



D5.4 6-Month Project Activity Report Version 1.1

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Scientific representative of the Coordinator: Francisco J. Cazorla Almeida (BSC)
Tel: +34 93.413.7173
E-mail: francisco.cazorla@bsc.es

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Author	Gina Alioto / Francisco J. Cazorla Almeida (BSC), Guillem Bernat (RAPITA), Liliana Cucu (INRIA), Tullio Vardanega (UNIPD), Benoit Triquet (AFS)
Contributors	Gina Alioto (BSC), Francisco J. Cazorla (BSC)
Reviewer	Gina Alioto / Francisco J. Cazorla Almeida (BSC), Guillem Bernat (RAPITA), Liliana Cucu (INRIA), Tullio Vardanega (UNIPD), Benoit Triquet (AFS)
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Declaration by the scientific representative of the project coordinator

I, as scientific representative of the coordinator of this project and in line with the obligations as stated in Article II.2.3 of the Grant Agreement declare that:

- The attached periodic report represents an accurate description of the work carried out in this project for this reporting period;
- The project (tick as appropriate):
 - has fully achieved its objectives and technical goals for the period;
 - has achieved most of its objectives and technical goals for the period with relatively minor deviations¹;
 - has failed to achieve critical objectives and/or is not at all on schedule².
- The public website is up to date, if applicable.
- To my best knowledge, the financial statements which are being submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project (section 6) and if applicable with the certificate on financial statement.
- All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organisations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 5 (Project Management) in accordance with Article II.3.f of the Grant Agreement.

Name of scientific representative of the Coordinator: Francisco J. Cazorla Almeida

Date: 15 / 09 / 2010

Signature of scientific representative of the Coordinator:

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¹ If either of these boxes is ticked, the report should reflect these and any remedial actions taken.
² If either of these boxes is ticked, the report should reflect these and any remedial actions taken.

Change Log

Version	Description of Change
v1.1	Initial Draft released to the European Commission

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1 Publishable summary

1.1 Motivation

The demand for both new functionality and reduced development and production costs for CRTE systems continues to rise rapidly. As just one example, modern cars can have software components consisting of up to 100 million lines of code, and each car contains up to 70 ECUs (Electric Control Units), which accounts for roughly 40% of the total production cost.

Unlike conventional systems, developers of CRTE systems (whether safety critical, mission critical, or business critical) must provably demonstrate to the customer or certification authorities the correctness of the system, both functionally and temporally. Despite the fact that most CRTE systems are deployed on comparatively simple and old processor technologies whose temporal behaviour is relatively easy to understand, even static analysis and extensive testing efforts yield far from perfect results. In fact, these incorrect operations cost EU industries billions of Euros annually in warranty claims and post-production costs.

Market demands of the next decade will require increased functionality, which can only be delivered by introducing more complex software, supported by aggressive performance hardware acceleration features like deep memory hierarchies and multicore CPUs. However, this increased complexity will also make systems much more difficult to analyse for their temporal behaviour and will lead to a major negative impact on the quality and reliability of the resulting products. This is because current timing analysis techniques and testing processes will not be able to scale up to the challenge.

The aim of the PROARTIS project is to define new hardware and software architecture paradigms that, by design, exhibit a timing behaviour that can be effectively analysed with probabilistic techniques. The hypothesis of the PROARTIS project is that:

New advanced hardware features can be used and analysed effectively in embedded real-time systems when designs move towards more truly randomised behaviour which probabilistically reduces the risk of temporal pathological cases to quantifiably negligible levels. This approach enables probabilistic timing analysis techniques that can be used effectively in the verification of Critical Real-Time Embedded Systems.

1.2 Project Objectives

PROARTIS defines three main scientific / technological outcomes. (1) Define a set of hardware and software design guidelines that will allow CRTE system designers to benefit from randomisation properties. (2) Define a new analysis paradigm based on the randomization properties of the architecture defined in (1). These new probabilistic approaches will enable analysis of high performance hardware features as well as more complex software systems. (3) Develop a case study with real avionic applications based on the outcomes of (1) and (2) in order to demonstrate and quantify the approach. These outcomes will facilitate the production of analysable CRTE systems on advanced hardware platform.

PROARTIS brings us closer to realizing these high level goals via clear progress against the following specific objectives:

- O1: Develop randomisation techniques in hardware designs. Inventing and implementing new hardware mechanisms that exploit randomisation.
- O2: Develop randomisation techniques for low level software. Implementing and evaluating randomisation mechanisms at the hardware-dependent software level. In particular investigating issues of RTOS device driver software and schedulability. Moreover, investigation of randomization mechanisms at the compiler and run-time library level in support of O1.
- O3: Develop new architectural software designs that support analysability. Implementing and evaluating high level programming paradigms, patterns and styles that can and should be followed (and those that must be avoided) to enable probabilistic timing analysis.
- O4: Apply novel probabilistic and statistical analysis techniques to the problem of timing analysis. Invention of new techniques to precisely model the new paradigms developed in the project.
- O5: Provide arguments and evidence to support the certification process. Development of new probabilistically based arguments of the temporal correctness of the systems that can be used in a certification process.
- O6: Develop simulation tools to perform architectural design exploration. Development of architectural simulation tools for at least one Instruction Set Architecture ISA (TriCore, PowerPC or SPARC) to perform automatic design exploration of the hardware and software proposals developed in PROARTIS.
- O7: Develop new probabilistic timing analysis tools. Development of a new probabilistic WCET timing analysis tool based on the RapiTime toolset. Development of a probabilistic schedulability analysis tool. Implementation of the mathematical models on standard statistical tools.
- O8: Validate the results on an industrial case study. Requirements capture of industrial size hard real-time systems in the avionics domain. Evaluation of the techniques proposed in the project on benchmark code and on industrial systems provided by the industrial partner AFS. The evaluation of the case studies will demonstrate the suitability of the techniques and methods developed in the project. The results of the comparison will not only be based on timing estimations, but also on support for certification.

1.3 Technical Work Performed and Main results

The main objectives for the first six months of the project were to *define the criteria* by which we would measure the success of the project and to *determine the technical requirements* to attain this success. Additionally, we needed to *define the baseline tool-chain* on which to carry out the PROARTIS project and *implement* that tool-chain.

As a result of the intensive collaboration between project partners during the first 6 months of the project (in which we held two face-to-face meetings and 4 teleconferences), we successfully accomplished these objectives.

In defining the Project Success Criteria, we focused on identifying a development process for Critical Real-Time Embedded Systems (CRTES) in which the analysis and construction of the complete system at high level is performed by considering the timing behaviour of the individual software components that form the whole system.

To do this, we considered the technical requirements at two levels: (1) the *software component (SC)*, which contemplates the analysis – in isolation – of each SC that constitute the system, and (2) at *system level*³, which contemplates the analysis of the system as a whole, including the interactions among its constituent components. Such a development process will allow us to be compliant with IMA* standards. To that end, we consider *boundaries* between SC that match our choice of boundaries between what we will declare as *separately qualified software components*.

At the *SC level*, we want to attain confidence in the worst-case execution time (WCET) estimations obtained by use of the PROARTIS techniques. This confidence will be measured in the form of probabilities, the desired region of probabilities is 10^{-9} - 10^{-12} , and the (probabilistic) confidence on such probabilities. We can breakdown this requirement into three sub-requirements: (1) Develop trustworthy WCET estimation techniques (WP3) based on probabilistic analysis of the behaviour of the hardware (HW) and software (SW). (2) Provide trustworthy confidence on the resulting WCET estimations such that the PROARTIS techniques can be used in the context of typical Airbus airborne applications (WP4) to feed system-level techniques, such as end-to-end response time analysis. (3) The timing properties of software components in isolation have to be time composable when they are integrated with other components to form the system. In other words, the architecture and execution model of the SC must ensure, with the support of the OS, the important property of time composability, which holds at system level. Time composability has to be guaranteed in the face of other SC. In that manner, individual SC can be developed and analysed independently of the OS and of the other components. These timing properties are a prerequisite to the SC of the analysis techniques proposed in WP3. (4) Time robustness at the SC level is the property that small changes in the input set used for timing analysis must not have an inordinate impact on the WCET estimation. Examples of input set data for the timing analysis are small shifts in the code or data layout in memory, the knowledge of whether some memory operations are hits or misses or lack of knowledge on some parameters of the hardware configuration. A PROARTIS goal in this regard is to reduce – as opposed to increase – the level of detail of hardware knowledge needed to perform useful and trustworthy timing analysis. (5) Performance: The WCET estimates obtained by using the PROARTIS approach must permit industrial software applications to confidently attain a level of performance not inferior to current practice (expressed, for example, in terms of “safe” CPU load) and to permit the adoption of more advanced (and thus less predictable) and powerful hardware. (6) Industrial viability: The PROARTIS approach shall be deemed “industrially viable” if it can be deployed within levels of time and cost no higher than with current practice, whilst achieving the above improvements.

At the *system level*, we want PROARTIS to enable *incremental qualification* of the system. Incremental qualification is one of the distinctive properties expected of IMA-compliant systems. In that manner it is ensured that system components can be developed and verified in isolation in such a way that they can be changed, added or upgraded with minimal, ideally negligible effect on the timing behaviour of the other system components. To this end, PROARTIS solutions have to provide: time

³ The term “system” does not refer to the aircraft, car, etc. level, but the *computer system* level, that is one piece of hardware that is colloquially called “a computer” and all the pieces of software that are loaded inside said computer.

composability at the application component level; and time *compositionality* at the system level. Whereas time composability makes incremental qualification much easier it may also introduce performance degradation because it may renounce optimizations or accelerations resulting from interaction and interference with other components. We will study the extent of this negative effect on performance and will try to minimize it. Time compositionality ensures that the timing behaviour of the whole system is determined, in a statically and economically viable determinable manner, by the timing behaviour of the application components that compose the system.

At the same time, we identified the technical requirements of the project which are categorized as follows:

- Requirements that that can be derived directly from the objectives and goals of the project.
- Requirements that must be satisfied in order to successfully produce an avionics demonstrator.
- Integration requirements between work packages.

These requirements are defined in detail in the D1.1 Technical Specification: Platform, D2.1 Technical Specification: Software Technology, D3.1 Technical Specification: Probabilistic Timing Method Selection, and the D4.1 Technical Specification: Avionics Applications Porting.

Finally, we defined a complete tool-chain for use in the project which we described in the D3.2 Baseline Integrated Tool-chain. This tool-chain is comprised of : Compiler, Real-Time Operating System and run-time libraries, architectural simulator and probabilistic/statistic analysis tools. We also implemented the initial version of this tool-chain to serve as the baseline for our research.

Overall, the PROARTIS Team successfully accomplished the main objectives for this initial part of the project. The identification of the technical requirements, the success criteria and the integration of the tool puts us in an excellent position to achieve the main goals of the project. The corresponding deliverables, as well as more information about the PROARTIS Project can be found by visiting our website: www.proartis-project.eu or by contacting the coordinator at proartis-coordinator@bsc.es.

2 Project objectives for the period

As described in the Description of Work, the PROARTIS project has been conceived to be 36 months in duration, comprising four scientific and technological work packages and two management work packages. These 36 months may be split into three main phases: a bootstrap phase in which the requirements of the project will be defined, a second phase that focuses on single core architectures, and a third phase that focuses on multicore processors.

The scientific and technological work packages and the relationship to the PROARTIS outcomes are:

Work Packages	Outcomes
WP1: Probabilistic Platforms WP2: Hardware-Aware Software Design	(i) Architectural Design principles
WP3: Probabilistic Analysis and Tools	(ii) Probabilistic Timing Analysis and Tool Support
WP4: Case Studies	(iii) Validation

These work packages have a circular relation with the three PROARTIS main themes defined below. At the same time, they have a direct correspondence with the three main PROARTIS outcomes (Figure 1.2):

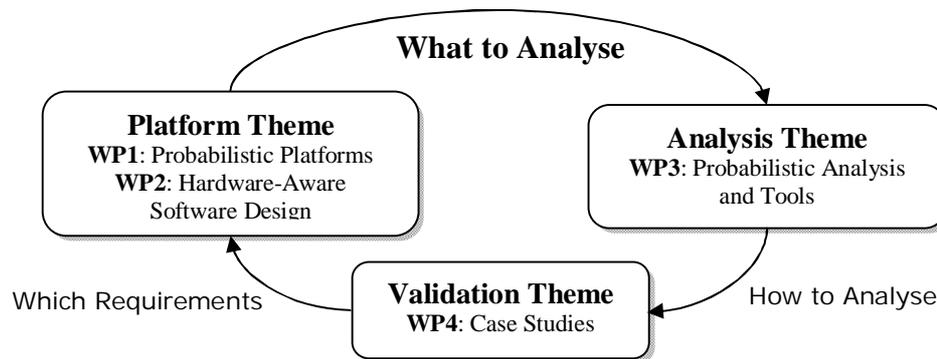


Figure 1.2. Pert Diagram: overview of the spiral model of relationships between the four scientific Work packages

The project is organized following a spiral model with three checkpoints or milestones, set up at month 6 (Milestone MS1), month 21 (Milestone MS2) and month 36 (Milestone MS3), in which key mid-project technical reviews will be performed and where strategic decisions will be made. At each of these milestones, we aim to realize a summary of the whole cycle presented in Figure 1.2 and use the knowledge gained with each iteration to refine the next phase of the spiral process.

The first six months are also known as Phase 1 or the Bootstrap Phase. During this phase, we focused on the following four objectives:

The first objective in the first six months of the project was to evaluate the applicability of potential project results and determine which metrics would indicate project success. We would *formulate these criteria* into the Project Success Criteria document (D5.3), which would include such metrics as the confidence levels on the probability of missing a deadline (where acceptable minimum values range from 10-9 to 10-12).

Once we had defined the Project Success Criteria, we would use them to help us to reach our second objective which was to *define the technical requirements* for the entire project.

The third objective was to *define* which hardware and software technology to adopt as an experimental baseline. Based on the feedback provided by the Validation Theme (WP4), we would define:

- The ISA (TriCore, SPARCv8 or PowerPC) used to develop the new hardware and software techniques. A high-level simulator will be developed and a compiler will be selected.
- The RTOS and run-time libraries.
- The programming language, programming paradigm and middleware (if required)

Once we defined the hardware and software technology, we would work to attain the fourth and final objective which was to *implement* this baseline tool-chain.

3 Work progress and achievements during the period

During the first six months of the projects, the work in all the technical work packages focused on defining the technical requirements of the project. The Partners collaborated closely to ensure that their individual requirements fed into or met the requirements of all other partners. This collaboration converged in a combined deliverable, the D5.3 Project Requirements Baseline and Success Criteria, which was both written and reviewed by all partners.

3.1 WP1

The results of WP1 for the first phase of the project are described in the D1.1 Technical Specification: Platform. This deliverable describes the requirements of the baseline platform infrastructure capable to carry out the PROARTIS research, as well as accomplish the specific recommendations of the WP4 to carry out the avionics case study.

3.2 WP2

The results of WP2 for the first phase of the project are described in the D2.1 Technical Specification: Software Technology. The D2.1 specifies the software technology (i.e. programming language, middleware) to be used in the PROARTIS experiment development, as well as provides the research requirements that justify this specification. This deliverable summarizes the work performed to date in Task 2.1 *Definition of baseline software technology*.

3.3 WP3

The results of WP3 for the first phase of the project are described in the D3.1 Probabilistic Timing Method Selection. This deliverable identifies three flavors of probabilistic analysis: Static Probabilistic Timing Analysis (SPTA), Measurement Based Probabilistic Timing Analysis (MBPTA) and Statistical timing analysis (StA) and contains a review of probabilistic and statistical methods and tools for critical real-time systems. Also, as a part of this WP, we determined which hardware and software technology to adopt as an experimental baseline as well as implemented the baseline tool-chain.

3.4 WP4

The goal of WP4 is to ensure the applicability of methods and arguments developed by PROARTIS to the case of certified avionics. Of interest is the case of IMA which

is known to yield implementations that are problematic for timing analysis. The D4.1 Technical Specification: Avionics Applications Porting, provides a set of requirements that must be satisfied by avionics demonstrators and as well as assumptions upon which they are allowed to build. In particular, the D4.1 defines requirements for selecting and adapting IMA applications for the purposes of WP4.

4 Deliverables and milestone tables

4.1 Deliverables

The project has successfully completed all Deliverables to date. All Deliverables marked RE* / PU will be publicly available within 6 months of their delivery to the EC. This is to allow ample time for the publication submission and peer review process while at the same time making deliverables available to the Public as soon as possible.

TABLE 1. DELIVERABLES

Del. no. [1]	Deliverable name	WP no.	Lead beneficiary	Nature [2]	Dissemination Level	Delivery date [4]	Achieved Yes/No	Actual / Forecast achievement date	Comments
D5.1	Project Portal	WP5	BSC	O	RE	2	Yes	2	No comments
D5.2	Project Management Handbook	WP5	BSC	R	PU	4	Yes	4	No comments
D6.1	Dissemination Strategy Document	WP6	RAPITA	R	PU	4	Yes	4	No comments
D6.2	Initial Press Release	WP6	RAPITA	R	PU	5	Yes	5	No comments
D1.1	Technical Specification: Platform	WP1	BSC	R	PU	6	Yes	6	D1.1, D2.1, D3.1, D3.2 and D4.1 will be delivered as a combined Deliverable D5.3 Project Requirements Baseline and Success Criteria.
D2.1	Technical Specification: Software Technology	WP2	UNIPD	R	PU	6	Yes	6	D1.1, D2.1, D3.1, D3.2 and D4.1 will be delivered as a combined Deliverable D5.3 Project Requirements Baseline and Success Criteria.
D3.1	Technical Specification: Probabilistic Timing Method Selection	WP3	RAPITA	R	PU	6	Yes	6	D1.1, D2.1, D3.1, D3.2 and D4.1 will be delivered as a combined Deliverable D5.3 Project Requirements Baseline and Success Criteria.

D3.2	Baseline Integrated Tool-chain	WP3	BSC	P	RE* / PU	6	Yes	6	D1.1, D2.1, D3.1, D3.2 and D4.1 will be delivered as a combined Deliverable D5.3 Project Requirements Baseline and Success Criteria.
D4.1	Technical Specification: Avionics Applications Porting	WP4	AFS	R	CO	6	Yes	6	D1.1, D2.1, D3.1, D3.2 and D4.1 will be delivered as a combined Deliverable D5.3 Project Requirements Baseline and Success Criteria.
D5.3	Project Requirements and Success Criteria	WP5	BSC	R	PU → RE* / PU	6	Yes	6	D1.1, D2.1, D3.1, D3.2 and D4.1 are combined into a single Deliverable, D5.3 Project Requirements Baseline and Success Criteria. The team requests to make this document public in January 2011 (due to a pending publication submission).
D5.4	6-Month Project Activity Report	WP5	BSC	R	PU	6	Yes	6	No comments
D6.3	Project Public Website	WP6	BSC	O	PU	6	Yes	6	No comments

4.2 Milestones

The project has successfully achieved all Milestones to date.

TABLE 2. MILESTONES

Milestone no.	Milestone name	WPs no.	Lead beneficiary	Delivery date from Annex I [1]	Achieved Yes/No	Actual / Forecast achievement date	Comments
M1	Overall research objectives defined and research infrastructure established.	WP1, WP2, WP3, WP4	RAPITA	6	Yes	6	All of the deliverables (D1.1, D2.1, D3.1, D3.2, D4.1 and D5.3) required for the successful achievement of this milestone have been completed. The project progress is in line with the plan of record.

5 Project management (WP5) and Dissemination (WP6)

Work Package 5, consisting of the Coordination and Project Management of the PROARTIS Project, is the shared responsibility of the Project Manager (Gina Alioto)

and the Technical Manager (Francisco J. Cazorla); however, it also includes the active participation of all project Partners through the Executive Board which is integral to the successful management of the project.

In the first six months of the project, WP5 focused on further defining the management plan initially described in the Description of Work and executing on this plan in order to drive the project forward according to the plan of record. This work largely consisted of setting up the organizational structure of the project, determining the most effective internal communication strategy for the project partners, establishing the appropriate quality assurance procedures and implementing the tools required for tracking project progress. Once these structures, strategies and procedures were well-defined, we documented them in detail in the D5.2 Project Handbook.

5.1 Management Organizational Structure

At the outset of the project, WP5 implemented the management structure of the project as defined in the Description of Work. At its first official meeting (held on 22 Feb 2010), the Executive Board reviewed the general rules and procedures which had been detailed in the Consortium Agreement (CA) and formalized basic requirements for internal communication summarized in the internal communication strategy described below.

5.2 Communication

Based on feedback from the Executive Board, WP5 employed an interactive internal communication strategy consisting of email lists, a secure intranet known as the Project Portal (D5.2), and regular teleconferences in addition to several face-to-face meetings. This combination of management tools and regular interactions led to smooth communication between all Partners throughout the first six months of the project.

As the primary communication channel for the project is email, WP5 (BSC) set-up and now maintains Distribution Lists in order to facilitate the routing of information requests to the appropriate individuals and groups. These lists are updated on a regular basis by the Project Manager with the most up-to-date list always posted to the Project Portal.

WP5 also implemented and released the Project Portal within the first 6 months of the project. The Project Portal is a wiki-based secure intranet that was created to facilitate the exchange of critical project documentation and news. It provides a structured central document repository for deliverables, meeting minutes, dissemination material, project-internal documentation and other relevant information. The Project Portal is administered and largely maintained by the Project Manager; however, all Partners are provided with access to allow for ease of updating project progress and sharing documents.

In addition to using the various tools implemented by WP5, the Executive Board held regular monthly teleconferences to evaluate progress against project plans, identify major problems and co-ordinate project-related interactions among the WP Leaders. The Project Manager, working with the Technical Manager, called and prepared the Executive Board Meetings which were chaired by the Technical Manager. The Work

Package Leaders provided technical status and were encouraged to hold additional meetings or open technical discussion forums on the Project Portal according to their respective needs for coordination.

In addition, the Executive Board also called 2 face-to-face meetings consisting of four days of technical discussions between the Work Package Leaders, during which a half-day EB meeting was held. These week-long meetings facilitated tight collaboration among the project partners ensuring that the project has progressed according to the plan of record.

The following table lists all Executive Board and Technical meetings in this reporting period.

EXECUTIVE BOARD / TECHNICAL MEETINGS		
Date	Meeting	Location
22 Feb 2010	Project Kick-off Meeting: Executive Board / Technical Meeting	Barcelona, Spain (BSC)
01 Apr 2010	Executive Board / Technical Meeting	Teleconference
12 May 2010	Executive Board / Technical Meeting	Teleconference
25 May 2010	Face-to-Face Meeting: Executive Board / Technical Meetings	Nancy, France (INRIA)
28 Jun 2010	Executive Board / Technical Meeting	Teleconference
13 Jul 2010	Executive Board / Technical Meeting	Teleconference

5.3 Monitoring Project Progress

The regular Executive Board / Technical Meetings described in the previous section are an important part of the two-tiered reporting process established in order to monitor project progress. The Executive Board meets via teleconference on regular basis in order to review progress toward critical project deliverables and milestones, to assess risk and to assign actions at a coarse-grain level. At a more fine-grain level, each Partner delivers a bi-annual report, which includes a summary of the effort dedicated to each work package, a summary of the non-human resource expenses incurred to date and a summary of the technical work completed to date as well as a brief explanation for any deviations from the Description of Work. This information is compiled and then shared by the Project Manager with the Executive Board to ensure that effort spending at the Partner level is in sync with the technical work performed to date. This process as well as the content and format of these reports have been documented in the D5.2 Project Handbook and on the D5.1 Project Portal.

The results of this monitoring will be further detailed in Section 6 regarding Use of the Resources in the P1 Activity Report at the end of this period.

5.4 Quality Assurance

During this first six months, WP5 proposed and the Executive Board approved a Quality Assurance process to ensure that each deliverable would be reviewed against a well-defined set of criteria. At the start of the project, the project team established a list of the Main Authors and Review Owners for every Deliverable for the duration of the project. The Main Author generates the Deliverable using a standard Deliverable template to ensure a homogeneous structure and appearance. He then passes the Deliverable on to the internal Reviewer. The Reviewer provides comments in a standardized Deliverable Review Form that includes the complete list of criteria. The Main Author revises the Deliverable and sends it to the Executive Board for a final approval before sending it to the European Commission. This process is described in detail in the D5.2 Project Handbook, the Deliverables List (including Main Author and Reviewer) as well as the Review Form and templates are all posted to the Project Portal.

The screenshot shows the PROARTIS Project Portal Deliverables Page. The page has a blue header with the PROARTIS logo and navigation links. A search bar is located in the top right. Below the header, there are quick links on the left and a main content area. The main content area includes a 'Deliverables' section with a list of contents, 'Important Deliverable-related Documentation', and 'P0.5 (M06) Technical Deliverable Drafts'.

Figure 2: PROARTIS Project Portal Deliverables Page

5.5 Legal and Financial Management of the Contract

During the first six months of the project, there were no changes to the consortium or to the legal status of the Partners that required any modification to the EC Grant Agreement, and subsequently no related changes were required to the Consortium Agreement.

However, the University of York (to be referred to as UoY), through their affiliation with RAPITA Systems requested to contribute to the project without receiving funding or support from the project or the European Commission. The Executive

Board approved of their voluntary participation of the project in the meeting of 23 Feb 2010 as follows:

EB100223.D4 The EB voted (5:0) in favor of making UoY an Affiliated Partner of RAPITA

based on the following definition:

- UoY may perform work, attend meetings, contribute to deliverables.
- UoY will not receive funding, UoY may not make cost claim.
- EB amend the CA to include UoY as an affiliate of RAPITA Systems.

The UoY subsequently signed an Accession to the Consortium Agreement and was welcomed to the project.

Finally, the Coordinator received the pre-financing and forwarded it to the other beneficiaries in compliance with the provisions of the Grant Agreement and the Consortium Agreement.

5.6 Dissemination (WP6)

During the first six months the project, the main objectives of WP6 were to define the project Dissemination Strategy (D6.1) of the Project, to disseminate the start of the project via the Initial Press Release (D6.2) and to establish a strong web presence via the PROARTIS Public Website (D6.3).

The first order of business for WP6, was to lay down the overall dissemination strategy in the Dissemination and Strategy Document (D6.1). This document clearly defines the dissemination objectives for the project as well as determines the dissemination channels and activities required to achieve these objectives. It identifies the key decision makers from industry as well as from academic institutions who will most benefit from the dissemination of the project and then defines the appropriate communication channels by describing all dissemination materials as well as determining the level of web presence for the project. Finally, it details targeted events and conferences for scientific presentations.

Having created the initial strategy for dissemination, WP6's next order of business was to create initial project buzz. We launched the initial press release (D6.2) on 18 June 2010. The objective of the press release was to create awareness of the PROARTIS Project for both the general public as well as interest groups in the Technology and Scientific Sectors. For this reason, we created several versions of Press Releases that targeted specific audiences. The Technical Press Release was sent to media specialized in IT while the more General and Wide-audience Press Releases were sent to more general newspapers, news agencies and news portals. The media contacts were pooled from the contacts of the various Partners to ensure maximum coverage throughout Europe. Additional Press Releases will focus on results that show progress toward achieving the Project objectives.

However, PROARTIS Disseminations in the first six months of the project, were not limited to the Press Release. We also published articles in the following:

- HiPEAC Newsletter for July (<http://www.hipeac.net/newsletter>)
- EC Embedded Portfolio (date TBD)
- News of BSC Website (www.bsc.es) featured 7 July

Finally, we focused our efforts on establishing a strong web presence via the PROARTIS Public Website (D6.3). We launched the PROARTIS Public website (www.proartis-project.eu) in June 2010 after an intensive internal evaluation period. The content includes a synopsis of the project, a description of the Partners involved and press access to our logo as well an up-to-date list of project-related publications. WP5 also provided its own set of management requirements for the PROARTIS Public Website (www.proartis-project.eu) which resulted in direct public access to project results. The Public Website includes / will include a complete list of project-related publications and presentations as well as links and downloads of papers where applicable. Perhaps most importantly, it provides direct access to all public deliverables.



Figure 3: PROARTIS Public Website

6 Explanation of the use of the resources

This information will be included in the P1 Report.

7 Financial statements – Form C and Summary financial report

This information will be included in the P1 Report.

8 Certificates

This information will be included in the P1 Report.