Report” (D7.4, March 2008).
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## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>A2A</td>
<td>Administration to Administration</td>
</tr>
<tr>
<td>A2C</td>
<td>Administration to Citizens</td>
</tr>
<tr>
<td>3GPP</td>
<td>3rd Generation Partnership Project</td>
</tr>
<tr>
<td>B2E</td>
<td>Business to Employee</td>
</tr>
<tr>
<td>CRM</td>
<td>Corporate Resource Management</td>
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<tr>
<td>CWE</td>
<td>Collaborative Working Environments</td>
</tr>
<tr>
<td>DDS</td>
<td>Data Distribution Service</td>
</tr>
<tr>
<td>DYMO</td>
<td>Dynamic MANET On-demand Routing Protocol</td>
</tr>
<tr>
<td>E2E</td>
<td>Employee to Employee</td>
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<tr>
<td>ETP</td>
<td>European Technology Platform</td>
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<tr>
<td>ETSI</td>
<td>European Telecommunications Standards Institute</td>
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<tr>
<td>GGF</td>
<td>Global Grid Forum</td>
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<tr>
<td>IETF</td>
<td>Internet Engineering Task Force</td>
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<tr>
<td>IRTF</td>
<td>Internet Research Task Force</td>
</tr>
<tr>
<td>MANET</td>
<td>Mobile Ad hoc Network</td>
</tr>
<tr>
<td>MP2P</td>
<td>Mobile Peer to Peer</td>
</tr>
<tr>
<td>NESSI</td>
<td>Networked European Software and Services Initiative</td>
</tr>
<tr>
<td>NWE</td>
<td>New Working Environments, Unit of DG INFSO</td>
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<tr>
<td>OMA</td>
<td>Open Mobile Alliance</td>
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<tr>
<td>OMG</td>
<td>Object Management Group</td>
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<tr>
<td>P2P</td>
<td>Peer to Peer</td>
</tr>
<tr>
<td>QoS</td>
<td>Quality of Service</td>
</tr>
<tr>
<td>S&amp;T</td>
<td>Scientific &amp; Technological</td>
</tr>
<tr>
<td>SOA</td>
<td>Service Oriented Architecture</td>
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<tr>
<td>VPN</td>
<td>Virtual Private Network</td>
</tr>
<tr>
<td>W3C</td>
<td>World Wide Web Consortium</td>
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<tr>
<td>WWRF</td>
<td>Wireless World Research Forum</td>
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1. Introduction

1.1 POPEYE background and objectives

1.1.1 Context and focus of POPEYE research

Next generation collaborative systems will offer the mobile user seamless and natural collaboration amongst a diversity of agents within distributed, knowledge-rich and virtualised working environment. However, this ambitious goal faces numerous challenges from the underlying communication infrastructure through to the high-level application services. These challenges, depending on the operational need, can be addressed in both technological and scientific terms.

The POPEYE project focuses on supporting dynamic spontaneous collaborative group working environments with autonomous coordination and knowledge management support.

When most of the currently available tools supporting collaboration exploit a rigid client-server architecture and rely on a communication infrastructure like the Internet, POPEYE’s ambition is to get collaborative working free from such constraints.

In this setting, the project will consider P2P over wireless ad hoc groups, where fixed infrastructure is not a prerequisite, where virtual communities can emerge spontaneously and share data with the appropriate quality of service (persistence, synchronisation, security,…).

The POPEYE project will

a) draw out an integrated overlay networking architecture that combines the stability and performance of infrastructure networks (when available) with the flexibility and spontaneous character of mobile ad hoc communications,

b) develop a communication platform to provide efficient P2P management and communication primitives,

c) develop higher-level context-aware, secure and personalised core services to facilitate application development by allowing the combination of user preferences with ambience information, such as time, location, user activity, and peers’ presence.

The POPEYE infrastructure will be assessed through representative and challenging selected mobility-enabled peer-to-peer e-collaboration applications and two demonstration events will be organised to show and evaluate the capabilities of POPEYE through proof-of-concept applications.

1.1.2 Objectives and expected results

The overall goal of the strategic research of POPEYE is: “to provide the concepts, methods and core services for next generation mobile collaborative working environment with emphasis on P2P information exchange model in the environment of heterogeneous mobile ad hoc networks”.

In the general notion of virtualised working environments, POPEYE addresses mobile P2P and ad hoc groups, where fixed infrastructure is not a prerequisite, where virtual communities can emerge spontaneously and share data with the appropriate quality of service (persistence, synchronisation, security,…).
With this approach in mind, POPEYE sets the following specific objectives:

- **Design an integrated overlay networking architecture** that combines the stability and performance of infrastructure networks (when available) with the flexibility and spontaneous character of mobile ad hoc communications.
- **Design and implement a communication platform** that exploits cross-layer functionality down to lower-level protocols to provide efficient P2P management and communication primitives. A key feature is its “network and terminal awareness”, allowing adaptation in accordance with the underlying physical links, network availability and local device resource constraints. Several P2P issues are already, even partly, addressed by “conventional” middleware, so we intend to base our work on existing products, e.g. JXTA and Microsoft-P2P, which will be extended to introduce additional mobility and pure ad hoc communication support.
- **Design and implement higher-level context-aware, secure and personalised core services.** Based on the P2P middleware platform, core services are designed and developed to simplify application development. In the frame of spontaneous virtual communities/groups, users’ preferences are exploited to publish, discover and access or deliver information within the P2P network in a targeted and personalised fashion. User preferences combined with ambience information, such as time, location, user activity, and peers’ presence, enable applications to propose automatic actions, such as joining or leaving a group and publishing or subscribing to some particular type of information, under user control.

Peer to peer networks have already shown their potential in fixed packet-based networks. Their distributed nature makes them particularly suited for mobile applications. Moreover, deploying P2P architectures in mobile networks can bring the same wide range of new applications and services to mobile users. However, in POPEYE we concentrate on the deployment of **P2P services** in the context of spontaneous ad-hoc network formation and how we can fully take advantage of P2P in a mobile environment, with an architecture carefully designed to guarantee it adapts to the particular properties of mobile networks.

### 1.2 WP7 Dissemination, Exploitation and Standardisation

WP7 of POPEYE work plan is to address all of the activities aimed at dissemination, exploitation planning and contribution to standardisation.

Particularly, WP7 objectives are set as follows:

- To identify the key targets for dissemination of knowledge and results generated within POPEYE and the messages or information set required for each target.
- To establish the communication channels for the target audience, prepare, update and maintain the content for the different audience groups.
- To design and develop a well-structured and operable dissemination plan covering the above objectives and to follow implementation of the planned actions in the course of the project.
- To establish the POPEYE identity and logo.
- To establish the POPEYE website as a main dissemination tool for the general audience.
To organise targeted POPEYE dissemination events – including one public demonstration event – to communicate results, key methods and lessons learned during the POPEYE research.

To participate to European dissemination events in the IST sector, including those organised by the NWE Program Unit.

To plan and prepare exploitation of project results in the post-project phase.

To facilitate possible contributions from POPEYE to the relevant standardisation groups and areas.

Accordingly, the work within WP7 is organised into the following tasks:

- **Task T7.1 - Dissemination of results.** This task is concerned with presentation and dissemination of results to the target groups, using the standard channels such as publications in journals, presentations and demonstrations in conferences, workshops and exhibitions, etc. Furthermore, a web site is to be developed for a global dissemination. Presentation of a coherent and complete perspective of the achievements, in terms of final results will be performed during specific demonstration events.

- **Task T7.2 – Exploitation.** This activity is to monitor the exploitation initiatives of the partners and foster the cross-breeding of industrial and academic capabilities so as to maximise the overall usage of the POPEYE achievements.

- **Task T7.3 - Contribution to fora and standards.** POPEYE has the potential to influence work groups in Internet Research Task Force’ (IRTF) Peer-to-Peer Research Group and the Global Grid Forum (GGF). Partners of the POPEYE consortium are also participating in standardization bodies such as 3GPP, ITU, ETSI, WWRF, IETF, W3C, OMG and OMA. This task will seek to identify any project development and achievement having the potentials to provide useful contributions to the relevant standardisation groups and areas.

### 1.3 Scope of Deliverable D7.2

The goal of deliverable D7.2 is to describe the consortium initial views and plans concerning dissemination, exploitation and standardisation activities as set by the POPEYE partners in the starting phase of the project.

As such, D7.2 is primarily concerned with defining and introducing the project plans – both and project and partners levels – related to dissemination of project activities and achievements, preparation of exploitation actions during project and after the project end, as well as contributions to standardisation. Furthermore, besides the overall planning of activities, D7.2 provides also an account of those first actions implemented during the initial months of the project.

The implementation of the various dissemination, exploitation and standardisation oriented activities and measures described in this deliverable will be developed throughout the POPEYE project work plan and will be based upon the work carried out and results obtained in virtually all work packages and tasks. A summary of all such activities will be reported in two dedicated deliverables issued towards the end of the first year (deliverable D7.3, “Year 1 Dissemination, Exploitation and Standardisation Report; March 2007) and at the end of the project (deliverable D7.4, “Year 2 Dissemination, Exploitation and Standardisation Report; March 2008).
2. Dissemination Approach

2.1 Main objectives and overall strategy

The POPEYE dissemination process planned and to be carried takes into account the project objectives, the partners expertise and roles, the main dissemination groups identified. It will include dissemination material and actions focussed on the specific characteristics of the different target groups.

Overall, the POPEYE dissemination strategy is based on three main steps:

- the specification of the target dissemination (user) groups;
- the definition of the main contents to disseminate to the potential user groups identified;
- the selection and set up of the media/channels to be used for the dissemination activities proper.

As the overall dissemination and exploitation plan encompasses a number of different actions, dissemination channels and media (see below, sect. 2.3) a number of key elements are to be taken into account and are to be carefully assessed when implementing each single dissemination phase and measure. Key elements which require special attention and careful choices in order to achieve and implement an effective and coherent project dissemination and promotion strategy include:

- **Goals**: The main goals of the dissemination effort must be defined and properly described. Dissemination goals must be associated with operational objectives, that clarifies what should be accomplished through the dissemination activities;
- **Stakeholders and Users**: scope and characteristics of the stakeholders and "potential users" ("adopters") that the dissemination activities are designed to reach for each objective;
- **Content and Media**: the basic elements of the contents to disseminate to each of the potential user groups identified, and the main dissemination media/channels for delivery of illustrative or publicising content and more specific information;
- **Success**: qualitative and quantitative control on dissemination activities to evaluate their success;
- **Access & Availability**: modalities to ensure and promote access to pertinent information and awareness of its availability;
- **Barriers**: early identification and analysis of potential barriers interfering with the targeted users’ access.
- **Interactions with other Projects/Communities**: coordination of the project activities with similar and synergetic initiatives which are being carried on in Europe, particularly within the IST Communities and, amongst these, the CWE communities.
- **Actions**: definition of the concrete dissemination actions to be undertaken and their timetable.

A summarised view of the planned dissemination actions according to the above principles is included at the start of the section 2.3 ahead. The detailed description of each planned action is given in the main part of the section.
2.2 Dissemination levels

The following main levels – groups of potential users or “adopters” – of POPEYE results and technology have been identified and formed, altogether, the target audience of the project:

- **Research communities**, which will be interested in the project results to support their research activities taking into account the POPEYE conceptual innovation, exploiting and further developing the project outcomes, and cooperating with POPEYE partners research activities. Such communities include IST, and particularly CWE, research groups involved in Integrated Projects, STREPs or Networks of Excellence active on the themes addressed by POPEYE.

Given the particular timing of POPEYE, there are also chances to interact and disseminate results with early FP7 projects.

- **European industries**, mainly technology and service providers in the ICT area. These will be interested in the potentials for commercial exploitation of project results, mainly with the development of new products or the introduction/integration of advanced features in existing products.

- Potential **End user communities** (“adopters”) that may take a relevant advantage from the availability of new and more powerful software products to support cooperative working and improve the efficiency and productivity of groups of people working together in a large variety of situations.

Identified potential market segments of interest for POPEYE as regards industrial and end user exploitation are described in section 3.2.

In order to facilitate dissemination during the project life time and prepare the exploitation and adoption of POPEYE results in the post-project phase, users from the above targeted levels will be involved in the POPEYE **User Group** (UG). The UG will consist of a list researchers, companies and organisations interested in the POPEYE research and possibly willing to evaluate the approach, methodologies and tools in early testing and use of POPEYE solutions. The UG will be populated particularly in the early stage of the project and updated during project progress, using contacts of participating companies and institutions.

2.3 Actions and channels

POPEYE dissemination and promotion activities will involve a coordinated set of instruments and tools, with a mix of regularly timed actions and asynchronous activities.

The following table provides a summarised view of the planned dissemination actions and channels, according to the general principles introduced in sect. 2.1. The detailed description and plans for each envisaged action are provided in the remainder of the chapter.
<table>
<thead>
<tr>
<th>Action / Item</th>
<th>Goals and Objectives</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website / Portal</td>
<td>Awareness, Information, Promotion, Engagement</td>
<td>One of the most versatile dissemination tools, the correct place for providing information targeted to different audiences.</td>
</tr>
<tr>
<td>Flyers / Brochures</td>
<td>Awareness, Promotion</td>
<td>Though much communication is electronic, A4 flyers that can be circulated in printed form, e.g. to hand out at conferences, will be produced. The electronic version (e.g. PDF) will be circulated electronically and provided e.g. through the web site.</td>
</tr>
<tr>
<td>Project Deliverables / Public distribution</td>
<td>Awareness, Engagement, Promotion</td>
<td>Most POPEYE project Deliverables are public. These will provide a main source of information on project advances and achievements. Will be made accessible mainly via the POPEYE website.</td>
</tr>
<tr>
<td>Paper / Journal articles</td>
<td>Awareness, Engagement, Promotion</td>
<td>Most of the scientific dissemination efforts will be targeted to be published in international scientific journals. A list of candidate journals and magazines has been identified.</td>
</tr>
<tr>
<td>Conference presentations</td>
<td>Awareness, Engagement, Promotion</td>
<td>National and International conferences organised by Institutions, Universities, Journals, Research Organisations, etc., are important opportunities to share project results with other experts in the field. A list of candidate events has been identified.</td>
</tr>
<tr>
<td>Conference posters</td>
<td>Engagement, Promotion</td>
<td>A poster session at a conference is more appropriate when work is in progress. The work (e.g. current results) is written in poster format and presented to delegates who attend the session.</td>
</tr>
<tr>
<td>Knowledge transfer / Tutorials</td>
<td>Awareness, Education</td>
<td>The scientific results obtained in POPEYE will provide the base knowledge for further research and education. To focus the attention of the interested professionals, research and student communities on POPEYE results, targeted dissemination events and tutorials will be delivered, possibly in conjunctions with some major international event (e.g. conference, workshop, etc.) addressing the research fields of POPEYE.</td>
</tr>
<tr>
<td>User Group / UG mailing list</td>
<td>Awareness, Engagement, Promotion</td>
<td>In order to facilitate dissemination and collaboration between POPEYE and other member of the CWE community, a POPEYE User Group will be established as a first community of targeted dissemination and information exchange. The UG will be mainly reached through a dedicated mailing list (e.g. “popeye.ug@...”) that will be used for distribution of information and material.</td>
</tr>
<tr>
<td>Open POPEYE Events / Workshops / Demonstrations</td>
<td>Awareness, Promotion, Engagement</td>
<td>Workshops are small interactive events held to achieve a specific objective (e.g. open discussion and consensus formation around User Requirements). Workshops will be used to perform in depth dissemination mainly within the POPEYE UG. In addition, one open, public demonstration event is planned at the end of the project.</td>
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</table>

Summary of main planned dissemination channels / actions in POPEYE
2.3.1 Web presence

Adequate presence of POPEYE project on the web will be ensured by the public project website, which will be a main public channel and access point for project results. Its address will be clearly indicated in all reports and documents produced and distributed by the project (e.g. summary and detailed activity reports, deliverables, etc.) and linking of the site will be ensured at IST Programme level as well as with other public websites.

The POPEYE website will be accessible through the following URL: http://www.ist-popeye.eu.

The following figure shows the homepage of the public website.
The POPEYE website is divided into a publicly accessible area, mainly intended for dissemination and project communication purposes, and a private area, restricted to partner access and intended to support partners collaboration during the project through a number of services (e.g. shared document space, calendar, event notification, etc.).

The public website is organised into the following main sections:

- **The homepage**, conveying in an immediate way the general project “branding” and communication style (adopted project colours, logo, project title and acronym, etc.) and providing a few key elements, arranged in clearly identified web parts, that are needed to introduce and highlights the main messages of the project:
  - Project mission statement
  - The key research themes addressed by the project
  - Link to the IST Programme and the CWE community
  - The ‘Highlights’ box, highlighting any event of relevance for POPEYE, both internal and external to the project
  - The ‘News’ box, showing the (two) most recent news from the ‘News’ section (see below)

- **The ‘Project’ section**, providing extensive information about POPEYE (background and objectives, innovation, expected results, etc.).

- **The ‘Consortium’ section**, which includes descriptions of POPEYE partners and their roles in the project.

- **The ‘News’ section**, containing the archive of news and any public communication generated during the project; the two most recent news are also displayed in the relevant box of the homepage.

- **The ‘Events’ section**, containing the archive of events of interest for POPEYE, including both project-related events (e.g. User Group meetings, demonstrations, etc.) as well as other external events (i.e. conferences, workshops, seminars, etc.) addressing any of the research areas of POPEYE.

- **The ‘Documents’ section**, which will gradually make available information about the project (leaflets, brochures, public presentations, etc.) as well as about the main project achievements (links to public deliverables and technical documents).

- **The ‘Links’ section**, providing a collection of links to other sites in the internet of interest form POPEYE, including the other CWE projects POPEYE will have established relations with, aimed at exchange of information and collaboration.

While the POPEYE website will be the primary, live source for on-line dissemination and communication, it will also define the general choices as regards the graphical style and key visual elements chosen for the project “branding”. These will be at the basis of all other project communication material and resources (project leaflets, brochures, posters, presentation templates, etc.).

It is planned the web exposure of POPEYE will be enhanced by ensuring cross-linking from other websites and on-line resources in the CWE communities. Particularly, planned cross-linking includes the following type of resources:

- Other CWE projects POPEYE will have established collaboration agreements with (i.e. other running CWE IPs, STREPs and Networks of Excellence);
- CWE Communities related portals and websites (e.g. AMI@Work Community Portal, etc.)
- EC supported on-line services such, e.g., the “WebRing” of CWE projects maintained by DG INFSO – NWE Unit.
The public website is built using an open source content management platform (Rainbow Portal, [http://www.rainbowportal.net](http://www.rainbowportal.net)) which enables easy maintenance and update of all texts and other contents of the site. The site structure and navigation – in terms of sections and sub-sections, menus, etc. – can be also easily changed through the content management platform services, thus allowing easy and quick adaptation of the site structure as new information and contents become available in the course of the project. The editing tools are accessible through the ‘Partners only’ section, and will be used on-line by the authorised partners.

The partners’ private part of the website is implemented using a collaboration platform provided by Softeco (eADT / eTW Suite) built using open source components ([http://www.extropia.com](http://www.extropia.com)).

2.3.2 Public project Deliverables

A main source of information for dissemination and project communication is ensued by the large number of **public project deliverables** planned in POPEYE. Indeed, most project deliverables are classified as public, and this will guarantee a transparent, publicly accessible flow of information from the project throughout its main phases.

All key stages of project development and their related expected achievements will be made accessible to the IST community and to the public by the relevant deliverables.

The table below provides a summary of all POPEYE public deliverables, their type (nature) and planned delivery date.

<table>
<thead>
<tr>
<th>Deliverable No¹</th>
<th>Deliverable title</th>
<th>Delivery date²</th>
<th>Nature ³</th>
<th>Dissemination level⁴</th>
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<tr>
<td>D1.1</td>
<td>Management Plan</td>
<td>M2</td>
<td>R</td>
<td>PU</td>
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<td>D2.1</td>
<td>Description of collaboration scenarios</td>
<td>M3</td>
<td>R</td>
<td>PU</td>
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<tr>
<td>D2.2</td>
<td>Description of functional, non functional and technical requirements</td>
<td>M6</td>
<td>R</td>
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(continues)

¹ Deliverable numbers Dx.y
² Month in which the deliverables will be available. Month 1 marking the start of the project (i.e. May 2006), and all delivery dates being relative to this start date.
³ Please indicate the nature of the deliverable using one of the following codes:
   - R = Report
   - P = Prototype
   - D = Demonstrator
   - O = Other

⁴ Please indicate the dissemination level using one of the following codes:
   - PU = Public
   - PP = Restricted to other programme participants (including the Commission Services).
   - RE = Restricted to a group specified by the consortium (including the Commission Services).
   - CO = Confidential, only for members of the consortium (including the Commission Services).
<table>
<thead>
<tr>
<th>Deliverable No(^5)</th>
<th>Deliverable title</th>
<th>Delivery date(^6)</th>
<th>Nature (^7)</th>
<th>Dissemination level(^8)</th>
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<tr>
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<td>POPEYE Basic Core Services Description</td>
<td>M6</td>
<td>R</td>
<td>PU</td>
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<tr>
<td>D7.2</td>
<td>Dissemination, Exploitation and Standardisation Plan</td>
<td>M6</td>
<td>R</td>
<td>PU</td>
</tr>
<tr>
<td>D7.3</td>
<td>Year 1 Dissemination, Exploitation and Standardisation Report</td>
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<tr>
<td>D3.1</td>
<td>POPEYE Security Design Document</td>
<td>M12</td>
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<td>POPEYE lower level Design Document</td>
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<td>POPEYE Core Services Description</td>
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<td>D1.2</td>
<td>Year 1 Management Report</td>
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<td>POPEYE Core Services Architecture Definition</td>
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<td>D8.1</td>
<td>First POPEYE Demonstration</td>
<td>M18</td>
<td>O</td>
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<td>D7.4</td>
<td>Year 2 Dissemination, Exploitation and Standardisation Report</td>
<td>M23</td>
<td>R</td>
<td>PU</td>
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<td>D1.3</td>
<td>Year 2 Management Report</td>
<td>M24</td>
<td>R</td>
<td>PU</td>
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<tr>
<td>D6.3</td>
<td>Evaluation and Guidelines for Developing POPEYE Applications</td>
<td>M24</td>
<td>R</td>
<td>PU</td>
</tr>
<tr>
<td>D8.2</td>
<td>Final POPEYE Demonstration</td>
<td>M24</td>
<td>O</td>
<td>PU</td>
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</table>

\(^5\) Deliverable numbers Dx.y

\(^6\) Month in which the deliverables will be available. Month 1 marking the start of the project (i.e. May 2006), and all delivery dates being relative to this start date.

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2.3.3 Dissemination material

Planned standard dissemination material includes the following type of resources:

- A Project fact-sheet (A4 format) produced in the early phases of POPEYE, providing general and information key facts about the project;
- A more elaborated project brochure, produced at later stages in the project (e.g. end of year 1; revised version at end of year 2) with more extended information and intended for dissemination at public events (conferences, exhibitions, etc.);
- A project poster (at least A1 format) also to be used at public events (conferences, exhibitions, etc.);
- A standard MS Powerpoint® project presentation aimed at providing all relevant project information including (at least):
  - Project outline and key facts;
  - POPEYE consortium partners;
  - Objectives and S&T Innovation
  - Expected results
  - Collaboration and User Group
  - Other technical information, when available (e.g. architecture, applications, etc.)
- Specific illustrative and communication materials like additional flyers, announcements, etc., produced for use in conjunction with specific project events like e.g. User Group workshops, public demonstrations, etc.
- Specific project dissemination material – additional to the planned project deliverables – produced according to specific project events or results; e.g. notes or proceedings related to public project workshops or demonstration events.

The following figure shows a few dissemination material produced at the onset of the project: the A4 project fact-sheet, the announcement of the User Requirements workshop and the related proceedings.
POPEYE is a European research project investigating innovative solutions for Peer-to-Peer architecture over mobile ad-hoc networks.

POPEYE is researching solutions to support:
- Coxiprotocols and cool networking, client and user
- P2P interaction via VOF (Virtual Overlay Fabrics)
- Usage of the service supporting infrastructure
- Efficient peer maintenance, and overlay management groups
- Intensive and secure
- Use of different overlay and infrastructure, suitable for professional usage

POPEYE is a Specific Targeted Research Project (STREP) performed by the EU under the 6th Framework Program, IST Priority. Contract No. IST-2006-034561

RESEARCH THEMES
- Persistence of shared data, archiving, storing, browsing, and populating
- Support of various P2P schemes, management of ad hoc client groups
- Security, security services, key and access security features

End User Projects
POPEYE is part of the Collaborative Working Environment (CWE) group of projects partially funded by the European Commission in the PTC IST program.

Announcement of POPEYE event

POPEYE End-User Requirements Workshop
Workshop on Peer to Peer Collaborative Working Environments over Mobile Ad-Hoc Networks

POPEYE Deliverable D7.2
Dissemination Level: Public

Proceedings of POPEYE End User workshop (20 September 2006)
All the above dissemination material will be made gradually available for public consultation and download from the relevant section of POPEYE website (‘Documents’).

2.3.4 Publications on journals and magazines

All POPEYE partners, both academic and industrial, have excellent track records in international publications on sector journals and magazines. Based on the relevant partners fields of research and scientific interests, the following set of candidate journals and magazines has been identified for possible POPEYE publications:

- IEEE Computer;
- IEEE Internet Computing;
- IEEE Wireless Communications;
- IEEE Pervasive Computing;
- ACM Transactions on Computer-Human Interaction;
- ACM Mobile Computing and Communication Review;
- CSCW Journal of Collaborative Computing;
- Behaviour and Information Technology;
- Transactions on Human-Computer Interaction;
- Int. Journal of Information Technology and Management;
- Int. Journal of Networking and Virtual Organisations;
- Computers in Human Behaviour;
- Group Decision and Negotiation;
- Int. Journal of Human-Computer Studies;

2.3.5 Presentation at conferences and events

Complimentary to publications in journals and magazines, the knowledge about POPEYE advances and achievements will be spread through presentations given at public events such as international and local conferences and workshops, exhibitions, trade fairs, etc.

POPEYE project partners are well positioned in various Research communities. Members of the consortium are organisers of well-reputed international conferences and workshops. In particular (not exclusively, though) we will focus on those conferences and events where members of the consortium are in the scientific program committee. All conferences are published by well-known publishers (such as e.g. ACM, IEEE, etc.)

The following list provides a collection of candidate events to be targeted for project presentations during the various phases of POPEYE research:

- ACM CSCW (http://www.acm.org/cscw2006/);
- CRIWG (http://www.criwg.org/principal.htm);
- Conference on Collaborative Working Environments for Business and Industry (CWE’06, CWE’07, CWE’08; http://www.cwe-europe.org);
- MobiSYS (http://www.sigmobile.org/mobisys/);
- MobiCom (http://www.sigmobile.org/mobicom/);
- UbiComp (http://ubicomp.org/);
2.3.6 Knowledge transfer

The possibility of knowledge transfer to the different courses the universities and POPEYE research partners develop will be an additional added value and a dissemination channel of the project.

In principle, the following approaches will be considered during the project:

1) Combining training events with selected conferences. This will require identifying a conference and proposing a workshop or "training/tutorial day" within the scope of the conference. Generally, this could be done either by targeting a Collaborative Work conference and proposing a training in the area of collaboration over MANETs, or spotting a Mobile Network conference and proposing training around collaborative work support.

2) Providing training on POPEYE, P2P collaboration and MANETs in combination with summer/winter schools. This will involve organising a 2 to 4 days school independent from other events where tutorials and research presentations could alternate.

Primarily, we will follow the line 1), proposing training/tutorial sessions in combination with a selected conference or workshop. Particularly, the training/tutorial event (of e.g. one day) could be extended with a few research oriented presentations and discussion (more in the workshop spirit). This appears to be feasible within the time and resource constraints of the project and will be addressed mostly in the second year of the project, when the main POPEYE R&T results will be available.

However, line 2) will be also carefully considered in the course of the project, based on training and education activities planned at the participating academic and research partners.

For example, the University of Murcia (UMU) actually provides courses in P2P mobile services and collaborative communications and security, where the results from POPEYE would be disseminated. UMU also organises summer schools in the context of the Universidad Internacional del Mar that could be used as part of a training or dissemination of the results of the project. We must point out also that since this year the Master Program of the UMU department involved in POPEYE includes a course about New Design strategies for Information System, where some of the lecture themes in the area of Architecture for Collaborative Working Environment, including aspects like SOA, Publish-Subscribe system, etc. are being analysed.

Likewise, at URV the main training and knowledge transfer events will be University periodic seminars, Tarragona’s city Science Dissemination events and focussed presentations to selected enterprises like Bull, Fujitsu and Telefonica.

2.3.7 POPEYE Open Events

POPEYE will hold several public events to disseminate the project approach and maximise the impacts of POPEYE research, particularly within the Collaborative Working communities.

Generally, these events will be held at key stages of the project, with the aim of checking project directions and approach in a broader context of CWE researchers as well as
disseminating information about POPEYE progress and achievements within the concerned constituency.

This dissemination channel will include some public workshops and two demonstration events.

2.3.7.1 Workshops

The first of these events is the POPEYE Requirements Workshop that took place in Oldenburg on September 20th, 2006. It provided a successful opportunity for constructive discussion on collaboration scenarios and requirements in relation to the addressed domain of P2P collaboration over MANETs. The public POPEYE Requirements Workshop was the first opportunity to mobilise the POPEYE User Group with the active participation of 13 person external to the project research.

The organisation of additional workshops will be freely decided by the POPEYE Management Board if and when it judges it beneficial to achieving the project’s objectives.

Here are several examples of context for the potential organisation of a workshop:

- Need of POPEYE to validate a given research achievements before going to the next step.
- Outstanding POPEYE research achievement that justifies the dissemination outside of the consortium.
- Demand from the POPEYE User Group or from other Partner Projects to address specific issues relevant to POPEYE research.
- Invitation by the European Commission or by other Partner Projects to collaborate or co-organise a workshop on a thematic of interest to the CWE research community.

2.3.7.1.1 Interim demonstration

The Interim Demonstration will take place accordingly to the Deliverable D6.1 - POPEYE Demonstration Plan

This first demonstration will be based an initial prototype implementation of POPEYE and will mainly target members of the POPEYE consortium themselves. However, external participants – for example members of the User Group from POPEYE partners – could be also involved in order to maximise the feedbacks already in this first assessment phase.

To ensure a better uptake of stakeholders and of potentials users, the POPEYE demonstration approach is incremental so that the users can accustom progressively to simple functions before moving to more elaborate ones and has the opportunity to provide guidance to the consortium within the project. This approach should warrant long-term interest for POPEYE achievements.

2.3.7.1.2 Final demonstration

The Final Demonstration will take place accordingly to the Deliverable D6.1 - POPEYE Demonstration Plan.

This event will be held in the context of a larger public event, allowing wider feedbacks from the POPEYE User Group and from an extended audience.

Lessons learnt from the Interim Proof of Concept Demonstration will be key to identifying the composition of the final demonstrator: proven architecture modules will be preferred and
external contributions will be negotiated accordingly so as to maximise the “operationality” and performance of the final demonstrator.

2.4 **External collaboration**

The POPEYE strategy for developing external collaboration with other stakeholders in the New Working Environments will be implemented through:

- Collaboration with research projects
- Collaboration with communities
- the POPEYE User Group

2.4.1 Collaboration with research projects

The POPEYE consortium, mainly through the project coordinator, will be seeking cooperation agreements with the other on-going research projects throughout the entire life-cycle of the project. This will be aimed at ensuring the largest possible integration of POPEYE within the CWE communities and, possibly, the identification of further collaborations after the project end.

Overall, potential collaboration will be related to the POPEYE strategic objective and technology areas:

- Mobility,
- Ad hoc networks,
- Persistence and Synchronisation.

An initial group of candidate projects has been identified, including:

- CASCOM (Coordinator: Mr. Oliver Keller)
- WearIt@work (Coordinator: Dr. Michael Lawo)
- InContext (Coordinator: Prof. Schahram Dustdar)
- CLOCK (Coordinator: Mr. John-Paul Moore)
- WorkPad (Coordinator: Prof. Tiziana Catarci)
- EcoSpace (Coordinator:: Dr. Wolfgang Prinz)

POPEYE is considering cooperation on grounds of reciprocal benefit.

Initial cooperation agreements have been stipulated (through exchange of Letters of Interest) with ECOSPACE, CASCOM, **WearIt@work**, Workpad and InContext projects. The result of these and any other collaboration established will be described in the yearly dissemination/exploitation reports (deliverables D7.3 and D7.4).

Furthermore, POPEYE project should have a relevant participation in the OCA (Open Collaborative Architecture) Group being created by the Commission in the area of NWE. Due to the nature of the network environment being considered by POPEYE (i.e. MANETs) its input will be relevant to be integrated in the whole picture of OCA. Additionally and because of the relation of UMU with one of the IP of the same call (ECOSPACE), actually initial collaboration has been started in order to try to integrate some of the characteristics of POPEYE collaborative environment in the design of the semantic collaborative middleware being considered in ECOSPACE.

Additionally as members of the UMU team are actually part of the Expert Group for NWE of the Commission, POPEYE is in a prominent position to collaborate with other projects and also to contribute to the design of the Future Trends. Several Commission lead events
will be instrumental to this. For example, participation is planned in the Workshops on New Collaborative Working Environments 2020 (Brussels, October 10th-12th) and also POPEYE is invited to be presented in the Collaboratecom session organised also by the Commission.

Collaboration with other projects external to the CWE communities will be also looked for. For example, opportunities have been identified for profitable exchanges with ICING project (http://www.fp6-project-icing.eu/). Researchers of the ICING project (Jesus Ibañez, UPF) are current members of the POPEYE User Group.

2.4.2 Collaboration with communities

POPEYE is also seeking participation with the active communities related to the POPEYE strategic objective and technology areas (mobility, ad hoc networks, persistence and synchronisation).

Initially identified candidates are:
- Open Collaborative Architecture (OCA) Working Group,
- AMI@Work family of communities,
- European Network of Living Labs.

An additional candidate is also the European technology Platform (ETP) Networked European Software and Services Initiative (NESSI),

Also as regards collaboration within the above communities, POPEYE is considering cooperation on grounds of reciprocal benefit.

The result of these collaborations will be described in the yearly dissemination/exploitation reports (deliverables D7.3 and D7.4)

2.4.3 POPEYE User Group

The POPEYE User Group is composed of:
- POPEYE consortium members themselves, as the prime user community of the POPEYE framework,
- experts belonging to the entities in the POPEYE consortium but not directly involved in the POPEYE research work,
- experts belonging to other project consortia where a cooperation agreement exists,
- experts belonging to the communities where POPEYE is involved under an External Collaboration scheme.

The User Group has already been actively participating in the POPEYE Requirements Workshop and will be involved in future public events like additional workshops, Interim and Final demonstrations.

The following table provides an overview of the organisations – about twenty, at the date this report is prepared – participating in the POPEYE User Group. It is important to note that the UG is an open platform, and it is expected it will be enlarged by inclusion of additional experts from various organisations during the project.
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Country</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Università’ di Roma “La Sapienza”</td>
<td>Italy</td>
<td>Expert from Workpad project</td>
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<tr>
<td>DFKI</td>
<td>Germany</td>
<td>Expert from CASCOM project</td>
</tr>
<tr>
<td>OFFIS e.V.</td>
<td>Germany</td>
<td>Experts other than those involved in POPEYE</td>
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<tr>
<td>Telecom Paris – ENST</td>
<td>France</td>
<td>Experts other than those involved in POPEYE</td>
</tr>
<tr>
<td>Universitat Pompeu Fabra</td>
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<tr>
<td>Business Technology Consulting AG</td>
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<td>Red Dot AG</td>
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<tr>
<td>Dataquest AG</td>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td>Atos Origin</td>
<td>Spain</td>
<td>Expert from CLOCK project</td>
</tr>
<tr>
<td>Technical University of Vienna</td>
<td>Germany</td>
<td>Expert from InContext project</td>
</tr>
<tr>
<td>University of Bremen, TZI</td>
<td>Germany</td>
<td>Expert from WearIT@work project</td>
</tr>
<tr>
<td>Fraunhofer FIT</td>
<td>Germany</td>
<td>Expert from ECOSPACE project</td>
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<td>Thales Communications</td>
<td>France</td>
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<td>Synthetron SA</td>
<td>Belgium</td>
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<td>ESoCE-NET</td>
<td>EU</td>
<td>European Society of Concurrent Enterprising</td>
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<td>Telematica Instituut</td>
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<td>RedDot GmbH</td>
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<td>Data-Quest GmbH</td>
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<td>ARTTIC SA</td>
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<td></td>
</tr>
<tr>
<td>GET-ENST</td>
<td>France</td>
<td>Expert other than those involved in POPEYE</td>
</tr>
</tbody>
</table>

Organisations in the POPEYE User Group (as of October 2006)

The activity of the POPEYE User Group will be described in the yearly dissemination/exploitation reports (deliverables D7.3 and D7.4).
3. Exploitation Planning

This section contains an outline of the initial exploitation context for POPEYE and a description of the general lines adopted to prepare exploitation of POPEYE results after project end. The goal of the section is to define the overall directions and strategy to streamline partners actions during the project lifetime. The exploitation plans implementation will be continuously adjusted as the project progresses, and reported in deliverables D7.3 and D7.4, at month 11 (March 2007) and month 23 (March 2008) respectively.

3.1 Identification of exploitable results

POPEYE addresses a collaboration context with the following main characteristics:

- mobile P2P and ad hoc collaboration groups, mainly in a MANET environment, without the need of supporting communication infrastructures;
- working groups (virtual communities) can emerge spontaneously, can be quickly set-up and are dynamic in nature (members can join and leave the collaboration environment at different times);
- dependable and secure data sharing and collaboration support is required, suitable for business and professional applications, providing the appropriate quality of service (persistence, synchronisation, context-awareness,…).

Overall, it is expected POPEYE research will produce the following types of exploitable results:

A. Specifications and design of several components (software modules, services, …) and of the POPEYE framework (platform);
B. Prototype implementation of some POPEYE software modules/components and of integrated framework (platform);
C. Proof-of-concept implementation of POPEYE application(s) addressing selected CWE context(s).

More specifically, the following table shows the main expected exploitable achievements of POPEYE at the current stage of project development, providing also indication of the project deliverables that are most relevant for (i.e. define or describe) each result. Possibly, as research progresses, different views with more detailed breakdown of results into exploitable products could be defined.
<table>
<thead>
<tr>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Design of POPEYE <strong>mobile P2P overlay network architecture</strong> in an heterogeneous environment, including both MANET and fixed network elements. Support for communication, routing, naming, peer/resource discovery/location, group management, etc.</td>
</tr>
<tr>
<td>2) Design of POPEYE <strong>integrated collaboration platform</strong> providing a number of support services in a mobile P2P environment. Support for context representation and management, context awareness, data management, distribution and synchronisation, shared workspace, security, etc.</td>
</tr>
<tr>
<td>3) Design of POPEYE <strong>security services</strong> providing a number of security mechanisms suitable for MP2P collaboration in a MANET environment.</td>
</tr>
<tr>
<td>4) Integrated POPEYE <strong>MP2P communication platform</strong>, implementing the services and characteristics defined in 1).</td>
</tr>
<tr>
<td>5) Integrated POPEYE <strong>MP2P collaboration platform</strong>, implementing the services and characteristics defined in 2).</td>
</tr>
<tr>
<td>6) POPEYE <strong>MP2P security software modules</strong>, implementing the services and characteristics defined in 3).</td>
</tr>
<tr>
<td>7) POPEYE <strong>MP2P collaboration application(s)</strong>, selected among those targeted by the POPEYE MP2P communication and collaboration platform, implemented and evaluated in a proof-of-concept demonstration.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Relevant Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications, Design</td>
<td>D4.1, D4.2</td>
</tr>
<tr>
<td>Specifications, Design</td>
<td>D2.2, D2.3, D2.4, D5.2, D5.3</td>
</tr>
<tr>
<td>Specifications, Design</td>
<td>D3.1, D3.2</td>
</tr>
<tr>
<td>Prototype implementation</td>
<td>D4.3, D2.4</td>
</tr>
<tr>
<td>Prototype implementation</td>
<td>D5.4, D2.4</td>
</tr>
<tr>
<td>Prototype implementation</td>
<td>D3.3</td>
</tr>
<tr>
<td>Proof-of-concept implementation</td>
<td>D6.2, D8.1, D8.2</td>
</tr>
</tbody>
</table>

1), 2) and 3) represent the main conceptual and foundational results expected from POPEYE. These will aggregate the outcomes of specification and design work conducted in WP2, WP3, WP4 and WP5 and provide results that the partners expect to exploit in further research as well as for use and further investigation of MP2P solutions and applications in the CWE as well as in other application areas (see §3.2).

Results 4), 5) and 6) are the outcomes of implementation and prototyping work conducted in WP3, WP4 and WP5. These include both prototype building blocks as well as the integrated MP2P/CWE support POPEYE platform. Partners expect to exploit these results either as individual components (e.g. the MP2P communication protocol, platform, etc.) or as an integrated platform. Given the different mobile CWE scenarios addressed in POPEYE requirements analysis [POPEYE D2.2] and the general characteristics and requirements of the resulting prototype POPEYE components and platform, it is expected these could be used to support development of a number of different CWE applications as well as of several possible extensions of the realised functionalities.

Finally, supporting a specific selected CWE application scenario⁹ through an integrated POPEYE application, result 7) is addressing more directly a vertical application segment within the mobile CWE context taken into account and, although developed at a pre-competitive prototype level, is expected to be more close to short-term market developments.

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⁹ MP2P collaborative working and information exchange among participants of a public event like a conference, workshop, etc.; see POPEYE Deliverable D6.1 [POPEYE D6.1]
The achievement of the above results will be carefully monitored from the standpoint of exploitation throughout the development of project activities. Potential product definition (along the line indicated above) will be continuously considered and preparation of exploitation will be streamlined accordingly.

3.2 Market analysis

3.2.1 Market identification

As the penetration of “smart” mobile devices is increasing and will outnumber personal computers in the near future, it is expected that the market of mobile P2P computing for content exchange, communication and collaborative work will largely expand in the coming years. POPEYE is addressing this market, with the aim of providing significant steps ahead through advanced management of context information, smart personalization and mobile collaboration support.

This market will be investigated during WP7 activities in order to prepare at best the exploitation of project results. In the remainder of this section we provide a brief overview of some candidate market segments that will be considered and analysed more in depth during this work. This view will be adjusted during the two years of the project, and the resulting exploitation potentials and plans will be described in the yearly dissemination and exploitation reports (D7.3, D7.4).

3.2.1.1 e-Professionals

The challenging segment of professional virtual communities and workgroups is the first target exploitation area for POPEYE. In order to properly address this, the planned POPEYE solutions take into account a number of requirements and capabilities related to this segment – i.e. security, dependability, integrity of data, QoS, etc.

Future developments of mobile collaboration support applications – featuring almost “anywhere at anytime collaboration” capabilities – appear to surface as a natural evolution of nowadays mobile business support devices and applications provided by most handset suppliers and telecom operators – e.g. mobile internet access, email and instant messaging, group calendaring and scheduling, file synchronisation and transfer, etc.

Several leading telecom operators are already considering the emergence of spontaneous networks in many aspects of life, including businesses and professional activities, as unavoidable. It can be expected a boost to this will be also the expansion of the demand and attitudes of the “gaming generation” into business and professional life – i.e. the younger generations that are used to experience mobile gaming by means of truly nomadic systems such as e.g. Sony Portable Play Station game console are likely to have similar expectations as regards the ad-hoc connectivity and nomadic capabilities of mobile business and collaboration support devices. The development of advanced MP2P collaboration support facilities and services like mobile shared workspaces, presence tools, group and community management services, etc. as those planned in POPEYE is directly targeting core needs of this user segment.

3.2.1.2 Enterprise services

The mobile and wireless enterprise market is directly related to the e-Professional segment and provides another potential target for POPEYE. Enterprises of varying size and location are embracing wireless services in multiple ways and spending is increasing for enterprise
wireless hardware, software and services. After investing in the necessary technology and outfitting their field personnel with mobile devices, businesses are now looking to maximise their investment and mobile CRM and employees collaboration support services (B2E, E2E) is the next rational step.

Although the currently predominant model is still based on the enterprise portal + VPN paradigm, mobile P2P collaboration appear to be a promising evolution in several application areas. These include, for instance:
- support to teamwork and collaboration activities in on-field activities like maintenance of largely distributed infrastructures (e.g. power supply networks, oil and gas networks, transportation networks, etc.);
- Teamwork and collaborative technical services within large industrial and service facilities (e.g. industrial plants, production facilities, ports and airports, etc.)
- mobile CRM applications and various services for field personnel (e.g. sales support, customer support services, etc.)

This market segment will be investigated as a primary POPEYE potential target market, sharing several requirements and goals with the e-professional service sector.

3.2.1.3 Mobility and e-Tourism

The mobility and tourism market segments are intrinsically demanding increased provision of mobile services and information (multi-media content) “on the move”. Technology that is allowing users to communicate using their mobile devices in car, onboard trains, ships and even commercial airliners is steadily gaining importance. Demand for in-transport services and information is rapidly increasing in Europe and world wide.

What’s more interesting for POPEYE in this sector is that transport systems are becoming more and more cooperative, with increasing demand of communication, information exchange and sharing between vehicles and infrastructures (V2I) and among vehicles (V2V) with the aim of making the travel more efficient and secure. This evolving scenario is dramatically increasing the possibilities for getting and using information also for the passengers (e.g. train timetables, trip planning, traffic information, incident alert, etc.). PDA-based and, shortly, in-car internet services is one of the most relevant market already emerged and expected to experience major growth in the short-term. Cooperative P2P exchange of information within communities of travellers and tourists is a natural evolution of this (e.g. what’s the best Indian restaurants in this area? How is the traffic situation in the area? Does anyone know the best way to get to X? Anyone interested in my city guide? etc.).

POPEYE will investigate exploitation potentials in this market segment considering MP2P safety, travel and tourism related information and collaboration services for private users (i.e. travellers, tourists, etc.) as well as professional users (e.g. transport, logistics, etc.). We expect POPEYE applications in this sector would benefit from several basic mobility related features provided by the POPEYE platform, including location-based capabilities, context adaptation, presence tools, etc. and would offer appealing solutions for a very relevant European expanding mass market for advanced IST products.

3.2.1.4 Leisure and Infotainment

Even on a wider mass scale, the leisure and infotainment market segment opens a very large potential exploitation scenario for POPEYE. As an indication, two main application areas seem to be of interest for POPEYE:
1. **Information and user-generated content sharing.** User-generated content are seen as potential drivers of communications and data usage, especially by younger generations, not only for traditional telecommunications networks but also for communities over MANETs and hybrid networks. Although the collaborative dimension, here, seems to downsize to simpler content search and share and messaging services, the potential market volumes are huge. The envisaged features and capabilities of POPEYE platform (presence tools, shared workspace, community building and management, etc.) address directly core requirements of this application sector.

2. **Mobile gaming.** This is another promising growing market, where mobility support, multi-user (community) engagement and resource sharing are key elements of most applications. These games are not only played on mobile hardware but also integrate the player's position into the game concept. Since the appearance of i-Mode in 1999 and the introduction of Java on mobile phones by DoCoMo, the mobile gaming arena (initially driven by i-Mode games) is continuously growing. The aforementioned global success of Sony PSP, which is able to support up to 16 players playing together within an autonomous network, is a clear indication of the trends in this market. Location-based, multi-player games have been recently introduced by other vendors using GPS-based automated location facilities. More and more PDAs and smart phones suppliers are now offering GPS receivers as add-ons, either integrated or external, usually connected via Bluetooth. Except a few commercial products (the most well-known example is the treasure hunt game Geocaching, which can be played on any mobile device with integrated or external GPS receiver) most developments in the area of mobile, location-based gaming still remain in the stage of research prototypes, leaving much room for innovative products in this growing market segment.

3.2.1.5 **Civil protection and military market**

Protection of land and infrastructures and interventions after disasters are activities implying high degrees of mobility, coordination and dynamic adaptation to the evolving situation, very often in difficult and dangerous environments. Efficient support to operations requires ready availability of mobile devices providing **on-field access to information** and disaster recovery resources. On the other hand, partial availability or complete lack of telecommunication infrastructures call for **ad-hoc connectivity** and quick set up of **autonomous networks** capabilities. Highly dynamic support for teamwork is also required given the dynamic nature of the ad-hoc groups involved in operations (device mobility, run time join/leave, etc.).

Advanced mobile P2P platforms and applications providing high levels of robustness, dependability and security can be expected to play major roles in this sector. Applications can be envisaged for a number of purposes, including tactical and operational planning (e.g. simulation and evaluation of preparedness plans), operational training (emergency management teams, on-field command & control teams, etc.), on-field operation support (disaster recovery activities).

In the **military domain**, there is a need for replacing the Combat Network Radio (CNR) systems by more flexible, agile and adaptable solutions to be implemented at the tactical level.

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10 EC study [ECDigCo] estimated the mobile gaming in the EU to total EUR 5 billion by 2006; independent market estimates (Lehman Brothers, November 2005) forecast mobile gamers to top to 200 million worldwide by 2010
Part of the currently on-going transformation process of the armed forces in the world, and in particular in Europe, the requirement for interoperability between nations in a coalition, in a context of fast projection abroad, clearly calls for solutions like the POPEYE framework.

This illustrates the high potential for dual usage of the POPEYE technology (civil and military).

3.2.2 Competition

Despite the huge success of various P2P applications over the internet, P2P technology development has given little attention to specific issues related to mobile environments, and particularly to mobile collaboration applications.

POPEYE aims to develop a scalable framework that is able to support applications for small groups of users (i.e. up to the order of 100) in pure and hybrid P2P topologies over ad hoc, multi-hop networks and/or fixed infrastructures.

This is still a challenging investigation field and a state of the art review work conducted in the first months of POPEYE allowed to analyse related research work and a number of developments that are of interest for POPEYE from the point of view of the emergence of potential future results and solutions in this market.

A competition analysis will be carefully carried out during the following eighteen months of the project, with the aim of identifying emerging and potential market competitors for POPEYE. Particularly, current developments in the area of mobile P2P collaboration middleware over MANETs – e.g. initiatives such as the AGAPE [BCM03] and LaCOLLA [MaN05] projects – will be monitored.

Overall, market monitoring will be streamlined in two main directions:

1. the emergence of MP2P platforms over MANETs, as generic solutions to support mobile collaboration applications,
2. the appearance of specific MP2P applications (solutions, products, etc.) in the various POPEYE market segments previously introduced in sect. 3.2.1

The results of this competition analysis will eventually influence the exploitation strategies of POPEYE partners and will be fully reported in the yearly exploitation and dissemination reports (D7.3, D7.4).

3.2.3 Main exploitation directions

The exploitation strategies of POPEYE consortium reflect the nature and diversity of the involved partners and are tailored to the specific scientific and business goals of each participating organisation. An overview of the main exploitation directions at consortium level is given in the remainder of this section. The exploitation plans of individual partners are more detailed introduced in section 3.3. ahead.

For industrials partners involved in the POPEYE consortium, exploitation of the results of the project offers a key strategic opportunity for the longer-term development of their communication business, beyond third generation systems, both in Europe and globally. It is expected POPEYE will offer a framework to transform this investment and participation into a substantial commercial opportunity in the next decade.
o THC is particularly focussing on the identification of new architectural communication patterns for the future mobile systems and study the associated security mechanisms and threats. Through its business domains, THC has already explored specific usage of ad-hoc radio communications for the battlefield and expects POPEYE infrastructure to help develop dual usage of this technology to the full range of civilian and military domains, including fire-fighting, disaster recovery, humanitarian relief, homeland defence, peace-keeping, fast reaction force, etc.

o SOFTECO, from a SME point of view, is interested in the development and validation of further innovative value-added solutions for the industrial and service market. The participation to POPEYE is the first opportunity to prospect future products analysis and development strategies in several areas of the company core business.

Academic partners are looking to exploit POPEYE through an increase in know-how and ability to support the European mobile telecommunications industry. At the conclusion of the project, they will be in a strong position to supply technical support and trained engineers to the European work force in mobile telecommunications applications as well as in mobile, P2P CWE applications.

### 3.3 Partners exploitation lines

#### 3.3.1 Industrial exploitation

**3.3.1.1 Thales Communications**

Thales Communications (THC) is particularly focussing on the identification of new architectural communication patterns for the future mobile systems and study the associated security mechanisms and threats.

Through its business domains, THC has already explored specific usage of ad-hoc radio communications for the battlefield and expects POPEYE infrastructure to help develop dual usage of this technology to the full range of civilian and military domains, including fire-fighting, disaster recovery, humanitarian relief, homeland defence, peace-keeping, fast reaction force, etc.

THC most competitive industrial exploitation objective is in the MANETs for defence tactical usage, better characterised by:

- Fast deployable IP based protocols
- Fixed and mobile wireless communications
- Where no single node is essential (it can be masked or even destroyed during the mission)
- Easily connected to an existing IP infrastructure (e.g. link to a Force Command and Control System)
The “civilian” type of applications and products addressed by POPEYE research are moving faster than in the military field where applications are traditionally “vertical” and mirror a rigid Command Chain (from the soldier on the field up to the Commander in Chief).

The necessary transformation of the armed forces has been initiated by the United States in the late 1990s and, since, is a on-going process in most armies throughout the western world: in Europe the underlying concept is that of “Network Enabled Capabilities” or NEC. The United States, with their more ambitious concept of “Network Centric Warfare” or NCW, benefit of far greater resources for research. However, Europe is better oriented for collaboration between forces because it is inherently taking into account operations in coalition of different nations.

Of course, a wide range of application domains exist for POPEYE research in between the “civilian” and the “military” domain where THC is also developing solutions. Among them are the Emergency Disaster and Humanitarian Relief (Tsunami, Earthquake, Hurricane,…), Security and Rescue (Special Event Security, Fire Fighting,…).

In short, the POPEYE technology has a potential for dual use (in civilian and military domains) and it is the distinctive contribution of THC to exploit this potential.

The THC research team for POPEYE belongs to the Thales Architecture Framework (TAF) Department, in charge of complex system engineering, technical architectures and advanced studies. One of the missions of TAF in Thales Communications is to help bridge the industrial gap between advanced research and inclusion of the technology in the company’s products portfolio.

For the purpose of POPEYE, the research team maintains privileged relations with the Tactical Internet Business Unit of Thales Communications, in charge of developing the products and systems for its customers and managing the on-going programmes.
3.3.1.2 **Softeco Sismat SpA**

Softeco Sismat is a mid-size enterprise firmly established in the Italian software market for both industrial and service sectors. During the last financial year, about 60% of the company’s sales were in the industrial area, including industrial process automation, process control, production planning and management, while the remaining 40% were in the area of services (public administrations, finance) and research establishments. With a steady increase of its turnover during the last years (10%-20%), the company has been acknowledged by sector analysts as one of the national emerging SMEs in the area of software applications, and one of the leading companies for application of advanced IT in their products.

Participation to POPEYE and to the development and validation of wireless P2P solutions for innovative e-Business/e-Work/e-Services applications will ensure strengthening our technological excellence in a core business area for our company.

The strategy for exploitation of POPEYE results addresses the following types of prospective customers:

- **e-Professionals market.** This represents the first level potential industrial exploitation for Softeco, given the direct involvement in the development of the POPEYE proof-of-concept implementation in this selected market segment (e-Professional support services for public events – conferences, workshops, etc.). Mobile team working and support to collaborations within travelling e-professional groups are also a target market that will be addressed by further development of the POPEYE prototype application.

- **Corporate market.** Business solutions for large industrial enterprises and service companies represent the core business of Softeco, with a large portfolio of longstanding customers in a number of market areas. These include major players in the telecommunications sector (Marconi Ericsson, Selex Communications, Alcatel, Telecom Italia, etc.) energy distribution and services (ENEL, EDF, EGL, …), automation, plants and engineering (ABB, Ansaldo Group, Elsag, Landis & Gyr, …) manufacturing and electronics (Whirlpool, Philips, Marelli, …). POPEYE solutions addressing e-Work/e-Business corporate applications (e.g. mobile CRM, support to field services, etc.) have large potentials for exploitation.

- **e-Gov and Public Administration market.** POPEYE based applications and solutions for the public administration represent also a prospective market for Softeco, including Administration-to-Administration (A2A) and Administration-to-Citizens (A2C) applications. The potentially exploitable market includes all major regions of Italy, where various kind of solutions have been already supplied.

- **Mobility, transport and tourism market.** This represent a vertical market for Softeco, with a number of customers in Italy (virtually in most regions and major cities) and partnerships in other European countries (mainly Germany, UK, Norway). POPEYE solutions will be also considered in this market segment, along the general lines described in section 3.2.1.3.

Through participation in POPEYE, a first implementation of the POPEYE mobile P2P collaboration architecture will be developed, evaluated in the planned proof-of-concept and demonstrated to prospective customers. Since Softeco will be largely involved in (and responsible for) development and testing of POPEYE proof-of-concept demonstration, this will provide the first, main opportunity for initial marketing activities.
After a phase of further product development, engineering and enhancements during a period of one - two years, a fully-developed commercial implementation of the POPEYE platform meeting all key requirements for integration in the national industrial market will be available.

3.3.2 Academic and research exploitation

3.3.2.1 Universidad de Murcia
Exploiting projects results, UMU will develop their expertise in distributed systems and security for the mobile peer-to-peer. UMU will produce some academic research papers in national and international conferences from their activities in this project; furthermore, the direct cooperation with some industrial partners will help to disseminate their knowledge and experience.

3.3.2.2 Universita’ degli Studi dell’Aquila
Participating to POPEYE, UDA will improve their skills in software architectural design of collaborative working environments. The project results (as well as the collaboration with the consortium partners) will be exploited for validating the methodologies and tools that UDA has developed for non-functional modelling and analysis of software systems. The expertise acquired in POPEYE shall also be exploited in the PLASTIC European project, which is aimed at the development and deployment of service-based applications on heterogeneous platforms.

UDA intends to publish scientific papers in international conferences basing on the work developed in POPEYE, targeting the reference conferences and journals indicated in section 2.3.4 and 2.3.5.

3.3.2.3 Universidad Rovira i Virgili
URV’s research group is currently involved in both research and technology transfer projects related to collaborative environments and peer-to-peer technologies. In this line, URV contributions to the dissemination and exploitation of POPEYE’s results will be twofold:

- To produce academic research papers in national and international conferences from the results obtained in the POPEYE project.
- To promote technology transfer results and further collaborations with selected enterprise partners: Eidola (URV Group Spin-Off), Bull, Fujitsu, Telefonica, I. Guttman.

Furthermore, POPEYE will contribute to enhance the training of URV students in mobile collaborative settings and to disseminate results in the local Tarragona’s society (citizen association Tinet and Wireless communities TarracoWireless and ReusWireless). Finally, URV will promote POPEYE open source middleware dissemination in the ObjectWeb community.

3.3.2.4 GET - ENST
Over the years, GET-ENST has developed know-how in the area of mobile service support. POPEYE gives GET-ENST the opportunity to further investigate the support of collaborative applications in a spontaneous network environment. GET-ENST will produce
some academic research papers in national and international conferences from the research conducted within the framework of POPEYE. POPEYE will also permit the exposure of GET-ENST graduate students and researchers to high-level technical work considering real-life technological problems. Finally, the increased know-how developed within POPEYE:
- will be beneficial in future research projects on collaborative work as well as on mobile service platforms,
- will enable the participation in technology transfer projects that can further exploit POPEYE achievements,
- will be transferred to the training activity and contribute to the good training of GET-ENST students who will soon be part of the European work force in mobile telecommunications.

3.3.2.5 Kuratorium OFFIS

Being a non-profit research institute, the dissemination of POPEYE results by OFFIS will focus on the scientific community. A commercial exploitation won’t take place. Through papers and presentations, project outcomes will be made available to the scientific public strengthening OFFIS's position as a leading research institute for mobile applications and services.

Through liaison with standards bodies and direct collaboration with operators, it is expected that early exploitation will be seen in the form of accelerated diversity in the introduction of new services on future generation network.

Furthermore, the project’s results will be utilised as a starting point for future research projects which include efforts towards technology transfer. Also the established contacts to the academic partners within the project as well as to the industrial ones shall be utilised for future activities.
4. Standardisation and Open Source

4.1 Contribution to standardisation

A specific POPEYE dissemination activity will be also directed to identify any potential contribution form project developments to the relevant standardisation bodies and to implement appropriate actions accordingly.

Standardisation related activities will essentially look at two complementary action lines:
1. adoption and thereby promotion of appropriate standards within POPEYE, notably in the specification and implementation of POPEYE framework and applications;
2. development of specific inputs to standards, when POPEYE achievements are identified that allow this.

POPEYE consortium partners have the potential to influence working groups in Internet Research Task Force (IRTF) Peer-to-Peer Research Group and the Global Grid Forum (GGF), where the current work on mobile peer-to-peer (like mobility and location awareness issues) is scarce. Several standardisation bodies will be monitored to target the most appropriate contributions from POPEYE, including IETF, W3C, OMG, OMA, ETSI, WWRF, 3GPP.

These activity lines will be carried out throughout the entire development of POPEYE research, and results and developments will be documented at the end of each project year (deliverable D7.3, “Year 1 Dissemination, Exploitation and Standardisation Report”, March 2007; deliverable D7.4, “Year 2 Dissemination, Exploitation and Standardisation Report”, March 2008).

Possible input and knowledge transfer from POPEYE to relevant standardisation bodies include:

- **OMG DDS.** The Object Management Group (OMG) has adopted in 2004 the specification for the Data Distribution Service (DDS) for Real-Time Systems; which provides a Global Data Space abstraction.
  Thales Communications was a major contributor to this specification and will facilitate the implementation in POPEYE if it is found appropriate.

- **OMG, UML.** In the last few years, UDA have contributed to OMG standards in the area of validation of UML models, particularly as regards software performance and software reliability validation.
  As regards software performance validation of UML models, UDA have worked on using and refining the stereotypes and tags introduced in the UML profile for Schedulability, Performance and Time. Nowadays UDA are collaborating with other institutions that intend to contribute to the new Request for Proposal MARTE, which is aimed at migrating the SPT profile on UML 2 specifications, and at the same time at integrating it with elements from the real-time domain.
  As regards software reliability validation of UML models, a main issue is introducing a profile for reliability of component-based software systems. The OMG profile for Quality of Service and Fault Tolerance is in its finalisation phase, and it will soon need to embed UML 2 standards. UDA experience in this field will be useful to contribute to the latter step. The work conducted in POPEYE is suitable to be exploited in both the above directions.
- IETF MANET. UMU are already actively participating to the standardisation of DYMO (Dynamic MANET On-demand Routing Protocol) within the IETF, and has developed one of the only two implementations available nowadays and that will be used in POPEYE.

Other potential contributions or adoption of standards will be carefully evaluated during the work on POPEYE architecture definition and development.

In order to streamline contacts and actions, besides the liaisons already established by POPEYE partners and the above standardisation groups, it is envisaged to address the COPRAS initiative [COPRAS] to further disseminate and channel among other relevant groups and bodies any project outcome potentially interesting for standardisation.

4.2 Contribution to Open Source community

The Open Source approach has proven to be impressively effective in the development of large, complex projects. In the specific case of POPEYE, it will help in developing an open architecture for spontaneous collaboration, while providing the potential users the ability to create new services and tools in dynamic P2P environments. POPEYE will thus largely exploit the Open Source approach for both software and documents (standards, specifications, guidelines) development.

This will influence project work in two different but complimentary respects:

1) using open source components (and/or specifications) that are identified as suitable for the design and implementation of POPEYE architecture and applications;

2) contributing some of the project results to the open source community

4.2.1 Use of Open Source components and specifications

The use of suitable open source components and specifications is planned to be carefully considered during POPEYE architecture specification/design (WP2) as well during design and development of POPEYE architectural building blocks (WP3-WP5) and proof-of-concept applications (WP6).

Some open source elements for potential use in POPEYE are preliminarily identified as regards the key layers of the target architecture.

Related to communications over P2P MANETs, DYMO (Dynamic MANET On-demand routing protocol) is considered a strong option for implementation of POPEYE MP2P communications services. DYMO is an open specification from IETF (internet draft [DYMO]) intended for use by mobile nodes on multi-hop networks. There are also a few open source implementations, including one available from UMU [DYMO-UM].

The exploitation of existing open source components as starting points for developing Collaboration middleware for MANETs may be another critical choice for POPEYE implementation. A review conducted in WP2 on available options has indicated JGroups [JGroups] as a viable option. JGroups is a widely used and fairly mature open source middleware providing a number of basic facilities for development of collaboration support architectures. It includes a number of interesting features for POPEYE, including lightweight reliable multicast, ordered communication protocols, encryption protocols and group membership.
Decisions about the use of these and other open source elements will have to be taken in the above technical WPs. Full accounts of the options and decisions taken will be given in the yearly Dissemination, Exploitation and Standardisation Reports (D7.3, D7.4).

4.2.2 Potential contributions to Open Source

The feasibility of delivering POPEYE architecture components as open source is taken into account in the current dissemination and exploitation planning phase and will be carefully investigated and assessed during the design and development of POPEYE framework.

Generally, there are two main possible types of contributions:

- At the specification level, by delivery of the abstract specification of specific POPEYE modules or components, of their APIs, etc.;
- At the implementation level, by the release of publicly usable POPEYE architecture components.

Given the foreseen potential industrial exploitation of POPEYE, and the commercial interest of the industrial partners involved, a proper balance between these interests and the advantages of the multiplying effects gained by releasing POPEYE components into the open source community will have to be identified.

As a general strategy, we envisage to follow the LGPL – Library (or Lesser) GNU Public License – model [LGPL] for any component or module considered for open source release.

This will leave open future commercial exploitations of results based on POPEYE. Indeed, any further commercial development (solution, application, product) will be able to use POPEYE open source components (e.g. as libraries) without necessarily having to become open source under LGPL\textsuperscript{11}, and could be marketed without any restriction (i.e. shipped with POPEYE components included).

On the other hand, this leaves intact all the advantages of open source development, as any modification, extension, etc. made to POPEYE open source components will have to be sourced back into POPEYE.

Based on this background view, the contribution of POPEYE components to the open source will be considered in parallel to the specification and detailed design work to be conducted in POPEYE technical workpackages (WP3 to WP6).

As a starting view concerning the dissemination and collaboration channels within the open source community, we consider the ObjectWeb open source middleware community as a good reference platform to disseminate POPEYE results.

\textsuperscript{11} this is the big difference to the GPL (GNU Public Licence), where applications using it must be licensed under the GPL as well.
5. Concluding Remarks
This deliverable presents the initial view and planning concerning POPEYE dissemination, exploitation and standardisation activities. It reflects the partners view in the initial phase of POPEYE analysis and specification work and sets the basis of for the general dissemination and exploitation activities that will be developed in the course of the project.

A number of dissemination target, actions and channels have been defined that will have to be implemented in the following eighteen months.

A preliminary identification of the expected POPEYE results has been has been introduced. This will be subject to adjustments during project activities, as design, implementation and prototyping work progresses, possibly leading to more detailed and structured results definitions. Possible use of and contributions to standards and open source have also been identified.

The partners exploitation intentions have been also outlined.

All three elements of POPEYE dissemination, exploitation, standards and open source related planned strategies outlined in this deliverable will be adjusted and fully reported in the corresponding documents “Year 1 Exploitation, Dissemination and Standardisation Report” (D7.3, March 2007) and “Year 2 Exploitation, Dissemination and Standardisation Report” (D7.4, March 2008).
6. References


