INFORMATION SOCIETIES TECHNOLOGY
(IST)
PROGRAMME

Information Society

REVIEW REPORT

IST-004527 - ARTIST2

Embedded Systems Design

Review Y4

Covering project month M37 to M49: 01/09/2007 – 30/09/2008

Contract start date:	Sept 1 2004
Contract end date:	August 30 2008
Review date:	12 December 2008
Review location:	Beaulieu 33 0/54 Brussels
Project Officer:	Berta FERRER LLOSA
Reviewers:	Michel RUFFIN
	Joe SVENTEK
	Martin TIMMERMAN

Report number:	2009012
Classification:	Consortium + Reviewers
Report version:	3.0
Revision History	1.0, 16/12/2008, M. Timmerman, initial draft with inputs from reviewers
	1.1, comments from Joe, Berta and Michel
	2.0, proposal of final draft Martin
	3.0, final draft after minor suggestions from Berta

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1 Executive Summary

1.1 Project summary:

The long-term objective of ARTIST2 is to build a durable European research community on Embedded Systems Design, by integrating the topics, teams and competencies around a number of essential clusters like Modelling and Components, Compilers and Timing Analysis, Execution Platforms, Control for Embedded Systems, and Testing and Verification etc. If needed, clusters can be adapted through the lifetime of the project. The NoE will act as a Virtual Centre of Excellence in the area of Embedded Systems Design.

The integration into joint research activities will occur at two levels:
- Integration within clusters. Currently, the efforts on the identified topics are fragmented, and there is no European research team that would gather the sufficient critical mass needed. The integration of a topic is a first step towards integrating the area as a whole.
- Integration between cluster topics to create the multi-disciplinary community that will pilot the embedded systems design area. This will be achieved through integration activities that will bring together teams from different clusters.

The Joint Programme of Research Activities includes research both within the clusters and between clusters. Intra-cluster research aims to create critical mass and excellence on each essential topic. Inter-cluster research aims to integrate the area as a whole. The implementation of the Joint

Programme of Research Activities {JPRA} is supported by the Joint Programme of Integrating Activities {JPIA}, including research platforms and mobility of personnel.

A central mission for the NoE is spreading excellence to the community at large, through an ambitious Joint Programme of Activities for Spreading Excellence, including Education and Training, Dissemination and Communication, Industrial Liaison, and International Collaboration.

The project duration is four years, starting on 1st September 2004, with an EC contribution of €6.5 Million.

1.2 Period under review and main review objective

The last 13 months are under review. The review objectives are to verify contribution to the main objectives during this period:
- Strengthening Scientific and Technological Excellence for Embedded Systems Design
- Spreading Excellence in Embedded Systems Design
- A Lasting ARTIST Network of Excellence
- Structuring European R&D in Embedded Systems Design

The review was planned and executed in accordance with the contract. The consortium has consumed the expected resources and incurred the expected costs for this phase of the project.

1.3 Overall reviewers' conclusion

The overall impression is very positive with respect to representing the project community in conferences, workshops, seminars etc. All cluster teams are working well together stimulated by a cluster team manager. This was reflected in the presentations during the review and somewhat less in the deliverables. The website continues to prove to be an efficient tool. The main points are summarised below:

- **Strengths**:
  - The NoE project continues to be well on track with a lot of high-quality research and internal communication activities in all the clusters.
  - Quality management - the deliverables were on time and enabled the reviewers to give preliminary feedback ahead of the meeting.
  - There is continued integration between the different partners.
  - The website continues to be extensively used as a dissemination tool for interaction in the clusters

- **Improvements:**
  - NA

This report is a combined effort of all the reviewers and there are no points of disagreement between them on its content.

2 Organisation and logistics

This review was held in Brussels, Beaulieu 33 0/58 on Friday December 12 2008. Each cluster was represented throughout the review. See list of participants, list of reports and deliverables & agenda (appended to this report). An electronic copy of each presentation was available beforehand.

3 Project Management

The Management deliverables adequately cover the management aspects of the project. (see the section on deliverables)

4   Dealing with previous review recommendations

All but one of the previous review recommendations have been achieved:

4.1   Recommendation 1: Policy for Year 4 Deliverables (similar to Year 4)

- *All technical deliverables should be available on the ARTIST2 web site by 30 October 2008.*
- *All technical deliverables available on the ARTIST2 web site by 30 October 2008 will be pre-assessed by the reviewers by 15 November 2008.*
- *All technical deliverables MUST be available on the ARTIST2 web site by 15 November 2008 {This is a contractual requirement}.*
- *All technical deliverables NOT available on the ARTIST2 web site by 15 November 2008 are REJECTED.*
- *All management deliverables MUST be available on the ARTIST2 web site by 15 November 2008.*
- *If any management deliverables are NOT available on the ARTIST2 web site by 15 November 2008, the review meeting is CANCELLED.*

ACHIEVED

4.2   Recommendation 2: Deliverables

The 1ast year work plan document must be modified and resubmitted as soon as possible, no later than 28th February 2008. It should take into account the granted one month extension of the project.

ACHIEVED

4.3   Recommendation 3: Activity leader change

Reviewers understand that there are circumstances pushing to replace an activity leader. The management should continue to take care to ensure continuity.

Activity stopped due to lack of critical mass.

4.4   Recommendation 4: Demos and demonstrators

The use of demos and demonstrator continues to be encouraged.

This has been encouraged: see report on demos during review.

4.5   Recommendation 5: Peer review of deliverables

Continue to put a deliverables quality assurance process in place.

ACHIEVED

4.6   Recommendation 7: Metrics on impact

In order to assess the impact of ARTIST2, a number of metrics have been defined in the DoW. The project managers need to take a careful look at these and other relevant metrics and start to quantify them. This topic was neglected in the previous period and should absolutely be present during the end of the project review. The reviewers continue to recommend that a calculation of the budgets (EC – national etc.) of projects "around" ARTIST2 should be done.

The metrics which are not confidential should appear on the web site of the project to better demonstrate the project impact.

NOT really done – the comment from the consortium is the following:

The updated metrics were again included in the Project Activity Report.
Those metrics that can be quantified have been.

Calculating the budgets of projects "around" Artist2 poses several types of problems:
In many cases, this information is confidential. While Artist2 has seen the real emergence of a scientific community, it has not created a unified legal entity comprised of all the partners (nor was this an objective).
Defining the perimeter of such projects is arbitrary, on a case-by-case basis.
The data collected would be difficult to use in any type of meaningful analysis.
Even within a project, it is difficult to meaningfully (and consistently) determine the perimeter of what is "near" Artist2.

4.7 Recommendation 8: Final review & deliverables

The final review and deliverables of year 4 should stress the future of the network of excellence and the different component which have been developed, enhanced or integrated during the project (e.g. Shark operating system, tools, ...)

ACHIEVED

4.8 Recommendation 9: Virtualization

The consortium should position itself toward an important technology such as virtualization which can solve some problems such as transparent support of multicore, isolation/reservation of resources, reducing power consumption. In the industry, processor vendors (Intel, AMD), RT operating system vendors (Windriver (VxWorks, RTLinux), ENEA (OSE), Green Hills (Integrity), Mentor graphic (Nucleus)), general purpose operating systems vendors (Redhat, Novel/SuSE, Microsoft, Sun) are all putting a lot of efforts to introduce this technology everywhere.

During the review it has been said that the issue is being addressed for single core systems. The multi-core systems will be addressed in ARTISTDESIGN. However this did not appear in deliverables.

5 Deliverables

5.1 General comments on presentations

The presentations by each cluster were homogeneous, following a template.

5.2 General comments on deliverables

All Y4 deliverables have been accepted after reception of some requested rework during the pre-assessment of these documents in the month before the review.

The request for dropping deliverable D24-TV-Y4 "Verification of Security Properties" was accepted based on the explanation given by the Consortium that political difficulty within the topic preventing a higher level of integration.

The "Final Plan for Use and Dissemination of Knowledge" was accepted. The "Publishable Activity Report" is rejected. An updated version of this "Publishable Activity Report" is expected by 3rd February 2009. It should provide a global overview on the work carried out within the Network of Excellence during its 4 years duration and the results achieved. Thedocument should be self

contained – not mentioning another deliverable – or indicate where you can find it – otherwise one needs to remove it.

The Y4 deliverables were of a uniform excellent quality, written very professionally. The template provides fields for exactly what is needed to report on progress, and the authors have clearly and concisely populated the template in each case.

In some documents there is too much repetition and information about previous years not needed for the year 4 report.

5.3   WP0 JPMA: Joint Programme of Management Activities

5.3.1   D1-Mgt-Y4 Year 4 Project Management Report

A draft version of this deliverable has been delivered to the commission directly. Final version with complete financial information still not received.

5.4   D2-Mgt-Y4 Year4 Project Activity Report – Exec summary

ACCEPTED
This is a very clear document well structured. It gives a good overview of activities in the cluster. It is consistent with information in the Cluster deliverables.
Reviewers appreciate the effort (recommendation of last year) to measure project progress with metrics.

5.4.1   D2-Mgt-Y4 (cluster RTC) Year4 Project Activity Report

ACCEPTED
The document is of good quality. No specific remarks.

5.4.2   D2-Mgt-Y4 (cluster ART) Year4 Project Activity Report

ACCEPTED
The initial version of the document was in some parts too much copy & paste from last year document and achievements for 2008 were difficult to perceive. A revise document was requested during the pre-assessment phase.
The revised document addresses most of the initial comments. The revised document is a quality document..

5.4.3   D2-Mgt-Y4 (cluster CTA) Year4 Project Activity Report

ACCEPTED
This is a quality document. No specific remarks.

5.4.4   D2-Mgt-Y4 (cluster EP) Year4 Project Activity Report

ACCEPTED
This is a quality document. No specific remarks.

5.4.5   D2-Mgt-Y4 (cluster Control) Year4 Project Activity Report

ACCEPTED
This is a quality document. No specific remarks.

5.4.6   D2-Mgt-Y4 (cluster TV) Year4 Project Activity Report

ACCEPTED

This is a quality document. No specific remarks.

5.5   WP1 JPIA: Joint Programme of Integrating Activities

5.5.1   D4-RTC-Y4 Component Modelling and Verification (Platform)

ACCEPTED

The document is of very good quality full of figures that help to understand things on topics which encompass a lot of technologies and tools. It provides a lot of details on activities in year 4. However in section 2.4.1 it is sometimes difficult to point out what are the contribution linked to the Artist2 project from the description of other projects (specially for topic 2).

Note that there was a misunderstanding of last year comment in which we requested reference in alphabetical order, this also meant to have a single set of references and not a different set by contributor. The list of publications is important and of good quality.

Collaborations and resulting publication, workshops, tutorial are clearly identified and impressive.

The future evolution after Artist2 is clearly identified, what is perhaps missing is an assessment of success, failure, change of trends but has been covered during the review

5.5.2   D7-ART-Y4 A common infrastructure for adaptive Real-time Systems (Platform)

ACCEPTED

The initial version of this document was poor in some parts and needed some clarification regarding the relationship between Erika and SharkA revised document was requested during the pre-assessment phase.

The revised document addresses most of the initial comments. The confusion between Erika and Shark has been removed. The rest has been addressed during the review meeting.

5.5.3   D12-CTA-Y4 Timing - Analysis (Platform)

ACCEPTED

This is a quality document. No specific remarks.

5.5.4   D13-CTA-Y4 Compilers (Platform)

ACCEPTED

This is a quality document. No specific remarks.

5.5.5   D14-EP-Y4 System modelling infrastructure   (Platform)

ACCEPTED

This is a quality document. No specific remarks.

5.5.6   D18-Control-Y4 Design Tools for Embedded Control   (Platform)

ACCEPTED

This is a well-written, succinct deliverable document. It clearly describes the achievements, dissemination activities, and integration activities in year 4, their relationships to results from previous years, and how the work within this cluster will be carried forward. The lists of publications, workshops, tutorials, and keynotes indicate significant technical progress and interaction among the cluster members, and significant activities to spread this excellence to non-members.

Additional comments are:
- Several enhancements to TrueTime.
- Release of TrueTime under the GNU GPL means that development and support of the tool will extend well beyond the ARTIST2 funding period.
- TrueTime is key component of three follow-on projects: ACTORS, CHAT and WIDE. Also used in EUROSYSLIB and DySCAS.
- Several enhancements to TORCHE.
- Several automotive embedded system projects within the cluster: DySCAS, Saint demonstrator, ATESST.
- Solid publication record, four workshops, several keynotes and tutorials
- Work will be carried forward in ArtistDesign.

5.5.7 D22-TV-Y4 Testing and Verification Platform for Embedded Systems (Platform)

ACCEPTED

This is a succinct deliverable document. It describes the achievements, dissemination activities, and integration activities in year 4, their relationships to results from previous years, and how the work within this cluster will be carried forward. More detail is required regarding the protocol validation effort, and how the results of this effort are being made available to the community at large. In general, the lists of publications, workshops, tutorials, and keynotes indicate substantial technical progress and interaction among the cluster members, and significant activities to spread this excellence to non-members. Significant published technical achievements in:
- Enhancements to the symbolic test generation tool, STG
- Application of VERIMAG's test generation tool, TTG, to the automatic generation of robotic observers
- UPPAAL has been improved and optimized, and a tool for controller synthesis (Tiga) has been developed
- A modelling and verification framework for protocol validation has been developed by OFFIS; it is not clear from the deliverable whether this has been made available to the members of the NoE and the wider embedded systems community, and there is no evidence of publications or technical reports regarding this activity.
- The DiVinE tool has been further optimized.
- More industrial case studies have been carried out, and added to the open repository
- SPIN, DUPPAAL, and DiVinE have been made available on a cluster at Aalborg to enable individuals to use them on large problems.

5.6 WP2 JPASE: Spreading Excellence

5.6.1 D3-Mgt-Y4 Report on Spreading Excellence

ACCEPTED

Good document, clear, well structured. The document provides a good idea of NoE results.

5.6.2 Final plan for using and disseminating the knowledge

ACCEPTED

The public content of this document should be incorporated in the publishable activity report.

5.6.3   Publishable Activity Report

REJECTED

Un updated version of the "Publishable Activity Report" is expected by 3rd February 2009 giving a global overview on the work carried on within the Network of Excellence during its 4 years duration.

5.7   WP3 JPRA: NoE Integration - Research Activities

5.7.1   D8-ART-Y4 QoS aware Components (NoE Integration)

ACCEPTED

The document is clear and provides the good level of information. Maybe the interaction between partners and joint activities (publication, workshop and tutorial) could be enhanced.

5.7.2   D15-EP-Y4 Resource-aware Design (NoE Integration)

ACCEPTED

This is a quality document. No specific remarks.

5.7.3   D19-Control-Y4 Adaptive Real-time, HRT and Control (NoE Integration)

ACCEPTED

This is a well-written, succinct deliverable document. It clearly describes the achievements and integration activities in year 4 and their relationships to results from previous years. The strong collaborations established during ARTIST2, especially during year 4, bode well for carrying this integration forward. The list of publications indicates significant technical progress and interaction among the members of the clusters.

Additional comments:
- Substantial, additional collaboration and integration activities in year 4 within this work package (ART, RTC, and Control clusters involved).
- Significant published technical achievements in:
    o Period selection for multiple controllers
    o Real time dynamic memory management
    o Relationships between event-driven and embedded control and feedback scheduling
    o Simulation model for Zigbee radio
    o Loosely time-triggered architectures for embedded system design
    o Multimedia streaming
    o Wireless protocols for automation and control

5.7.4   D23-TV-Y4 Quantitative Testing and Verification (NoE Integration)

ACCEPTED

This is a well-written, succinct deliverable document. It describes the achievements, dissemination activities, and integration activities in year 4, their relationships to results from previous years, and how the work within this cluster will be carried forward. The significant lists of publications, workshops, tutorials, and keynotes indicate significant technical progress and interaction among the cluster members, and significant activities to spread this excellence to non-members. The strong collaborations established during ARTIST2, especially during year 4, bode well for carrying this integration forward. Certainly the most productive and strongest cluster reviewed by this reviewer.

Additional comments:
- Significant published technical achievements in numerous areas, generalized as follows:
    o Different approaches to real-time system testing

- o Modelling and verification tool extensions and performance improvements
- o New approaches to model checking
- o Reasoning frameworks
- o Game theory applied to modelling and verification
- o And many more …
- Significant number of joint publications, keynotes, workshops and tutorials.

5.8 WP5 JPRA: Real-Time Components

5.8.1 D5-RTC-Y4 Development of UML for Real-time Embedded Systems (Cluster Integration)

ACCEPTED
The document is of good quality. It is concise, clear and provides the necessary information. The only weak point is the lack of details concerning future evolution (section 3.4). But this was addressed during the review meeting.

5.8.2 D6-RTC-Y4 Component-based Design of Heterogeneous Systems – updated version

ACCEPTED
This document is of very good quality.
The publications are impressive in term of number and quality. The interactions between partners seem to have increased since last year. They are well documented and common publications have increased.

All the recommendations of last year have been addressed in the text and in the facts. A little more details on future plan would have improved section 3.4.

5.9 WP6 JPRA: Adaptive Real-time

5.9.1 D9-ART-Y4 Flexible Resource Management (Cluster Integration) - updated

ACCEPTED
The deliverable is concise. The results of year 4 appear clearly and are well presented.

The list of publications is quite impressing but it is a bit troubling to see some appear twice as individual publications and joint publications. This should have been avoided.

5.9.2 D10-ART-Y4 Real-Time Languages (Cluster Integration)

ACCEPTED
The document is very clear, very synthetic and of very good quality. Publication seems to be of very good quality

The document could provide more detail on section 3.2 and answer the question on future evolution. This has been addressed during the review meeting.

5.9.3 D11-ART-Y4 Adaptive and pervasive networking (Cluster Integration)

ACCEPTED
The document is very clear and synthetic. It provides a clear vision of collaborations. However there is nothing on future evolution. This has been addressed during the review.

5.10 WP8 JPRA: Execution Platforms

5.10.1 D16-EP-Y4 Communication-centric systems (Cluster Integration)

ACCEPTED
This is a quality document. No specific remarks.

5.10.2 D17-EP-Y4 Design for low power (Cluster Integration)

ACCEPTED
This is a quality document. No specific remarks.

5.11 WP9 JPRA: Control for Embedded System

5.11.1 D20-Control-Y4 Control in real-time computing (Cluster Integration)

ACCEPTED
This is a well-written, succinct deliverable document. It clearly describes the achievements, dissemination activities, and integration activities in year 4, their relationships to results from previous years, and how the work within this cluster will be carried forward. The continued strong collaborations established during ARTIST2 bode well for carrying this integration forward.

Additional comments:
- Significant published technical achievements in:
  - Building on Y3 results
    - Control of server systems
    - Feedback-based resource management in cellular devices
    - Control and Optimization of networked systems
    - Dynamically configurable automotive embedded systems
  - New efforts in
    - Dynamic memory management
- Nearly all of the collaborations are between a single core partner and one or more affiliated industrial partners. Therefore, all of the publications are listed under "Individual Publications", and the "Joint Publications" section is empty, with the one area in which joint publications were produced described in D18-Control-Y4.

5.11.2 D21-Control-Y4 Real-time techniques in control system implementations (Cluster Integration)

ACCEPTED
This is a well-written, succinct deliverable document. It clearly describes the achievements, dissemination activities, and integration activities in year 4, their relationships to results from previous years, and how the work within this cluster will be carried forward. The lists of publications, workshops, tutorials, and keynotes indicate significant technical progress and interaction among the cluster members, and significant activities to spread this excellence to non-members.

Additional comments:

- Significant published technical achievements in:
  - Building on Y3 results
    - Sporadic event-based control of first-order systems
    - Scheduling and control co-design techniques
    - Automotive embedded control

- Scheduling of control and signal processing calculations on FPGAs
- Time-delay compensation
- Wireless embedded control and automation
  - New efforts in
    - Dynamic memory management
    - Limit cycles in event-triggered control systems
    - Practical implementation of an event-based PI controller
    - Suboptimal state estimators for systems with event-triggered measurements
    - Operating system and language support for embedded control systems
    - Control of networked systems

5.12 WP10 JPRA: Testing and Verification

5.12.1 D24-TV-Y4 Verification of Security Properties (Cluster Integration)

This deliverable was dropped for year 4.

6 Future work

NA

7 Assessment of objectives

The project continued to be relevant and the original objectives, as expressed in the DoW, were still valid.

8 Recommendations

8.1 Recommendation 1: Clearly separate ARTIST2 from ARTISTDESIGN spendings.

It should be clear what money goes to Artist2 and what to ArtistDesign.

8.2 Recommendation 2: ARTIST2 website => ARTISTDESIGN

The reviewers emphasised the importance of retaining what has been achieved in Artist2 and continuing with this good work within the ArtistDesign Network of Excellence.

8.3 Recommendation 3: deliverable versus presentations

The reviewers would appreciate if the same care put on presentations during the review meetings was put on the writing of the deliverables.

8.4 Recommendation 4: public document

Reviewers expect to receive an updated version of the "Publishable Activity Report" by 3rd February 2009 giving a global overview on the work carried on within the Network of Excellence during its 4 years duration.

8.5 Recommendation 5: community visibility

As this community is now well established it should become more and more visible to the whole world. This "marketing" work should be priority in the ARTISTDESIGN follow up. Also, work being done for embedded systems can be certainly and definitely be used for the whole IT community in general. ARTISTDESIGN has also work to do here.

9 Review conclusion

The Artist2 Network of Excellence has made an impressive and remarkable work during the last four years in building a durable European research community on Embedded Systems Design. Results of these integration efforts can be perceived on the number of embedded systems related projects started at European and national level, on the number of related organised workshops, events, summer schools, joint publications, etc. All these dissemination actions (and more) are nicely collected and presented in the Artist web portal which we believe should be considered best practice.

At the review meeting, presentations were at the right level of detail, well presented and the timing was good. Recommendations made by the reviewers during the previous reporting period were correctly taken into account by the Consortium.

To finalise, reviewers would like to take the opportunity to congratulate and thank everyone involved in the Artist2 Network of Excellence for the good work performed and for the successful results finally achieved after some struggling in the beginning of the project.

Next Meeting: NA

Reviewer's signature:

10 Appendix: state of project Y4 deliverables by WP

WP	Work package title	Lead contractor		Start month	End month	Deliverable ID	Status	Comment
WP0	JPMA : Joint Programme of Management Activities	1	CDC	0	48	**D1-Mgt-Y4** Year 4 Project Management Report		**Delivered to the commission**
		2	UJF/ VERIMAG	0	48	**D2-Mgt-Y4** (executive summary) Year4 Project Activity Report	accepted	
						D2-Mgt-Y4 (cluster RTC) Year4 Project Activity Report	accepted	
						D2-Mgt-Y4 (cluster ART) Year4 Project Activity Report	accepted	
						D2-Mgt-Y4 (cluster CTA) Year4 Project Activity Report	accepted	
						D2-Mgt-Y4 (cluster EP) Year4 Project Activity Report	accepted	
						D2-Mgt-Y4 (cluster Control) Year4 Project Activity Report	accepted	
						D2-Mgt-Y4 (cluster TV) Year4 Project Activity Report	accepted	
WP1	JPIA : Joint Programme of Integrating Activities	2	UJF/ VERIMAG	0	48	**D4-RTC-Y4** Component Modelling and Verification (Platform)	accepted	
		37	Scuola Sant'Ana	0	48	**D7-ART-Y4** A common infrastructure for adaptive Real-time Systems (Platform)	accepted	
		25	Saarland	0	48	**D12-CTA-Y4** Timing - Analysis (Platform)	accepted	
		3	Aachen	0	48	**D13-CTA-Y4** Compilers (Platform)	accepted	
		12	DTU	0	48	**D14-EP-Y4** System modelling infrastructure (Platform)	accepted	
		16	KTH	0	48	**D18-Control-Y4** Design Tools for Embedded Control (Platform)	accepted	
		4	Aalborg	0	48	**D22-TV-Y4** Testing and Verification Platform for Embedded Systems (Platform)	accepted	

WP2	JPASE : Spreading Excellence	2	UJF/ VERIMAG	0	48	**D3-Mgt-Y4** Report on Spreading Excellence	accepted	
WP3	JPRA : NoE Integration - Research Activities							
		24	UP Madrid	0	48	**D8-ART-Y4** QoS aware Components (NoE Integration)	accepted	
		31	Bologna	0	48	**D15-EP-Y4** Resource-aware Design (NoE Integration)	accepted	
		19	Lund	0	48	**D19-Control-Y4** Adaptive Real-time, HRT and Control (NoE Integration)	accepted	
		30	Twente	0	48	**D23-TV-Y4** Quantitative Testing and Verification (NoE Integration)	accepted	
WP5	JPRA : Real-Time Components	8	CEA	0	48	**D5-RTC-Y4** Development of UML for Real-time Embedded Systems (Cluster Integration)	accepted	
		32	Uppsala	13	48	**D6-RTC-Y4** Component based Design of Heterogeneous Systems	accepted	
WP6	JPRA : Adaptive Real-time	7	Cantabria	24	48	**D9-ART-Y4** Flexible Resource Management (Cluster Integration)	accepted	
		34	York	18	48	**D10-ART-Y4** Real-Time Languages (Cluster Integration)	accepted	
		35	Porto	0	48	**D11-ART-Y4** Dynamic and pervasive networking. (Cluster Integration)	accepted	
WP7	JPRA : Compilers and Timing Analysis					**D12-CTA-Y4** Timing Analysis Platform (Cluster Integration)	accepted	
						D13-CTA-Y4 Compilers Platform (Cluster Integration)	accepted	
WP8	JPRA : Execution Platforms							

		29	TUBS	0	48	**D16-EP-Y4** Communication-centric systems (Cluster Integration)	accepted	
		31	Bologna	0	48	**D17-EP-Y4** Design for low power (Cluster Integration)	accepted	
WP9	JPRA : Control for Embedded Systems	19	Lund	0	48	**D20-Control-Y4** Control in real-time computing (Cluster Integration)	accepted	
		33	UPVLC	0	48	**D21-Control-Y4** Real-time techniques in control system implementations (Cluster Integration)	accepted	
WP10	Dropped							

11 List of PO and reviewers

Name	Organisation	Email
Berta Ferrer Llosa	European Commission	Berta.Ferrer-Llosa@ec.europa.eu
Joseph Sventek	University of Glasgow	joe@dcs.gla.ac.uk
Michel Ruffin	Alcatel-Lucent	Michel.Ruffin@alcatel-lucent.com
Martin Timmerman	Dedicated Systems Experts	m.timmerman@dedicated-systems.info

12 Agenda (as executed)

December 12 2008

Time	Presentation	Speaker
9:30	Introduction by EC	Berta Ferrer Llosa
9:40	**Overview** Answers to the recommendations PPT: 1-ScientificManagement.ppt	Joseph Sifakis
9:55	**Real-time components cluster** PPT: 2-Bengt.ppt	Bengt Johnson
10:15	**Adaptive Real-Time Cluster** PPT: 3-ART-Y4.ppt	Giorgio Buttazzo
10:40	Break	
11:00	**CTA cluster** **CTA: Compilers** PPT: 4-Artist2_Y4Review_CTA-cluster.ppt	Peter Marwedel
11:15	**CTA: Timing Analysis** PPT: 4-Artist2_Y4Review_CTA-cluster.ppt (cont)	Björn Lisper (MDH)
11:37	**Execution Platform Cluster** PPT: 5-Artist2_Y4Review_Execution_Platforms.ppt	Jan Madsen
12:10	lunch	
13:15	**Control for Embedded Systems Cluster** PPT: 6-ControlClusterY4.ppt	Karl Erik Arzen
13:50	**Testing and Verification Cluster** PPT: 7-Artist2_Y4Review_Testing_and_Verification.ppt	Kim Lärsen
14:20	**Spreading Excellence** PPT: 8-Artist2-Y4_JPASE_Bouyssounouse.ppt	Bruno Bouyssounouse
14:50	**Reviewer's meeting**	
15:40	**Conclusion and Feedback**	
	End	

13 Attendees

13.1 PO & Reviewers

Berta Ferrer Llosa (PO) (DG Information Society and Media)
Michel Ruffin (Reviewer – Alcatel-Lucent)
Joe SVENTEK (Reviewer - University of Glasgow)
Martin Timmerman (Reviewer – Dedicated Systems Experts)

13.2 Participants from consortium

Name	Email	Speaker
Bruno Bouyssounouse	Bruno.Bouyssounouse@imag.fr	YES
Karl-Erik Årzén	karlerik@control.lth.se	YES
Giorgio Buttazzo	giorgio@sssup.it	YES
Joseph Sifakis	Joseph.Sifakis@imag.fr	YES
Bengt Jonsson	bengt@it.uu.se	YES
Peter Marwedel	peter.marwedel@udo.edu	YES
Jan Madsen	jan@imm.dtu.dk	YES
Kim Larsen (Aalborg)		YES
Frédéric Vollé (CDC)		
Patricia Bouyer (ENS Cachan)	This person was announced but did not attend the meeting.	
Bjorn Lisper (Malardalen)		YES

14 Partner list for this period

Role	N°	Name	Short Name	Country
CO	1	Caisse des Dépots et Consignations	CDC	FR
CR	2	University Joseph Fourrier / Verimag	UJF / Verimag	FR
CR	3	RWTH Aachen	Aachen	DE
CR	4	BRICS – Aalborg University	Aalborg	DK
CR	5	AbsInt Angewandte Informatik GmbH	AbsInt	DE
CR	6	University of Aveiro	Aveiro	PT
CR	7	Universidad de Cantabria	Cantabria	ES
CR	8	Commissariat à l'Énergie Atomique Laboratoire LIST	CEA	FR
CR	9	Centre Fédéré en Vérification, Université de Liège	CFV	BE
CR	10	Czech Technical University	Czech TU	CZ
CR	11	Dortmund University	Dortmund	DE
CR	12	Technical University of Denmark	DTU	DK
CR	13	Swiss Federal Institute of Technology	ETHZ	CH
CR	14	France Telecom R&D	FTR&D	FR
CR	15	Institut National de Recherche en Informatique et Automatique	INRIA	FR

CR	16	Royal Institute of Technology	KTH	SE
CR	17	Linköping University	Linköping	SE
CR	18	Centre National de la Recherche Scientifique / Laboratoire LSV	LSV / CNRS	FR
CR	19	Lund University (Sweden)	Lund	SE
CR	20	University of Mälardalen	Mälardalen	SE
CR	21	Kuratorium OFFIS e. V.	OFFIS	DE
CR	22	PARADES EEIG	PARADES	IT
CR	23	University of Pavia	Pavia	IT
CR	24	Universidad Politecnica de Madrid	UP Madrid	ES
CR	25	Saarland University	Saarland	DE
CR	26	ST Microelectronics - Central R&D	STM	FR
CR	27	Technical University of Eindhoven	Eindhoven	NL
CR	28	Technical University of Vienna	TU Vienna	AT
CR	29	Technical University Braunschweig	TUBS	DE
CR	30	University of Twente	Twente	NL
CR	31	University of Bologna	UoB	IT
CR	32	Uppsala University	Uppsala	SE
CR	33	Universidad Polytecnica de Valencia	UPVLC	ES
CR	34	University of York	York	UK
CR	35	Polytechnic Institute of Porto	Porto	PT
CR	36	EPFL Lausanne	EPFL	CH
CR	37	Scuola Superiore Sant'Anna	Pisa	IT
CR	38	ACE	ACE	NL
CR	39	Tidorum	Tidorum	FI
CR	40	the University of Kaiserslautern	Kaiserslautern	DE

15 Project calendar

This is the last year review starting month 37 up to month 49. (1 month extension was granted) Review done in month 52.

Month	2004	2005	2006	2007	2008
Jan		5	17	29	41
Feb		6	18	30	42
Mar		7	19	31	43
Apr		8	20	32	44
May		9	21	33	45
Jun		10	22	34	46
Jul		11	23	35	47
Aug		**12**	**24**	**36**	**48**
Sep	1	13	25	37	49
Oct	2	14	26	38	
Nov	3	15	27	39	
Dec	4	16	28	40	52