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of Embedded Systems**

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Dissemination and Use Plan

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Contents

1	Executive Summary	4
2	Dissemination & Exploitation Objectives.....	5
3	Description of Dissemination & Exploitation Tasks.....	5
4	Implementation of Dissemination and Demonstration Activities.....	7
4.1	Project Dissemination and Promotion.....	7
5	Partners' Dissemination Plans.....	8
5.1	OFFIS.....	8
5.2	BOSCH	9
5.3	SIEMENS.....	10
5.4	THALES	10
5.5	PROSILOG	11
5.6	POLIMI.....	12
5.7	ECSI.....	12
6	Conclusions.....	12

1 Executive Summary

The deliverable D6 describes the implementation of dissemination work within the project. It also provides the plans how the demonstration activities will be carried out by the project consortium and what mechanisms will be used to achieve best possible efficiency.

In addition to it, the exploitation plans and marked watch will be carried out to provide a sound analysis for commercial exploitation of the tools developed within the project.

Document organisation:

Section 2 describes briefly the objectives of the dissemination and exploitation. The general project dissemination and exploitation tasks are described in Section 3 that provides the division of work into tasks and shows the logical organisation of work. Section 4 then provides the description of dissemination material and distribution means that will be used within the project for dissemination purposes. It also describes the main activities of ECSI in dissemination as most of the actions will be coordinated and executed by ECSI. Other partners specification dissemination plans are described in Section 5, followed by short conclusions.

2 Dissemination & Exploitation Objectives

- To assure external and internal promotion across European industry and academic community of the project technical results.
- To analyse the efficiency of the dissemination actions and correctly plan relevant dissemination activities.
- To demonstrate the project results to a wide audience from industry and research community.
- To support the adoption of the project results in industry practice for both project partners and other industrial companies, as well as in research programmes.
- To maintain the dissemination and use plans for each partner of the consortium in order to assist with definition of most appropriate exploitation routes for each partner and for the project as a whole.

3 Description of Dissemination & Exploitation Tasks

The following tasks will implement the ICODES dissemination and exploitation planning activities.

Task 6.1 Dissemination and standardization activities

The objective of this task is to ensure by all appropriate means the visibility and awareness of ICODES in the embedded systems and SOC design communities as well as to ensure the links to standardization where appropriate.

There will be two levels of dissemination:

The **global consortium dissemination** will be focused on comprehensive dissemination of the project results: both informative and technical documentation, publications, brochures and announces through all relevant channels (the specific web pages, ECSI publications, e-mailing, mailing, press, seminars, workshops, etc).

The second level concerns **individual dissemination**: every partner of the consortium will also carry out individually the dissemination actions for various purposes and different audiences:

- The research partners by publications of scientific results at international conferences and workshops and articles in journals and books.
- The user partners through publication and awareness actions internally at the companies and in the circle of collaboration partners: other industrial companies or research/academia partners.
- ECSI will ensure the wide-spread dissemination among European industry and research/academia. The ECSI Institute will be used to provide the project related training courses to the partners outside of the consortium.

Relations with standardization organizations will be set up and/or maintained for ensuring the consistency of the project results with commonly approved standards and practices. In particular, monitoring of UML related activities outside the project to maintain potential connectivity at the API level between ICODES developments and potential UML techniques which will be proposed for real-time embedded systems through the standardization bodies

(OMG). Relation with Platform-Based Design DWG of VSI Alliance will enable to adapt the project development to the requirements defined for system design methods.

Task 6.2 Demonstrations and conferences

The consortium dissemination will be focused on the common organization of participation in the major events in the system design domain: the European (and possibly world-wide) conferences (e.g. DATE, FDL, IST, Embedded Systems, SAME and others), where material dissemination, methods and tools demonstration, presentations and dedicated booths will be organized. In addition, dedicated project sessions or tutorials at conferences will be organized to present extensively the project advances (e.g. at FDL).

To ensure the better transfer of technology and knowledge developed in the project focused thematic workshops and industrial seminars with demonstrations will also take place.

Task 6.3 Commercial exploitation and market watch

The exploitation of the project results will rely on the application of methods and tools developed within the project by the user partners, on the commercial exploitation of the design environment by the tool provider (Prosilog) and on the relationship with industry (large system companies and SMEs) provided to the project by ECSI.

The tools and results coming from Prosilog through ICODES project will be distributed and commercialized in several ways: for the marketing aspects, the dissemination will consist in national and international press releases, communications during conference and presentations of the tools in national and international conventions, workshops organized during these conventions, and training courses for system design (using Prosilog tools).

Tools commercialisation will be realised by three modes:

- direct in Europe by presentation to potential customers; performance evaluation could be released thanks to a specific license granted to users.
- indirect in USA and Japan with specialised distributors and
- for schools, universities and research centres special licenses will be proposed for very cheap prices; this option is a very good dissemination vector.
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In addition to the exploitation actions undertaken by Prosilog, ECSI will actively participate in ensuring the exploitation of the results – ECSI will establish relations between technology providers/developers and system companies that may be first users/adopters of the technology developed in the project.

All these activities will be supported by a detailed market analysis and the development of strategies for commercial exploitation of project results. This will enable to adopt the exploitation ways to the industry needs and evolving market conditions.

In the initial phase of the project the WP work will mainly focus on internal and external dissemination (for, and to the European electronic design community) and on preparation of dissemination and use plan as well as on market analysis in the view of the commercial exploitation of the project results. All appropriate means and dissemination channels will be used to raise awareness of the project among the project partners and the European industry

and research/academia community: presence at the conferences, organisation of workshops (internal and external) and focused publications. In the later phases this will be complemented by the demonstration activities at the large European events, support of standardisation process (e.g. relation to OMG for UML), deployment of large dissemination activities. A web representation will provide access to the relevant project documentation, presentation, papers and relevant tutorials, workshop and training material. Throughout the entire project the market and the research scene will actively be monitored for developments which may have an influence on the scientific and commercial success of the project in order to pro-actively issue corrective actions.

This activity will also lead to regular updates of the exploitation analysis and the Dissemination and Use Plan.

4 Implementation of Dissemination and Demonstration Activities

4.1 Project Dissemination and Promotion

- **Efficient marketing and promotion** in active and passive way of ICODES and its results with all available channels: hard mailing, e-mailing, dedicated phone calls, web pages, publications, presence at conferences and other relevant means.
- **Dissemination material:** Preparation of a project promotional material for major events at which ICODES will be presented. The ICODES, ECSI and project partners brands will be used to strengthen the dissemination impact. The following promotional material will be prepared:
 - **ICODES flyer:** The flyer will contain the main project summary with expected results that will be refined along the project execution. All useful information will be included: contact information, web links, etc.
 - **Publications:** All kind of publications will be used to promote the achievement of the project. Some examples are: the ECSI Letter (a quarterly publication), partners' newsletters. Other publications are technical papers to be presented at conferences, workshops, in journals, where appropriate.
- **Promotion channels:** Promotion of the project will be done by means of the web site (at the ECSI and OFFIS servers), ECSI and partners mailings and e-mailings, and contacts as well as via any other relevant publications and/or press releases as required. In details the promotion will be achieved by:
 - **Project Web:** Creation and regular maintenance of an ICODES specific section within the ECSI web page, accessible via a unique URL as well as via the ECSI pages itself. Full information on project results and freely available information is accessible on the web. The links will be provided on the page to the websites of project partners and other relevant sites; similarly, on the web pages of project partners links will be maintained to the main project web page.
 - **E-mailing:** The project-related announcements will be sent to several mailing lists owned by project partners (the ECSI list with 3500 addresses + partners mailing lists)

- **Hard mailing:** The mailing of related publications and ICODES brochures providing overview information on the project and acknowledging the EU contribution will be done.
- **Targeted distribution:** will be done to ECSI and project partners databases of contacts. This activity will be carried out in scaled time sequence in advance of events, demonstrations, presentations (as they occur).
- **Dedicated contacts with industry:** Direct contacts will be undertaken by ECSI and other project partners to establish the liaisons between the project and the training departments of system companies or related technical departments. This contacts will enable: (1) to collect the information and contacts at companies to be used for promotion actions and (2) to provide up-to-date information on the project advances to the well identified partners.
- **Industrial presentations:** All opportunities will be used by the project consortium to undertake the awareness raising activities for available industrial contacts (e.g. ECSI member companies), visits to the project partners, general industry presentations and dedicated promotion sessions. Information on the ICODES project will be always included in such presentations. Particular examples are: the ECSI consortium meetings, workshops, General Assemblies, Annual Meetings of organisations (e.g. ECSI), etc.
- **Conferences, exhibitions and workshops:** The presence at the annual conferences as DATE, FDL, IST will be used to promote ICODES. The active participation in European events will enable to promote the project and also to gather the information on potential interest in the project results.
- **Press releases:** Press releases will be issued (especially for the major European events) to promote the project results. Direct contacts with electronic press (EE Times, Electronique Internationale, Electronics Scotland, ALBA newsletter, and others) will be used for awareness actions.

5 Partners' Dissemination Plans

5.1 OFFIS

In this early phase of the ICODES project our main objective for the dissemination is to raise the awareness of the ICODES methodology in the industrial and scientific community.

Activities until today:

- Project webpage <http://icodes.offis.de>: This website was created to provide a platform to exchange information within the project consortium as well as with the scientific community. It actually contains a brief description of the project, contacts, and a download area for the public access to libraries and examples for testing the OSSS language.
- Electronic OSSS training for the ICODES consortium. This training was meant to familiarize the project partners with the basic constructs of the OSSS language. In a

practical experiment they were asked to model an AMBA bus bridge and access with OSSS shared objects.

- Use of the ICODES synthesiser infrastructure in the DFG project PolyDyn. The PolyDyn project is closely related to ICODES. Its focus is on reconfigurable architectures modelled with an extension of OSSS. Due to this close relationship ICODES and PolyDyn jointly develop and promote the OSSS language in conjunction with the infrastructure to synthesise from and model in OSSS. A first paper as a result from this cooperation was published at the FDL 2004 with the title “Designing for dynamic partially reconfigurable FPGAs with SystemC and OSSS”.

Our future activities will aim into the same direction. We will enhance and extend the public material available at the ICODES webpage. In particular we plan to provide a beginners guide on OSSS and the updated language reference manual of OSSS on the web. Papers and presentations on scientific events such as FDL, DATE, CODES/ISSS will help to raise the awareness of the projects work and to keep the scientific community informed on the progress we make. At the upcoming DATE conference in Munich (7.-11. March, 2005), OFFIS and the University of Oldenburg will present the OSSS+R language at the University booth.

Later we plan to organise hand-on tutorials at EDA events to share our ideas with designers of embedded systems, let them give the OSSS-tool a try, and get their feedback on our approach.

5.2 BOSCH

During the runtime of the ICODES project Bosch will evaluate the ICODES methodology and tools and it's usability and applicability. Because of the expected benefits, Bosch will start the internal exploitation at a later stage of ICODES if the evaluation results proof the concepts. At an early stage new technologies and methodologies are usually being applied in one or several pilot projects. These pilot projects are used for series product development where the new methodology promises major advantages versus established flows. Big advantages are namely saving costs and time to market. However, because the automotive industry is very oriented for high product safety, big attention is laid on possible side effects of new methods, tools, etc. Once the pilot project(s) produce satisfying results and found out to be used for series products, they are approved to be used inside Bosch.

The main focus of Bosch automotive is to produce components for the automotive customers. The nature of this products is usually not software that can be used for design development. Therefore, Bosch has no interest in an external exploitation.

During the early runtime of ICODES, the project ideas are internally disseminated in different meetings. These information however is still of a reduced scale. Once the ICODES methodology is stable enough for application (expected at the end of the project), presentations will be held for selected persons of different departments. Mainly system architects, but also engineers for HW/SW development in leading positions are candidates for such dissemination activities. Relevant persons will then be thought in trainings with the ICODES ideas, flow and tools.

In most cases, Bosch disseminates direct or parallel related research project results on public conferences. The benefits for publication are of various facets like endorsement, establishment, driving standardization activities, higher acceptance. However, the amount of

published papers is hard to predict and depends on the project results as well as on the projects, in which ICODES results are involved.

5.3 SIEMENS

The Siemens plan of internal exploitation involves all the different aspects of innovation developed in ICODES: the proposed design methodology, the OSSS language, the metrics analysis and the interconnection synthesis engine, within the ICODES IDE. This commitment mainly involves the task of programmable platform design for applications that are in the company main stream.

Internal exploitation will be pursued in conformance with the company guidelines concerning the innovation activity on the design flow. The Development Technology Laboratory has the role to introduce innovative design methodologies and EDA tools for the development of Mobile Networks equipments. Every innovation of the methodology is based on a deep analysis of candidate technologies and tools. After a positive evaluation, new methodology guidelines and trainings are issued to support the adoption within the company design community. The same procedure will be followed for the results of the ICODES project.

Today the availability of programmable platforms supporting hardware and software requires the introduction of new design guidelines and tools to improve the current design process. The use of ICODES results will allow to involve different design skills in a unified vision of hardware and embedded software creation process. This will result in the definition of new operating procedures to approach these new challenging architectures. The interconnections synthesis flow, starting both at behavioral and at RT levels, will decrease design and development time. The modeling language, the analysis tools and the developed executable models will provide an easier design space exploration allowing to evaluate in a faster time different architectural choices.

The task of integrating the tool set into the company used design flow will also be part of the exploitation, providing an operative example to be underlined when marketing the tool set.

On the contrary, no direct external exploitation is foreseen, as the company is not committed to direct sales of EDA tools and development SW. So benefits will not involve direct sales of the project results, but will be reflected in the higher quality of designed Platform FPGAs. An indirect support for commercialization is provided to developers and marketing partners since the company will operate as beta-test site during the project's life span.

5.4 THALES

The outcomes on ICODES will be first disseminated internally at the Technical Business Unit level, and in a second stage, after complementary benchmarking, in the various THALES' units. The aim is to improve our design capabilities for our new product. So, these outcomes will be used for the development of new generation real time embedded systems in communication domain (mobile radio, terminals, ...) including multimedia behaviours.

The architecture of these systems will be based on a fundamentally heterogeneous platform. This platform will integrate several different "communicating" computing engines devoted to specific functions like intensive processing, data processing and/or decision and supervision.

Finally, this platform will be implemented either as a board with discrete components (GPP, DSP, FPGA, ...) or as a System-on-a-Chip (SoC) composed of several IP cores.

The proposed design methodology, the OSSS language, the metrics analysis and synthesis communications, for both hardware and software blocks, will definitely allow a breakthrough in application implementation on such platforms through code generation for communications among the IPs (HW/HW, HW/SW and SW/SW). Moreover, it will improve product quality and productivity which are major issues for an industrial company.

These tools will be integrated in THALES design flow and disseminated in the company with the support of a process handbook.

THALES, not being a tool-provider, external dissemination is out of scope.

5.5 PROSILOG

The dissemination for Prosilog is realized following several axes:

5.5.1 Project results dissemination

Prosilog will communicate on the results obtained through the project. This communication will be mainly handled by the Prosilog's web site. An effort will be done to publish scientific papers in collaboration with the industrial partners; the goal of these papers will be to demonstrate the time and quality gain which could be realized by using the tools and solutions implemented in ICODES.

5.5.2 Public and private demonstrations

The presentation of the tools and solutions developed in ICODES is ensured thanks to the following channels: public presentation during international and regional conventions, where Prosilog is present through a booth (DAC, DATE, SAME, SoC Design & Reuse, ...) and private presentation for potential customers during sales prospecting activities.

5.5.3 Provision of relevant results to standardization bodies

Prosilog is involved in the major consortiums concerned by EDA area and whose major goal is to promote standardization activities to the electronics design community. Prosilog was already member in the OSCI (Open SystemC Initiative); this position will help in favour of SystemC language enhancement propositions, which could be realized following the results about the OSSS definition.

Prosilog has joined, at the beginning of the project, the SPIRIT consortium, which aims to standardize the IPs definition in order to facilitate their interoperability in heterogeneous systems; Prosilog's tools developed for ICODES were oriented to be compatible with the existing 1.0 version of SPIRIT scheme description, what's already ensure a wide use by potential partners. Prosilog is involved in defining the 2.0 version of SPIRIT scheme, and uses the results obtained in ICODES works for this standardization activity.

5.5.4 Advanced training

As soon as the Prosilog's platform will be available in a release version, training sessions will be proposed to the partners. These trainings will focus on several aspects covered by the Prosilog's platform, such as design creation, refinement and verification.

5.5.5 Commercialization

Tools commercialization will be realized by three modes: (1) direct in Europe by presentation to potential customers; performance evaluation could be released thanks to a specific license granted to users. (2) indirect in USA and Japan with specialized distributors and (3) for schools, universities and research laboratories, special licenses will be proposed for very cheap prices; this option is a very good dissemination vector. Note that the software structure of the ProsiLog's platform developed in ICODES, allows and facilitates the integration on third party plug-ins. This means that OFFIS and POLIMI will have the possibility to benefit from the ProsiLog's platform capabilities, and as a consequence, their demonstration will be facilitate, following the communication channels described in 5.5.2 paragraph. This integration possibility will also be exploited to commercialize the OFFIS' synthesizer, through ProsiLog's sales channels.

5.6 POLIMI

Politecnico di Milano aims at internally exploiting the results of the research performed in the ICODES project by including issues of system design and communication analysis and synthesis in the advanced courses of the curriculum of Computer Engineering, in particular for those students choosing the specialization on embedded systems. Students will be exposed to the results of the project and will work hands-on on the tools developed in the Microarchitecture laboratory of the Dipartimento di Elettronica e Informazione. The metrics and analysis developed will be tested on the system designs developed during the courses by the graduate students.

Tutorials for PhD students will be organized to ensure visibility on the results of the project inside the Department.

Furthermore, the technologies developed will also be transferred to master students in Cefriel, for those groups of students working in the area of embedded systems.

External dissemination will be performed through the submission of papers describing the project and the main results to the major system design conferences, such as DAC, DATE, FDL, CODES/ISSS, in order to increase the awareness on the achievements of the developments performed in the project.

5.7 ECSI

The ECSI dissemination activities are described in sections 3 and 4.

6 Conclusions

The deliverable D6 provides the basis and the definition of main dissemination channels that will be used within the project to ensure the visibility of ICODES to the European embedded system community as a whole. It also gives an overview what kind of material will be used for the purpose of dissemination.

In order to achieve the best possible impact the global project dissemination and demonstration actions will be combined with individual specific initiatives undertaken by the consortium partners.

At the time of delivery of this report several dissemination actions are already implemented. As examples are the internal and external open web pages at the ECSI and OFFIS servers, the participation and presentation to open industry workshops like the one organised by ECSI on System Synthesis in September 2004.

The exploitation of the project results will be carefully prepared by the consortium as a whole and by specific partners. These concrete plans will take the form of a report that will be elaborated and refined in the second part of the project.