

TECHNICAL REVIEW REPORT

Information and Communication Technologies ICT

Project acronym: ARTISTDESIGN
Project title: ArtistDesign - Design for Embedded Systems
Grant agreement number: ICT-214373
Funding scheme: NOE
Project starting date: 01/01/2008
Project duration: 48 months
Coordinators: Joseph SIFAKIS (VERIMAG)
Bruno BOUYSSOUNOUSE (FLORALIS)
Project web site: <http://www.artist-embedded.org>

Period covered by the report: Period Y 4, from 01/01/2011 to 30/03/2012
Place of review meeting: Dresden - Germany
Date of review meeting: 16/03/2012

Experts: Janos SZTIPANOVITS (Vanderbild USA)
Martin TIMMERMAN (Dedicated Systems - Belgium)

Project officer: Rolf RIEMENSCHIEDER

Consolidated report



European Commission
Information Society and Media

1. OVERALL ASSESSMENT

a. Executive summary

Project Summary

The ARTISTDESIGN NoE is the visible result of the on-going integration of a community, that emerged through the Artist FP5 Accompanying Measure and that was organised through the Artist2 FP6 NoE. The central objective for ARTISTDESIGN is to build on existing structures and links forged in Artist2, to become a virtual Centre of Excellence in Embedded Systems Design. This will be mainly achieved through tight integration between the central players of the European research community. Also, the consortium is smaller, and integrates several new partners. These teams have already established a long-term vision for embedded systems in Europe, which advances the emergence of Embedded Systems as a mature discipline.

ARTISTDESIGN aimed at becoming the main focal point for dissemination in Embedded Systems Design, leveraging on well-established infrastructure and links, such as a web portal and newsletter. It extended its dissemination activities, including Education and Training, Industrial Applications, as well as International Collaboration. ARTISTDESIGN intended to establish durable relationships with industry and SMEs in the area, especially through ARTEMISIA/ARTEMIS. ARTISTDESIGN has built on existing international visibility and recognition, to play a leading role in structuring the area.

The research effort aimed to integrate topics, teams, and competencies, grouped into 4 Thematic Clusters: "Modelling and Validation", "Software Synthesis, Code Generation, and Timing Analysis", "Operating Systems and Networks", "Platforms and MPSoC". "Transversal Integration" covering both industrial applications and design issues aims for integration between clusters.

ARTISTDESIGN has defined a four-year work programme, with a strong commitment to integration and sustainability. To achieve the aims, the estimated support from the EC is approximately 4.5 MEU. This support is a very small proportion of the overall investment by the core partners.

Project Cost: 5.86 million euro

Project Funding: 4.5 million euro

Period under review

The last 12 months are under review (months 37-48). 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
- 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 is in the progress of incurring the expected costs for this phase of the project.

Overall reviewer's conclusions

The rich web of industrial connections, the attention industry pays to ArtistDesign activities is a testimony that ArtistDesign is an excellent investment: it is an engine of innovation in a strategic field.

The "superstructure" ArtistDesign created over a number of EU research projects is valuable: the coordination is working, the clusters were active, communities interact and a shared vision has been

formulated. ArtistDesign hold a major promise that new insights will emerge from the vertical, cross-cutting activities that could not have emerged otherwise.

ArtistDesign gave a unique identity to research in EU in embedded systems. The scope of activities, the level of involvement of the researchers, the volume of produced results is impressive. The ArtistDesign portal is a shared intellectual asset used now worldwide and there is a promise that some content of this portal will be taking over in another context.

This all is shown by the research output, the website, the summer schools, the joint publications as well as by the generated projects both at European level (FP7, Artemis) and at national level.

At the review meeting, presentations were at the right level of detail, well presented and the timing was good.

The main points are summarised below:

Strengths:

- The NoE has matured and provided the required conceptual integration for large and diverse technology area.
- There is evidence of significant interaction across researchers, research groups and even research areas. This interaction has created a strong convergence on the field and improves effectiveness in addressing rapidly emerging new challenges
- The produced research output of the teams participating in the NoE is extremely impressive.
- There is ample evidence that Impact on industry is strong. Connection to industry is demonstrated, with significant variance among the various industrial domains.
- Noteworthy to mention various start-ups in the domain such as Syntavision (Uni Braunschweig), Wispes (Uni Bochum), BiomiCore (DTU), UP4all (CISS) et al. which were founded through the indirect support of ARTISTDESIGN partners.
- Outreach activities are remarkably strong and well represent EU research excellence in the area of embedded systems world-wide.
- ArtistDesign may be considered as a crown jewel of the EU ICT, well worth the investment.
- The NoE has extended its internal connections and especially in the integration domain, where new fields have been initiated. New fields of application which were mentioned as targets during last review were actually addressed.
- The permeability among the collaborating partners is demonstrated and is based on actual sound research objectives, where joint competences are used to try and bridge gaps, to deliver solutions to identified lacks in embedded systems development areas.
- Special attention was paid on mixed-criticality as an emerging research topic. Most presentations dealt with this issue.

Beyond ARTISTDESIGN

- ARTISTDESIGN has clearly met and well exceeded its goals. This should be wrapped up and consolidated in a vision document citing Players and stakeholders (like Offis/Thales, etc..) and grand challenges (like crisis, energy, mobility and health)
- There are bright perspectives ahead:
 - Impressive visibility in events at DATE in Dresden March 2012
 - SIG within EDAA
 - Think BIG
- The NoE has developed a realistic scheme to sustain the key activities of ARTISTDESIGN

Improvements:

- Prepare in a more timely fashion the financial management documents. This seems to be a constant issue as this was also the case last year.
- The activities that are demonstrated in terms of joint works would benefit from having a joint future research agenda. An impressive list of position papers has been presented, though lacking an integrated vision. It is actually left too much to the individual initiatives what will happen. Also ARTISDESIGN “branding” has been limited during the project, which may now have as a consequence that the cohesion amongst the different groups might disappear. The ARTISTDESIGN community has produced a significant number of tools currently hosted at various technical area lead institutions. Disappearance of these tools would be a huge loss both for the research community and for industry. Some mechanism should be worked out to keep this “leave behind” alive, integrated and accessible. There are several successful models for this, such as the ESCHER Institute, a non-for profit organization in the USA that carried on a large number of model-based design tools in the last decade, or the X-Windows consortium, any many others. The community should examine the and pursue the best approach to resolve this issue.
- Support documentation and training for tools is missing. This issue should be fixed in conjunction with a repository effort.
- Security is a topic that was not addressed at all and cannot be taken aboard after the system is designed
- In the framework of Horizon 2020: the key drivers to support this community are not yet clear and need to be explored through active promotion of the research needs identified.

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

Organisation and logistics

This review was held in Dresden Germany on Friday March 16 2012.

Each cluster was represented throughout the review. See list of participants, list of reports and deliverables & agenda (appended to this report). The deliverables were available in electronic version previous to the meeting on the website. An electronic copy of each presentation was available at the review meeting.

The available room was adapted to the amount of people present during the meeting. Coffee and beverages and the lunch were excellent.

b. Recommendations concerning the period under review

Dealing with previous recommendations

Following the reviewer’s recommendations given at the end of the previous review and the answers of the consortium in the beginning of this review.

Recommendation 1:

Continue efforts for increasing tool interoperability, to ease deployment towards industry by allowing the building of integrated development environments.

Answer from Consortium (AfC): This recommendation is addressed directly on a case by case basis for each tool developed by the partners, in :

D3-1.0-Y4 “Jointly-executed Programme of Integrating Activities” (JPIA), section 4 “Tools and Platforms”.

Recommendation 2:

Develop use cases and scenarios inspired by various industrial sectors.

Focus this use cases and scenarios to target more deeply various, even though limited, industrial sectors for design flows and related tool chains so as to guide future transitioning, which would secure the mutual understanding of the research outcome by the industrials and the requirements to have this outcome successfully deployed (acceptance through integration in a seamless development environment). Objective should be to build a success story that would then be supportive for raising interest of the industrial players.

AfC: This recommendation is also addressed directly on a case by case basis for each tool developed by the partners, in D3-1.0-Y4 “Jointly-executed Programme of Integrating Activities” (JPIA), section 4 “Tools and Platforms”.

Recommendation 3:

Increase inter-cluster coordination by exploiting common focus on MC and MPSoC.

AfC: This recommendation is addressed in the Hardware Platforms and MPSoC cluster’s deliverables: D2-(0.2e)-Y4, D12-(6.1)-Y4, and D13- (6.2)-Y4.

Recommendation 4:

Document the insights gained during the last four years in special issues, and other publication forms – including position papers.

AfC: These are documented in deliverable:
D2-(0.2a)-Y4 ch. 1 - Executive Summary and Overview, pages 27-43.

Recommendation 5:

Continue deployment of actions targeting sustainability of the outcome and initiated actions... In particular, leverage the cooperative activities and sharing events which are the best outcomes such as summer school, workshops, portals and joint publications.

AfC: The NoE will continue many of its visible actions well beyond the end of the NoE, in particular:

Creation of an academic Special Interest Group called ”ADSIG” within EDAA, the permanent structure that organizes the DATE conference. The ADSIG will host a web portal offering many of the same services to the academic community that are offered by the current ArtistDesign web portal, including hosting for workshops and events, links to external events and publications, mailing lists, etc.

The ARTIST Summer School will continue to be organized. The next edition will be in Aix- Les-Bains in September 2012, EPFL and ETHZ, in cooperation with ADSIG.

The consortium believes that the forward movement initiated within ARTIST for cooperation at the European level on embedded systems design will continue well into the future. This will in turn lead to further joint research and papers by ARTIST partners.

Recommendation 6:

Provide the “reading grid” for the joint activities that have been performed and will go on being initiated, so as to get a roadmap for these in terms of self-defined objectives and achievements (the fruitful results and the dead-ends that definitely have an interest to be known, why these tracks were not fruitful, in order to enrich the overall research community knowledge)

AfC: These ArtistDesign main joint activities are covered in some detail in are the “WP7: Transversal Integration” activities, which are documented in some detail in the corresponding deliverables: D14-(7.1)-Y4, D15-(7.2)-Y4, and D16-(7.3)-Y4.

Recommendation 7:

There is a significant research impact perceived. However more measurable evidence of this impact should be provided.

There is a need to show how this group influences science and industry. Quantified evidence in that regard would be good for the consortium and the commission.

Ideas about some metrics could be:

- *How big is the material produced by the consortium*
- *How many universities are using the material*
- *How many students are reached*

Also impact of collaborations should be quantified.

AfC: The consortium has produced a huge amount of material over the past 4 years (not including Artist2, or Artist FP5):

Approximately 975 joint papers have been published by the partners (joint papers have authors from two or more ARTIST partners). The number of papers published individually by partners is far higher.

Approximately 1000 keynotes and tutorials have been delivered by leading ARTIST researchers.

It's our belief that every university or research center in the world, that is involved in Embedded Systems Design uses the material produced by the NoE partners.

The consortium has held numerous International Summer Schools, representing overall approximately 960 students all over the world:

- 4 editions of the Summer School in Europe,
- 4 editions of the Summer School in China
- 3 editions of the Summer School in South America
- 1 edition of the Summer school in Morocco

Additionally, we have organized a very large number of graduate schools and international workshops. The full list of these is detailed in the Y4 edition of the deliverable: D4-(2.0)-Y4 Spreading Excellence Report (JPASE).

The impact of these collaborations is difficult to measure in any precise terms, but it's clear that the ArtistDesign NoE has had a deep, overall structuring effect on the research activities of all the partners, and on the European research landscape as a whole.

Recommendation 8:

There are some steps going into the direction of a “survival” of the effort. However this is still too vague. A roadmap on embedded systems could be one step in that direction including a new vision for the future checking this vision against other activities like ARTEMIS, ITEA2, etc and including a priority list of themes to be dealt with.

AfC: TU Braunschweig (R. Ernst) was one of the main contributors to the 2011 SRA.

That ArtistDesign partner was also responsible for all initial public presentations of the vision and scientific background of that agenda at industrial and political events. This indicates the importance of the NoE as a source of new ideas for ARTEMIS and, consequently, for industrial innovation in embedded systems and their application.

TU Braunschweig and ETH Zürich have also been consulted in the definition of the FP7 calls and in the preparation of Horizon2020.

---end of AfC to our recommendations for the period under review----

Comments from the reviewers: Overall, the recommendations have been answered in a satisfactory way. Concerning Rec. 8, a consolidated and focused research vision and measures to promote this vision were not clearly addressed. There are elements of follow up sited during the review, but more details would have been welcome. (see also paragraph above about “Beyond ARTISTDESIGN”).

The reviewers accept all deliverables and the allocation of resources was well justified.. The public end report of the project needs to be prepared. .

c. Recommendations concerning future work
N.A.

d. Assessment

ARTISDESIGN grew into a vibrant, outstanding research community with huge outreach. Ideas need to be worked out on translating their software tools and systems into an integrated, accessible and open “cyber infrastructure” for embedded systems research.



2. OBJECTIVES and WORKPLAN

a. Progress towards project objectives

All project objectives have been achieved and considerable progress was made in the fourth year which was better than the 3rd year concerning number of publications and activities.
The DOW was executed as foreseen with great satisfaction of the reviewers. All activities foreseen in the NOE have been performed with efficiency.

b. Progress in individual work packages

Each WP showed satisfactory progress and activity. No delays were detected and no remedial actions or steps are needed, except for the production of the final public report which needs yet to be done and also the finishing of the financial statements.

c. Milestones and deliverables

See appendix ... for details on all deliverables.

d. Relevance of objectives

The relevance of the objectives is still valid and it is unfortunate that there is no direct line of continuation.. Apart from the activities outlined above (see response to Rec.5) it might be indeed difficult to sustain some of the activities without extra sponsoring and support.

The Joint Programme of Activities has been successfully realised and all planned activities have been completed to the satisfaction of the reviewers.

3. RESOURCES

a. Assessment of the use of resources

The resources have been utilised to achieve the progress in a way consistent with the principle of economy, efficiency and effectiveness, typical for an NOE, and this by all partners of the consortium.

b. Deviations

No deviations.

4. MANAGEMENT, COLLABORATION AND BENEFICIARIES' ROLES

a. Technical, administrative and financial management of the project

The quality and effectiveness of the project management, including the management of individual work packages, the handling of any problems and the implementation of previous review recommendations (see above) is very good. The information and documentation provided in the deliverables and the presentations during the review meeting were of high quality and completeness. All presenters answered in an efficient and complete way to the reviewer's questions.

b. Collaboration and communication

The quality and effectiveness of the collaboration and communication between the partners of the consortiums continued to be very high.

b. Beneficiaries' roles

There is no sign or indication that some of the partners did underperform or did have a lack of interest.

5. USE AND DISSEMINATION OF FOREGROUND

a. Impact

Looking to the figures in the answer to recommendation 7 (see above), there is enough evidence that the project has and will continue to have very significant scientific and technical impact?

b. Use of results

The results of the project will be used by the individual partners in actual and future research work.

Some activities such as the workshops will continue to exist and will be maintained by a follow-up organisation.

c. Dissemination

The dissemination of project results and information has been done via the project website, a lot of publications, conferences and workshops in a very adequate and appropriate way.

d. Involvement of potential users and stakeholders

During the review meeting presentations and discussions, it has become clear that a lot of potential users and stakeholders will use the achievements.

e. Links with other projects and programmes

Due to the nature of the project being an NOE and also the nature of the different partners, there are a high amount of links to other projects and organisations.

6. OTHER ISSUES

No other issues

Name(s) of expert(s): Janos SZTIPANOVITS, Martin TIMMERMAN

Date: April 18, 2012

1 Appendix: state of project deliverables by WP

| Del. No. | Deliverable name | Comments | Status | File |
|--|-------------------------------------|----------|-----------------|--|
| WP0: Joint Programme of Management Activities (JPMA) | | | | |
| D-0.1-Y4 | Project Report | | pending | D1 |
| D-0.1-Y4 | Project Activity Report | | Accepted | D2-0-2a-Y4_ExecSummary+Overview.pdf D2-0-2b-Y4_Modelling_and_Validation.pdf D2-0-2c-Y4_SW_Synthesis_Code_Generation_and_Timing_Analysis.pdf D2-0-2d-Y4_Operating_Systems_and_Networks.pdf D2-0-2e-Y4-Hardware_Platforms_and_MPSoC_Design.pdf |
| WP1: Joint Programme of Integration Activities (JPIA) | | | | |
| D-1.0-Y4 | Integration Activities Report | | Accepted | D3-1-0-Y4_JPIA_Integration_Activities_Report.pdf |
| WP2: Joint Programme of Activities for Spreading Excellence (JPASE) | | | | |
| D-2.0-Y4 | Spreading Excellence Report | | Accepted | D4-2-0-Y4_Spreading_Excellence.pdf |
| WP3: Thematic Cluster: Modeling and Validation (JPRA) | | | | |
| D-3.1-Y4 | Modelling Report | | Accepted | D5-3-1-Y4_Modelling.pdf |
| D-3.2-Y4 | Validation Report | | Accepted | D6-3-2-Y4_Validation.pdf |
| WP4: Thematic Cluster: Software Synthesis, Code Generation and Timing Analysis (JPRA) | | | | |
| D-4.1-Y4 | Software Synthesis, Code Generation | | Accepted | D7-4.1-Y4_Software_Synthesis_Code_Generation.pdf |

| | | | | |
|----------|-----------------|--|-----------------|-------------------------------|
| D-4.2-Y4 | Timing Analysis | | Accepted | D8-4-2-Y4_Timing_Analysis.pdf |
|----------|-----------------|--|-----------------|-------------------------------|

WP5: Thematic Cluster: Operating Systems and Networks (JPRA)

| | | | | |
|----------|------------------------------------|--|-----------------|---|
| D-5.1-Y4 | Resource-Aware Operating Systems | | Accepted | D9-5-1-Y4_Resource-aware_Operating_Systems .pdf |
| D-5.2-Y4 | Scheduling and Resource Management | | Accepted | D10-5-2-Y4_Scheduling_and_Resource_Management.pdf |
| D-5.3-Y4 | Embedded Real-Time Networking | | Accepted | D11-5-3-Y4_Embedded_Real_Time_Networking.pdf |

WP6: Thematic Cluster: Hardware Platforms and MPSoC Design

| | | | | |
|----------|-----------------------------|--|-----------------|--|
| D-6.1-Y4 | Platform and MPSoC Design | | Accepted | D12-6-1-Y4_Platform_and_MPSoC_Design.pdf |
| D-6.2-Y4 | Platform and MPSoC Analysis | | Accepted | D13-6-2-Y4_Platform_and_MPSoC_Analysis.pdf |

WP7: Transversal Integration (JPRA)

| | | | | |
|----------|---------------------------|--|-----------------|--|
| D-7.1-Y4 | Design for Adaptivity | | Accepted | D14-7-1-Y4_Design_for_Adaptivity.pdf |
| D-7.2-Y4 | Design for Predictability | | Accepted | D15-7-2-Y4_Predictability.pdf |
| D-7.3-Y4 | Industrial Integration | | Accepted | D16-7-3-Y4_Integration_Driven_by_Industrial_Applications.pdf |

2 List of PO and reviewers for this review

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3 Agenda (as executed)

March 16 2012 – Dresden Germany

| Time | Presentation | Speakers |
|-------|--|---|
| 9:00 | Introduction by EC | Rolf Riemenschneider |
| 9:05 | Overview Scientific Management Long-term Objectives and Status NoE Principles of Construction Integration of the area Building Excellence File: 1_1_Sifakis_ScientificManagement.pdf | Joseph Sifakis (UJF/VERIMAG) Bruno Bouyssounouse (UJF/VERIMAG) |
| 9:20 | Modeling and Validation Cluster Achievements and Perspectives Overall Aims and Achievements (Integration, Building Excellence) Overview of Scientific Highlights in Y4 Discussion File: 2_2_Larsen Graf - Review.pdf | Kim Larsen (Aalborg) Susanne Graf (UJF/Verimag) |
| 09:48 | SW Synthesis, Code Generation and Timing Analysis Cluster Achievements and Perspectives - SW Synthesis, Code Generation Overall Aims and Achievements (Integration, Building Excellence) Overview of Scientific Highlights in Y4 Discussion File: 3_Marwedel Lisper - Review.pdf | Peter Marwedel (Dortmund) Björn Lisper (Mälardalen) |
| 10:24 | Break | |
| 11:05 | Operating Systems and Networks Cluster Achievements and Perspectives Overall Aims and Achievements (Integration, Building Excellence) Overview of Scientific Highlights in Y4 Discussion Files: 4a Buttazzo - Review.pdf, 4b Burns - Review.pdf | Giorgio Buttazzo (Scuola Sant'Anna - Pisa) Alan Burns (York) Luis Almeida (U.Porto) |
| 11:26 | Hardware Platforms and MPSoC Design Cluster Achievements and Perspectives Overall Aims and Achievements (Integration, Building Excellence) Overview of Scientific Highlights in Y4 Discussion File: 5 Madsen - Review.pdf | Jan Madsen (DTU) - presenter Luca Benini (Bologna) - |
| 12:00 | Lunch | |
| 13:00 | Integration Driven by Industrial Applications Achievements and Perspectives Overall Aims and Achievements (Integration, Building Excellence) Overview of Scientific Highlights in Y4 Discussion | Alberto Sangiovanni (TRENTO) |

| | | |
|-------|--|---|
| | File: 8 Sangiovanni - Review.pdf | |
| 13:45 | Design for Predictability and Performance Achievements and Perspectives Overall Aims and Achievements (Integration, Building Excellence) Overview of Scientific Highlights in Y4 Discussion File: 7 Jonsson - Review.pdf | Bengt Jonsson(Uppsala) |
| 14:10 | Break | |
| 14:25 | Design for Adaptivity Achievements and Perspectives Overall Aims and Achievements (Integration, Building Excellence) Overview of Scientific Highlights in Y4 Discussion File: 6 Arzen - Review.pdf | Karl-Erik Årzen (Lund) |
| 15:00 | Spreading Excellence Achievements and Perspectives Vision: Long-term impact ArtistDesign Web Portal Year 4 Events Discussion Files: 9 Bouyssounouse - Review.pdf | Bruno Bouyssounouse (UJF/VERIMAG) |
| 15:10 | Administration, Budget and Efforts Principles / procedures Main efforts in Y4 File: 10 Bouyssounouse Administration+Budget Management.pdf | Bruno Bouyssounouse (UJF/VERIMAG) |
| 15:15 | Reviewer's meeting | |
| 16:00 | Conclusion and Feedback | |
| 16:30 | End | |

4 Attendees

4.1 PO & Reviewers

Rolf Riemenschneider (PO) (DG Information Society and Media)

Janos Sztipanovits (Reviewer – Vanderbilt)

Martin Timmerman (Reviewer – Dedicated Systems)

4.2 Participants from consortium

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5 Partner list for this period

| Beneficiary number | Beneficiary name | Beneficiary short name | Country |
|--------------------|---|------------------------|-------------|
| 1 (coordinator) | UJF FILIALE | FLORALIS | France |
| 2 | UNIVERSITE JOSEPH FOURIER GRENOBLE 1 | UJF/VERIMAG | France |
| 3 | RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN | AACHEN | Germany |
| 4 | AALBORG UNIVERSITET | AALBORG | Denmark |
| 5 | UNIVERSIDADE DE AVEIRO | AVEIRO | Portugal |
| 6 | ALMA MATER STUDORIUM - UNIVERSITA DI BOLOGNA | BOLOGNA | Italy |
| 7 | TECHNISCHE UNIVERSITAET BRAUNSCHWEIG | TUBS | Germany |
| 8 | UNIVERSIDAD DE CANTABRIA | CANTABRIA | Spain |
| 9 | COMMISSARIAT À L'ENERGIE ATOMIQUE | CEA | France |
| 10 | DANMARKS TEKNISKE UNIVERSITET | DTU | Denmark |
| 11 | UNIVERSITAET DORTMUND | DORTMUND | Germany |
| 12 | ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE | EPFL | Switzerland |
| 13 | EMBEDDED SYSTEMS INSTITUTE | ESI | Netherlands |
| 14 | EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH | ETH Zurich | Switzerland |
| 15 | INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM VZW | IMEC | Belgium |
| 16 | INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET AUTOMATIQUE | INRIA | France |

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| 17 | TECHNISCHE UNIVERSITAET KAISERSLAUTERN | TUKL | Germany |
| 18 | KUNGLIGA TEKNIKA HOGSKOLAN | KTH | Sweden |
| 19 | LINKÖPINGS UNIVERSITET | LINKOPING | Sweden |
| 20 | LUNDS UNIVERSITET | ULUND | Sweden |
| 21 | MAELARDALENS HOEGSKOLA | MDH | Sweden |
| 22 | OFFIS E.V. | OFFIS | Germany |
| 23 | PROJECT FOR ADVANCED RESEARCH OF ARCHITECTURE AND DESIGN OF ELECTRONIC SYSTEMS | PARADES | Italy |
| 24 | UNIVERSITAET PASSAU | PASSAU | Germany |
| 25 | SCUOLA SUPERIORE DI STUDI UNIVERSITARI E DI PERFEZIONAMENTO SANT'ANNA | SSSA-PISA | Italy |
| 26 | INSTITUTO SUPERIOR DE ENGENHARIA DO PORTO | PORTO | Portugal |
| 27 | UNIVERSITAET DES SAARLANDES | SAARLAND | Germany |
| 28 | UNIVERSITAET SALZBURG | PLU- SALZBURG | Austria |
| 29 | UPPSALA UNIVERSITET | UPPSALA | Sweden |
| 30 | TECHNISCHE UNIVERSITAET WIEN | VIENNA | Austria |
| 31 | UNIVERSITY OF YORK | YORK | United- Kingdom |

6 WP list

| WP | WP title | Type of activity | Lead partic no. | Lead partic. short name | Person months | Start month | End month |
|-----|---|------------------|-----------------|-------------------------|---------------|-------------|-----------|
| WP0 | Jointly-executed Programme of Management Activities (JPMA) | MGT | 1 | Floralis | 51 | 1 | 48 |
| WP1 | Jointly-executed Programme of Integration Activities (JPIA) | RTD | 1 | UJF/ VERIMAG | 327 | 1 | 48 |
| WP2 | Jointly-executed Programme of Activities for Spreading Excellence (JPASE) | OTHER | 1 | Floralis | 106,75 | 1 | 48 |
| WP3 | Thematic Cluster: Modeling and Validation <ul style="list-style-type: none"> • Activity: Modelling • Activity: Validation | RTD | 4 | Aalborg | 87,25 | 1 | 48 |
| WP4 | Thematic Cluster: Software Synthesis, Code Generation and Timing Analysis (JPRA) <ul style="list-style-type: none"> • Activity: Software Synthesis, Code Generation • Activity: Timing Analysis | RTD | 10 | Dortmund | 79,25 | 1 | 48 |
| WP5 | Thematic Cluster: Operating Systems and Networks (JPRA) <ul style="list-style-type: none"> • Activity: Resource-Aware OS • Activity: Scheduling & Resource Mgt • Activity: Embedded RT Networking | RTD | 24 | SSSA-Pisa | 73 | 1 | 48 |
| WP6 | WP6: Thematic Cluster: Hardware Platforms and MPSoC (JPRA) <ul style="list-style-type: none"> • Activity: Platform and MPSoC Design • Activity: Platform and MPSoC Analysis | RTD | 13 | DTU | 80,5 | 1 | 48 |
| WP7 | Transversal Integration (JPRA) <ul style="list-style-type: none"> • Activity: Design for Adaptivity • Activity: Design for Predictability and Performance • Activity: Integration Driven by Industrial Applications | RTD | 22 | PARADES | 109 | 1 | 48 |
| | TOTAL | | | | 913,75 | | |