PROJECT FINAL REPORT

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	FP7-2007-ICT-211806 **Provision of a European Training Infrastructure**	

	WP no.	Result no.	Lead participant
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Awareness and wider societal implications

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Foreword

This report forms deliverable D5.2.3 of the EuroTraining project (ICT-2007-211806): Awareness and wider societal implications.

The report presents the awareness generated by the project and the societal implications with respect to supporting university training programmes and industry's take-up of nanoelectronics and micro-/nanosystems

Hoersholm December 2010

Deliverable 5.2.3

Awareness and wider societal implications

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4.1 Final publishable summary report

4.1.1 Executive summary

The EuroTraining action offers access to a comprehensive range of advanced training courses. Special attention is devoted to develop and make available courses supporting the CMOS technology, targeting digital components and complex digital Systems on Chip ("More Moore"); to master diversification targeting non-digital applications, heterogeneous integration in Systems-on-Chip or Systems-in-a-Package ("More than Moore") and to prepare for the technology generation beyond the CMOS scaling limits ("beyond CMOS").

The courses offered are structured in three levels: *ECTS accredited courses, Quality Labelled courses and Other courses.*

Annually EuroTraining offers more than 500 courses. Nearly half of these courses are either ECTS courses or Quality Labelled courses. Since the start in 1995 of the preceding EuroTraining project 5.400 courses have entered into the web service and more than 1.2 million training users have accessed the service in order to find the right training.

EuroTraining has more than 10.000 training subscribers who receive monthly training offers. More than 35% of EuroTraining's users come from .com domains. Adding hereto industrial users with national domain codes indicates that around 50% of EuroTraining's users are coming from industry. This is also reflected in the ranking of the popularity of the training providers: Those getting most visitors are the commercial training providers typically offering hands-on training.

EuroTraining has developed training roadmaps describing the requirements with respect to developing new nanoelectronics and micro-/nanosystems curricula. Major influencers in the development of new curricula have been defined and discussed and a model for the development of new curricula has been presented.

EuroTraining has developed training roadmaps describing the requirements with respect to industrial training needed when adopting nanoelectronics and micro-/nanosystems. These reports have been derived from the ITRS roadmaps, various EC strategy papers, web surveys and by means of a nanoExpert panel consisting of academic and industrial representatives.

The major conclusions from the roadmaps are that a stimulation of course provision is needed in areas like nanoscience and nanotechnology, including beyond CMOS. In order to stimulate the recruitment of young people it is also concluded that training is needed for all ages (school, graduate, post-graduate). However special attention is needed for actions on teachers' training (train-the-trainers) and educational materials (e.g. use of Internet and course sharing).

In order to support industrial exploitation in these areas, EuroTraining has offered a series of Training-the-Trainers courses in countries where nanoelectronics and micro-/nanosystems are less deployed.

4.1.2 A summary description of project context and objectives

EuroTraining Services

This report describes how the EuroTraining project supports a timely introduction of new nanoelectronics and micro-/nanosystems university programmes in Europe. Furthermore it is described how the project supports industrial take-up of nanoelectronics and micro-/nanosystems. The provisions include *training courses*, *training material*, *training roadmaps and stimulation actions targeting the recruitment of young people for engineering careers.*

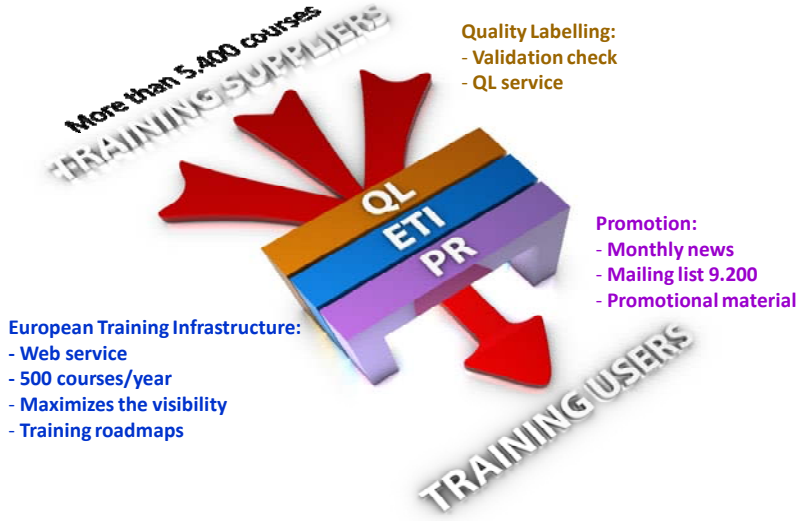
Training courses

The EuroTraining action offers access to a comprehensive range of advanced training courses. Special attention is devoted to develop and make available courses supporting the CMOS technology targeting digital components and complex digital Systems on Chip ("More Moore"); to master diversification targeting non-digital applications, heterogeneous integration in Systems-on-Chip or Systems-in-a-Package ("More than Moore") and to prepare for the technology generation beyond the CMOS scaling limits ("beyond CMOS").

The courses offered are structured in three levels:

1. *ECTS accredited courses:* European Credit Transfer and Accumulation System (ECTS). For successfully completed studies, ECTS credits are awarded. The credits facilitate the transfer and progression throughout the Union. Currently the ECTS accredited courses are mainly utilized as part of the PhD programmes.
2. *Quality Labelled courses:* The quality labelling procedure has been initiated by EuroTraining with the objective of improving the high quality of delivery of courses given by European Course Providers. Quality Standards outlines key components of effective education and allows course providers to evaluate their efforts in relation to these criteria. This evaluation procedure has the ability to check that the Course Providers are delivering high quality courses to students, and provides feedback and advice so that the quality can be improved in future courses.
3. *Other courses:* This category includes all other kind of courses or events (e.g. conferences) offered on a European level.

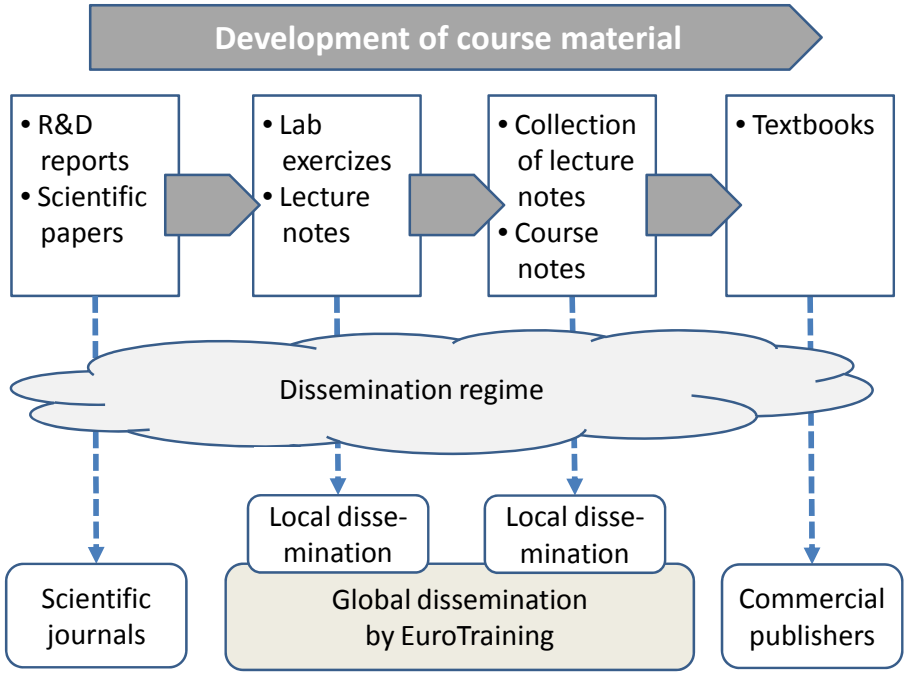
Annually EuroTraining offers more than 500 courses. Nearly half of these courses are either ECTS courses or Quality Labelled courses. Since the start in 1995 of the preceding EuroTraining project 5.400 courses have entered into the web service and more than 1.2 mill. training users have accessed the service in order to find the right training. The general rationale of the project’s course brokerage activity is shown in the figure below:



EuroTraining has more than 10.000 training subscribers who receive monthly training offers. More than 35% of EuroTraining's users come from .com domains. Adding hereto industrial users with national domain codes indicates that around 50% of EuroTraining's users are coming from industry. This is also reflected in the ranking of the popularity of the training providers: those getting most visitors are the commercial training providers typically offering hands-on training.

Training material

The development of training material is normally a process going from writing R&D reports and scientific papers which are converted to lab exercises and lecture notes which later become an entire course. Over the years more mature course material may be turned into textbooks published by international publishers. This value chain for the development of course material is shown in the figure:

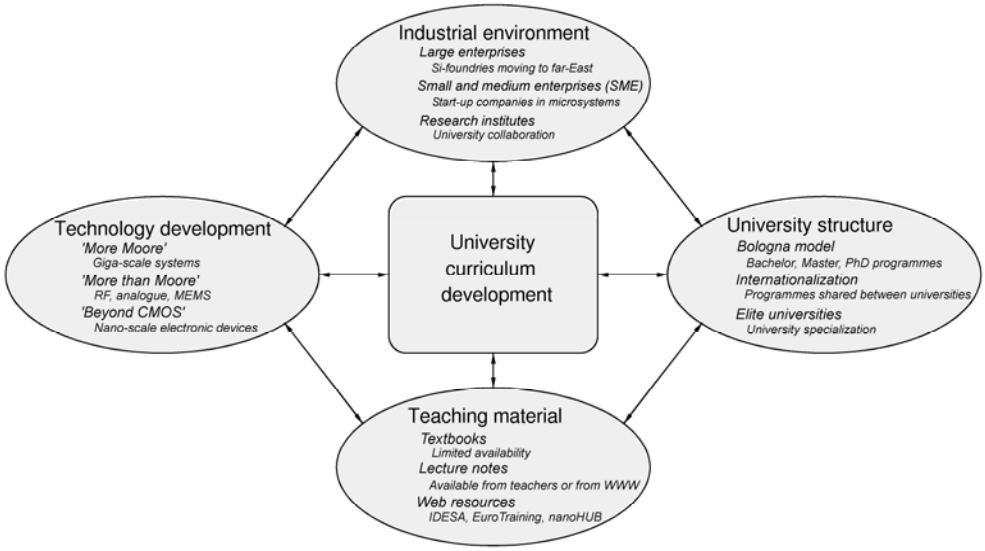


While scientific papers and textbooks are disseminated globally, the course material developed is only disseminated locally. This means that other users (universities) may have to wait for textbooks to be published some years downstream of the actual course material. By making the course material available through EuroTraining, it becomes available globally and consequently new nanoelectronics and micro-/nanosystems courses become available much quicker. Thereby, this platform fills a gap between local dissemination (at one university to a particular group of students) and global dissemination by means of commercial publishers.

Training material can of course also be used by innovative industrial partners. In order to support such early take-up of new technology, EuroTraining offers nearly fifty customised in-company training courses targeting specific industrial topics.

Training roadmaps - academia

EuroTraining has developed training roadmaps describing the requirements with respect to developing new nanoelectronics and micro-/nanosystems curricula. Major influencers in the development of new curricula have been defined and discussed and a model for the development of new curricula has been presented:



As part of the road mapping activity, two major reports have been provided:

- D2.1-nano: Description of nanoelectronics courses and syllabuses from selected universities
- D2.1-mst: Description of micro/nanosystems courses and syllabuses from selected universities.

These reports are available on www.EuroTraining.net.

In addition, to provide descriptions of selected courses and programmes, the reports outline development models for university programmes and provide a number of recommendations, both for universities in developing new programmes and for students in selecting programmes and courses.

Main recommendations for universities are:
- promote PhDs in new nanoelectronics and micro-/nanosystems areas. PhD programmes are often the starting point for developing new university programmes ranging all the way from bachelor, via master to PhD;
- promote summer schools in nanoelectronics and micro-/nanosystems. Summer schools are a good way of introducing new topics, especially in PhD programmes;
- promote cross utilization of courses among Physics/Electrical Engineering/Computer Science. Provi-ding courses which can be followed by students both from e.g. physics and electrical engineering or computer science and electrical engineering ensures broad educational programmes resulting in flexible and versatile engineers;
- promote cross utilization of lecture notes and labs. Lecture notes and lab exercises can be made available to others and can be obtained from www.EuroTraining.net;
- promote text book creation. Especially for bachelor programmes textbooks are needed, rather than loosely structured lecture notes;
- promote multiple degree programmes. Programmes shared between different universities can be an efficient way of utilizing top competences from different places;
- encourage change of track between Physics/Electrical Engineering/Computer Science when going from bachelor programme to master programme. This ensures flexible and versatile engineers.

Main recommendations for prospective students are:
- use the Internet when searching for the programme, which is most suitable for you;

- start the search at a directory or catalogue site to get a general impression about the available programmes: you can use the www.EuroTraining.net site, but you can find more sites, which you would like, and as time passes the number of useful websites is increasing;
- check the general quality of the universities which came into your scope, you can use some reliable sites that make ranking for you;
- check the available topics at the selected universities, whether your favourable topic is taught there or not, take special attention on application oriented programmes: the knowledge you can obtain from such a programme would certainly help you to find a good job or to join a successful enterprise;
- check whether the courses are available in your preferred language, which would be very useful for you if it were different from your mother tongue;
- try to find out if scholarship opportunities are offered to be applied for, and if the everyday living expenses meets your possibilities.

Training roadmaps - industry

EuroTraining has developed training roadmaps describing the requirements with respect to industrial training needed when adopting nanoelectronics and micro-/nanosystems. Two major reports have been published:

- D1.1-nano: Report with training roadmap of industrial course requirements in nanoelectronics
- D1.1-mst: Report with training roadmap of industrial course requirements in micro/nanosystems

These reports are available on www.EuroTraining.net.

These reports have been derived from the ITRS roadmaps, various EC strategy papers, web surveys and by means of a nanoExpert panel consisting of academic and industrial representatives.

The major conclusions from the roadmaps are that a stimulation of course provision is needed in areas like nanoscience and nanotechnology, including beyond CMOS. In order to stimulate the recruitment of young people, it is also concluded that training is needed for all ages (school, graduate, post-graduate). However special attention is needed for actions on teachers' training (train-the-trainers) and educational materials (e.g. use of Internet and course sharing).

In order to support industrial exploitation in these areas, EuroTraining has offered a series of Training-the-Trainers courses in countries where nanoelectronics and micro-/nanosystems are less deployed.

Youngster stimulation

The electronics industry has a general concern about the tendency in recent years that young people are reluctant in choosing engineering/electronics education. This dramatically shows the importance of stimulating the interest of young people in science and technology, in helping to ensure a steady flow of qualified engineers. As an initial step, EuroTraining has collected information on national stimulation actions carried out in the Member States. This survey has resulted in a database identifying nearly 500 initiatives in the Member States.

Results and recommendations derived from this database and questionnaires sent to the national initiatives are:

- Promote incentive actions towards pupils in primary schools by offering scientific and logistic support to the teachers (example: “hands on science” in France)
- Encourage research organisations in the area of nanotechnologies to directly or indirectly promote awareness actions based on leisure activities (example: “RVO” in Belgium)
- Support awareness actions toward a diverse public and based on practical experiments (example: “nanoTruck” in Germany)
- Keep a significant part of research budgets for awareness actions towards youngsters.
- Promote meetings between youngsters and professionals working in industry and laboratories.

Portrait of the nanoTruck

4.1.3 A description of the main S&T results/foregrounds

The EuroTraining project was launched on 1 November 2007 with a focus on the provision of nanoelectronics related training. On 1 June 2008 a similar project was granted under FP7 with a focus on providing microsystems related training. In order to distinguish the two projects they are now called EuroTraining-nano (ICT-211806) and EuroTraining-mst (ICT-223849). The activities are organised and run in close co-operation with European industry, universities and training centres involved in the education and training of micro- and nanoelectronics system integration technologies.

The major achievements in the first year of the project included:

1. A training roadmap outlining industrial training requirements in nanoelectronics (Deliverable D1.1-n). The major conclusion from the roadmapping study was that training activities should increase the public awareness of nanoelectronics, considering the following key

aspects: Improve the training activity and effectiveness of the collaborative research programmes and the Technology Platforms, in particular that of ENIAC; open the research infrastructure for the interested people, in particular teachers and undergraduate students.

2. In parallel, the project made a study on nanoelectronics courses and syllabuses from selected universities (Deliverable D2.1-n). The study concluded that more PhDs should be promoted in new nanoelectronics areas, more summer schools in new nanoelectronics areas are desired, cross utilization of courses among Physics/Electrical Engineering/Computer Science departments should be encouraged as well as the cross utilization of lecture notes, labs and text books.
3. A new web was implemented. Apart from a new layout, the major new features are a streamlined enrolment for new course providers and also a streamlined entry to the Quality Labelling service (Deliverable D3.1.1-n+m). A fully web-based evaluation system for course modules has been implemented based on the "e-bay" principles. This means that course modules and course material is evaluated by the users and the results will appear on the web as a kind of "stars" rating (Deliverable D3.1.2-n+m). To further simplify the enrolment procedures, a new simplified Quality Labeling routine was implemented. The main revision was focused on a seamless collection of the necessary material and the accreditation procedure. The aim of these revisions is to simplify, facilitate and accelerate the whole service. The new QL system is described in Deliverable D3.2-n+m.
4. In order to monitor the project's progress, a number of Performance Indicators were developed. These indicators are used as a basis for the progress assessment (Deliverable D5.2.2-n+m).

Following the Y1 phase, where most of the market analyses were performed (Industrial training roadmap and survey on academic training requirements) and the training infrastructure was reshaped in order to ease the adoption of new course offers for later dissemination to the user community the second year has focused on improving the access to the training market.

The major achievements in the second year comprise:

1. Following the "implementation" phase (Y1) with 423 courses promoted through EuroTraining the project have in Y2 increased the promotion to cover 500 courses (See Performance Indicator PI-1.4).
2. The 923 courses promoted so far are covering all 27 EU Member States except LT, LU and SI (See Performance Indicator PI-1.4).
3. In the first year of the project EuroTraining provided 25.733 potential course participants to its top-15 course providers. After two years of operation this figure was raised to 45.779 potential course participants (See Performance Indicator PI-5.2).
4. The survey on national actions stimulating the interest of youngsters for a career in science and technology was completed. The database contains information on nearly 500 national youngster stimulation actions originating from all 27 Member States (Deliverable D4.1-n). The actions include Recommendations, Initiatives in schools, Events, Media and Museums.
5. A follow-on report providing an in-depth analysis of the initiatives and recommendations was delivered at M24 (Deliverable D4.2-n). The report is composed of the following parts: Context and European initiatives, Description of the questionnaire sent to initiatives, Analysis of results of the questionnaire, Analysis of initiatives per country, General remarks about initiatives and 10 selected initiatives and success stories.

6. The first out of four Train-the-Trainers course on nanoelectronics was organized on 3-4 September in Brno, CZ. (Deliverable D1.4-n). The course contributions are based on top-level lectures provided by professor Göran Wendin (Chalmers University of Technology, SE) identified as part of the training roadmapping study and a number of local contributors. The course will soon be replicated in Romania, Poland and Lithuania.

7. The general training offer is complemented by specific training offers dedicated to SMEs covering the offering of at least eight thematic training courses (Deliverable D1.3.2-n). Currently five of these courses have been provided:
   - Nanotechnologies in low power ICs (Archamps, FR)
   - Low power microelectronics and energy scavenging (Archamps, FR)
   - Lab-on-Chip Based Sensors for bioparticles detection and characterization (Tallinn, EE)
   - SystemC modeling course for SMEs (Kista, SE)
   - Physical design and reliability issues in nanoscale analog CMOS (Trondheim, NO)

8. The general training offer is complemented by specific training offers dedicated to SMEs covering at least four techno/economic training courses (Deliverable D1.3.2-n). All four courses have been provided:
   - Cellular Mobile Communication B3G – Trends in HW/SW Complexity (Aalborg, DK)
   - Electronics Forum in Torino (Torino, IT)
   - Heterogeneous micro and nanosystems methodology (Munich, DE)
   - Hybrid CMOS/Nanogrid Architectures and Circuits (Trondheim, NO)

9. A coordinated extensive effort was undertaken by all partners in order to increase the mailing list used by EuroTraining for the promotion of courses. As a result the mailing list was extended from 3.500 at the beginning of the project to nearly 7.500 e-mail addresses at M12 and now more than 11.980 e-mail addresses. Furthermore the mailing list has been shaped in order to better reflect the composition of the 27 Member States.

10. E-mail shots announcing 10-48 upcoming Quality Labelled courses have been distributed on a monthly basis. As a result of the extended e-mail list and the general renewal of the web the number of hits increased from 191.705 at the beginning of the project to 645.695 after M6 and an impressive 1.172.840 at M12 (accumulated six monthly figures). After M24 the number of hits totaled 987.881. Seen in the light of the current economic recession this sounds as a fair figure also when considering that training is firstly hit when businesses start to look for cost reductions.

11. The promotion is furthermore supported by presentations, posters and the hand-out of the project flyer at various conferences (e.g. IEEE NORCHIP, Bay WS, ARTEMIS, ISSE, SIITME and EAEEIE).

12. A call for new Training Providers has been performed, and the number of course providers were consequently increased from 44 (M1) to 58 (M12) to 71 (M24) (See Performance Indicator PI-5.3).

13. The Second nanoelectronics workshop was organized on 24 June, 2009 in Valencia, ES (Deliverable D2.2). The major aim of the workshop was to present the outcome of the training roadmaps. The workshop, which was embedded in the 20th EAEEIE conference organized by European Association for Education in Electrical and Information Engineering Council attracted approximately 120 professors and lecturers from all Europe. The EuroTraining workshop was supported by two invited presentations on A joint European Master Degree in Micro & Nano Technologies (by Pierluigi Civera, Danilo Demarchi, Fabrizio Pirri) and on Nanoelectronics curricula at TUM (by Paolo Lugli, TU Munich).

The third year of the project has mainly been devoted to ensure a lasting impact of the project. This has included a significant dissemination of the knowledge build up in the project and additional revisions of the web site in order to make it survive in the years to come. The major implementations in the third year comprise:

1. Continuous growth of mailing list => now with more than 11.980 training subscribers. The target established in the contract was 10.000 mailing addresses. However, based on feed-back received during the reviews an increased effort was devoted not only to get more subscribers but also to get a fair representation in the 27 member states. The project team has therefore pursued a penetration corresponding to 12 ppm in each member states. Especially in the larger member states (DE, UK, FR) it takes some extra effort to get a higher representation (D5.2.2-n+m).
2. In June 2010 a M24 progress report was submitted for the EuroTraining-mst project. This report addresses the training and workshops organized in order to ensure the take-up of micro/nanosystems technologies.
3. A number of actions following from the second review was implemented: Penetration of subscribers in major Member states, reaching SMEs in e.g. non-electronic events, increasing the role of industry, improved focus on FPGA training, etc.
4. The last Train-the-Trainers course on nanoelectronics was organized on 14-15 June in Budapest (D1.4-n).
5. In the roadmapping survey (D2.1-n) Summer schools were identified as one of the major training events impacting the implementation of new nanoelectronics curricula. Consequently the web has been modified to take onboard Summer schools.
6. The last Train-the-Trainers course on microsystems organized on 8-9 July in Ljubljana (D1.4-m).
7. The second MST training workshop organized on 23 June in Grenoble. This completes a row of four training workshops organized throughout the project to disseminate the work on training roadmapping (D2.2-m).
8. Based on the successful Train-the-Trainers courses organized in Eastern Europe it was decided to organize three additional mst courses in Budapest (HU), Kosice (SK) and Bucharest (RO).
9. A peer reviewed paper has been published by the European Journal of Engineering Education. The paper entitled *A model for the development of university curricula in nanoelectronics* describes the academic output of the Nanoelectronics roadmapping activity.
10. An impact paper entitled *EuroTraining – Supporting University Programmes in nanoelectronics and nanosystems* has been published on the EuroTraining web. The paper describes in a short form the major results of the project.
11. The above mentioned impact paper was later followed by a more generalversion entitled *EuroTraining - Supporting University Programmes and industrial take-up of Nanoelectronics and Micro-/Nanosystems.*
12. User statistics from EuroTraining's website show that more than 35% of EuroTraining's users come from .com domains. Adding hereto industrial users with national domain codes indicates that around 50% of EuroTraining's users are coming from industry. This is also reflected in the ranking of the popularity of the training providers: Those getting most visitors are the commercial training providers typically offering hands-on training (Cadence and ESPERAN).
13. A final plan for the use and dissemination of foreground has been published (D5.1.2-n). The plan identifies three key assets of the project (training roadmaps, European Training Infrastructure and the list of training subscribers) and a plan for how to exploit these results.

14. A report on awareness and wider societal implications has been published (D5.2.3-n). The report presents the awareness generated by the project and the societal implications with respect to supporting university training programmes and industry's take-up of nanoelectronics and micro-/nanosystems. One of the findings are that nearly 50% of EuroTraining's users come from industry.
15. Based on the feedback received in the last review an updated version of the report on needs and opportunities in the electronics industry (D4.2-n) has been published. The report summarizes a number of recommendations for future awareness actions targeting youngsters.
16. The training material section of the web service has been streamlined to become more user friendly, meaning that in just one section the users can search for course modules, QBILs and URLs containing training material related to nanoelectronics and micro/nanosystems.
17. A call for new Training Providers has been performed, and the number of course providers were consequently increased from 44 (M1) to 58 (M12) to 71 (M24) to 82 (M36). The target set out in the contract was at least 60 course providers at the end of the project. (See Performance Indicator PI-5.3).

Since the start of the preceding EuroTraining project 5.940courses have entered into the web service and more than two million training users are annually accessing the service in order to find the right training.

The deliverables provided include:

DELIVERABLES

Del. no.	Deliverable name	WP no.	Dissemination level	Due delivery date from Annex I
D1.1-n	Report with training roadmap of industrial course requirements	1	PU	M6
D1.2-n	Report for Course Providers outlining course content with keywords and expert evaluation	1	PU	M9
D1.3.1-n+m	Demonstration: Qualified Bank of Internet Links (QBIL) equipped and opened	1	PU	M18
D1.3.2-n	Report: Description of two thematic courses and one techno/economic course. Monitoring of the course provision (four venues for each course)	1	PU	M18, M36
D1.4-n	Provision of nanoelectronics awareness course at four venues. Plus course material	1	PU	M12, M18, M24, M30
D2.1-n	Description of nanoelectronics courses and syllabuses from selected universities	2	PU	M6
D2.2-n	Two workshops with nanoelectronics education as the workshop theme	2	PU	M12, M24
D2.3-n+m	Course material suited for graduate level training in nanoelectronics	2	PU	M18
D3.1.1-n+m	New version of data base and with updated web	3	CO	M9
D3.1.2-n+m	New version with E-bay style presentation for university services	3	CO	M12
D3.2-n+m	QL report on evaluation and board activities	3	RE	M6 x n
D3.3-	Report with PR activities: Mailing list status,	3	CO	M12 x n

n+m	newsletters, course flyers, etc.			
D4.1-n	Catalogue on national training related stimulation activities targeting youngsters	4	PU	M18
D4.2-n	Report on needs and opportunities in the electronics industry	4	PU	M24
D5.1.1-n	Periodic report	5	RE	M12 x n
D5.1.2-n	Final plan for the use and dissemination of foreground	5	PU	M36
D5.2.1-n	Exploitation and dissemination plan	5	RE	M4
D5.2.2-n+m	Performance Indicator report	5	RE	M6 x n
D5.2.3-n	Awarenss and wider societal implications	5	RE	M36

The number of course providers subscribing to the Eurotraining service is shown in the below table:

Origin		**M0**	**M6**	**M12**	**M18**	**M24**	**M30**	**M36**
Austria	AT	1	1	1	1	1	1	1
Belgium	BE			1	2	2	3	4
Bulgaria	BU	1	1	1	1	1	1	1
Cyprus	CY	1	1	1	1	1	1	1
Czech	CZ							
Denmark	DK	2	2	2	4	4	4	4
Estonia	EE							
Finland	FI							
France	FR	3	3	4	5	6	8	9
Germany	DE	3	3	3	5	5	5	5
Greece	GR	1	1	1	1	1	1	1
Hungary	HU	1	1	1	1	1	1	1
Ireland	IE	2	2	2	3	3	3	3
Italy	IT	1	1	2	2	3	3	3
Latvia	LV							
Lithuania	LT							
Luxemburg	LU							
Malta	MT							
Netherlands	NL	3	3	3	3	3	3	3
Poland	PL							
Portugal	PO							
Romania	RO							
Slovakia	SK	1	1	1	1	1	1	1
Slovenia	SI							
Spain	ES							
Sweden	SE	1	1	3	3	3	4	4
Switzerland	CH						5	5
UK	UK	20	20	25	26	27	27	29
Other	.COM							
Other	.ORG							
Other	.XXX	3	3	7	9	9	4	7
TOTAL		**44**	**44**	**58**	**68**	**71**	**75**	**82**

The geographical distribution of the courses offered by EuroTraining is shown in the below table:

Origin		M0	M6	M12	M18	M24	M30	M36
Austria	AT		4	9	16	19	37	40
Belgium	BE		2	5	6	14	16	20
Bulgaria	BU		0	0	1	2	6	6
Cyprus	CY		0	1	1	2	2	2
Czech	CZ		0	1	1	1	9	15
Denmark	DK		1	1	14	17	19	22
Estonia	EE		0	1	1	1	2	2
Finland	FI		3	4	5	6	6	13
France	FR		28	61	90	135	177	193
Germany	DE		45	100	151	198	360	430
Greece	GR		3	8	8	9	14	17
Hungary	HU		1	3	4	9	10	12
Ireland	IE		4	5	39	46	70	119
Italy	IT		3	5	8	11	25	48
Latvia	LV		0	1	1	1	1	1
Lithuania	LT		0	0	0	0	1	1
Luxemburg	LU		0	0	0	0	0	0
Malta	MT		1	2	2	2	4	4
Netherlands	NL		4	7	9	18	24	25
Poland	PL		1	3	3	7	14	16
Portugal	PO		1	2	2	3	10	11
Romania	RO		0	0	0	1	7	8
Slovakia	SK		0	0	3	5	6	8
Slovenia	SI		0	0	0	0	2	2
Spain	ES		8	12	16	18	30	84
Sweden	SE		10	19	22	27	51	72
Switzerland	CH						151	156
UK	UK		71	113	171	236	422	486
Other	.COM							
Other	.ORG							
Other	.XXX		39	60	70	135	1107	1526
TOTAL			**229**	**423**	**644**	**923**	**2583**	**3339**

The number of users accessing the EuroTraining web service is shown in the below figure:

Origin		M0	M6	M12	M18	M24	M30	M36
Austria	AT	96	2.874	3.376	1.500	1754	1.834	1.839
Belgium	BE	228	4.230	5.676	3.060	3256	3.756	3.487
Bulgaria	BU	56	3.209	3.920	2.823	2.748	2.843	2.971
Cyprus	CY					957	921	978

		12	873	1.440	995			
Czech	CZ	19	826	1.260	894	988	1.078	1.015
Denmark	DK	24.048	30.529	26.035	25.236	26.211	29.255	28.987
Estonia	EE	9	682	850	588	412	687	641
Finland	FI	15	939	1.285	815	987	1.209	1.304
France	FR	201	3.591	3.274	2.340	3.511	3.756	3.675
Germany	DE	3.400	9.865	9.493	8.789	9.567	11.076	10.987
Greece	GR	6	3.022	1.296	2.520	3.022	3.685	3.823
Hungary	HU	569	2.460	4.460	1.740	1.856	1.921	1.976
Ireland	IE	248	2.039	960	2.376	2.679	1.543	1.698
Italy	IT	3.000	59.308	62.712	61.146	70.311	71.076	71.203
Latvia	LV	24	480	800	445	354	412	476
Lithuania	LT	65	994	1.036	871	932	913	956
Luxemburg	LU	51	1.287	2.360	987	942	1.145	1.231
Malta	MT	7	87	157	89	75	68	84
Netherlands	NL	685	8.056	10.484	6.224	7.534	9.567	9.476
Poland	PL	54	4.329	9.388	4.134	5.327	4.976	5.120
Portugal	PO	14	2.376	2.104	1.902	2.865	3.411	3.512
Romania	RO	5.108	3.915	3.600	4.150	5.674	5.832	5.847
Slovakia	SK	4	106	134	101	154	165	176
Slovenia	SI	642	1.324	1.526	1.300	1.298	1.453	1.765
Spain	ES	546	5.450	6.940	5.394	7.956	8.356	8.731
Sweden	SE	875	3.265	5.363	3.120	2.976	3.212	3.412
Switzerland	CH	1.023	1.300	2.923	1.118	3.089	5.748	5.976
UK	UK	987	4.634	9.814	5.239	8.663	9.587	9.821
Other	.COM	6.872	279.530	369.112	299.140	350.321	365.211	298.365
Other	.ORG	254	2.478	2.549	3.865	4.762	4.765	4.856
Other	.XXX	142.587	381.098	618.513	392.680	456.789	495.833	487.512
TOTAL		**191.705**	**645.695**	**1.172.840**	**845.581**	**987.970**	**1.055.294**	**981.900**

4.1.4 The potential impact (including the socio-economic impact and the wider societal implications of the project so far) and the main dissemination activities and exploitation of results

EuroTraining Services

This report describes how the EuroTraining project supports a timely introduction of new nanoelectronics and micro-/nanosystems university programmes in Europe. Furthermore it is described how the project supports industrial take-up of nanoelectronics and micro-/nanosystems. The provisions include *training courses, training material, training roadmaps and stimulation actions targeting the recruitment of young people for engineering careers.*

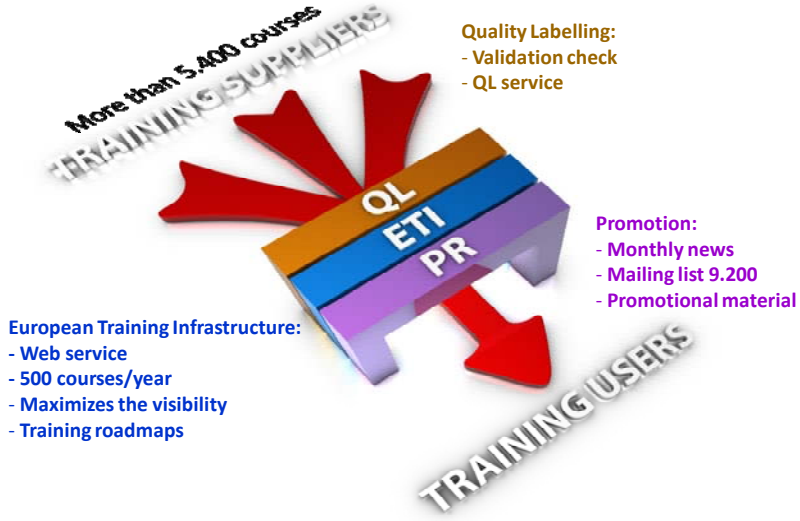
Training courses

The EuroTraining action offers access to a comprehensive range of advanced training courses. Special attention is devoted to develop and make available courses supporting the CMOS technology targeting digital components and complex digital Systems on Chip ("More Moore"); to master diversification targeting non-digital applications, heterogeneous integration in Systems-on-Chip or Systems-in-a-Package ("More than Moore") and to prepare for the technology generation beyond the CMOS scaling limits ("beyond CMOS").

The courses offered are structured in three levels:

1. *ECTS accredited courses:* European Credit Transfer and Accumulation System (ECTS). For successfully completed studies, ECTS credits are awarded. The credits facilitate the transfer and progression throughout the Union. Currently the ECTS accredited courses are mainly utilized as part of the PhD programmes.
2. *Quality Labelled courses:* The quality labelling procedure has been initiated by EuroTraining with the objective of improving the high quality of delivery of courses given by European Course Providers. Quality Standards outlines key components of effective education and allows course providers to evaluate their efforts in relation to these criteria. This evaluation procedure has the ability to check that the Course Providers are delivering high quality courses to students, and provides feedback and advice so that the quality can be improved in future courses.
3. *Other courses:* This category includes all other kind of courses or events (e.g. conferences) offered on a European level.

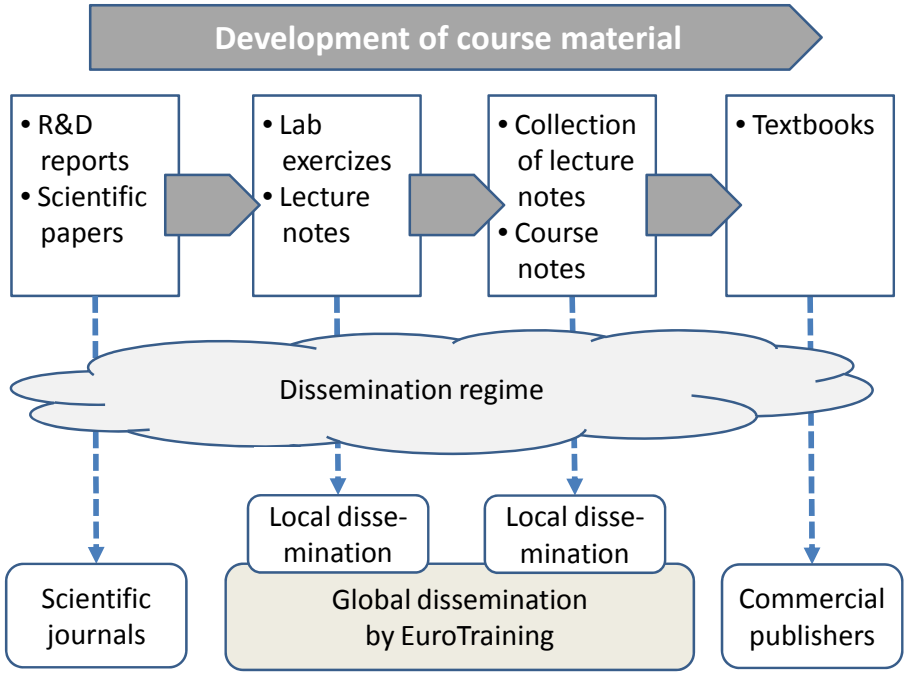
Annually EuroTraining offers more than 500 courses. Nearly half of these courses are either ECTS courses or Quality Labelled courses. Since the start in 1995 of the preceding EuroTraining project 5.400 courses have entered into the web service and more than 1.2 mill. training users have accessed the service in order to find the right training. The general rationale of the project’s course brokerage activity is shown in the figure below:



EuroTraining has more than 10.000 training subscribers who receive monthly training offers. More than 35% of EuroTraining's users come from .com domains. Adding hereto industrial users with national domain codes indicates that around 50% of EuroTraining's users are coming from industry. This is also reflected in the ranking of the popularity of the training providers: Those getting most visitors are the commercial training providers typically offering hands-on training.

Training material

The development of training material is normally a process going from writing R&D reports and scientific papers which are converted to lab exercises and lecture notes which later become an entire course. Over the years more mature course material may be turned into textbooks published by international publishers. This value chain for the development of course material is shown in the figure:

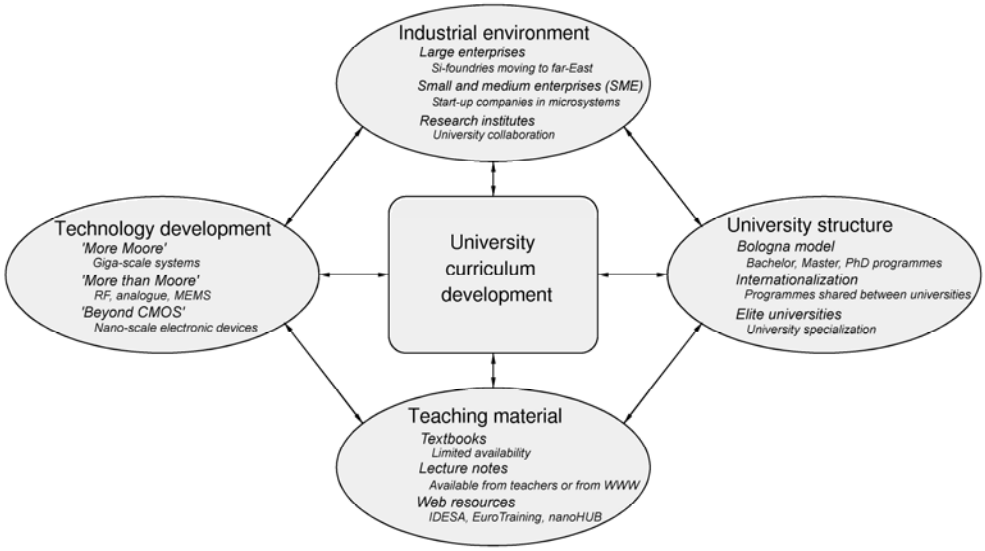


While scientific papers and textbooks are disseminated globally, the course material developed is only disseminated locally. This means that other users (universities) may have to wait for textbooks to be published some years downstream of the actual course material. By making the course material available through EuroTraining it becomes available globally and consequently new nanoelectronics and micro-/nanosystems courses become available much quicker. Thereby, this platform fills a gap between local dissemination (at one university to a particular group of students) and global dissemination by means of commercial publishers.

Training material can of course also be used by innovative industrial partners. In order to support such early take-up of new technology EuroTraining offers nearly fifty customised in-company training courses targeting specific industrial topics.

Training roadmaps - academia

EuroTraining has developed training roadmaps describing the requirements with respect to developing new nanoelectronics and micro-/nanosystems curricula. Major influencers in the development of new curricula have been defined and discussed and a model for the development of new curricula has been presented:



As part of the road mapping activity two major reports have been provided:

- D2.1-nano: Description of nanoelectronics courses and syllabuses from selected universities
- D2.1-mst: Description of micro/nanosystems courses and syllabuses from selected universities.

These reports are available on www.EuroTraining.net.

In addition to providing descriptions of selected courses and programmes, the reports outline development models for university programmes and provide a number of recommendations, both for universities in developing new programmes and for students in selecting programmes and courses.

Main recommendations for universities are:
- promote PhDs in new nanoelectronics and micro-/nanosystems areas. Phd programmes are often the starting point for developing new university programmes ranging all the way from bachelor, via master to Phd;
- promote summer schools in nanoelectronics and micro-/nanosystems. Summer schools are a good way of introducing new topics, especially in PhD programmes;
- promote cross utilization of courses among Physics/Electrical Engineering/Computer Science. Provi-ding courses which can be followed by students both from e.g. physics and electrical engineering or computer science and electrical engineering ensures broad educational programmes resulting in flexible and versatile engineers;
- promote cross utilization of lecture notes and labs. Lecture notes and lab exercises can be made available to others and can be obtained from www.EuroTraining.net;
- promote text book creation. Especially for bachelor programmes textbooks are needed, rather than loosely structured lecture notes;
- promote multiple degree programmes. Programmes shared between different universities can be an efficient way of utilizing top competences from different places;
- encourage change of track between Physics/Electrical Engineering/Computer Science when going from bachelor programme to master programme. This ensures flexible and versatile engineers.

Main recommendations for prospective students are:
- use the Internet when searching for the programme, which is most suitable for you;

- start the search at a directory or catalogue site to get a general impression about the available programmes: you can use the www.EuroTraining.net site, but you can find more sites, which you would like, and as time passes the number of useful websites is increasing;
- check the general quality of the universities which came into your scope, you can use some reliable sites that make ranking for you;
- check the available topics at the selected universities, whether your favourable topic is taught there or not, take special attention on application oriented programmes: the knowledge you can obtain from such a programme would certainly help you to find a good job or to join a successful enterprise;
- check whether the courses are available in your preferred language, which would be very useful for you if it were different from your mother tongue;
- try to find out if scholarship opportunities are offered to be applied for, and if the everyday living expenses meets your possibilities.

Training roadmaps - industry

EuroTraining has developed training roadmaps describing the requirements with respect to industrial training needed when adopting nanoelectronics and micro-/nanosystems. Two major reports have been published:

- D1.1-nano: Report with training roadmap of industrial course requirements in nanoelectronics
- D1.1-mst: Report with training roadmap of industrial course requirements in micro/nanosystems

These reports are available on www.EuroTraining.net.

These reports have been derived from the ITRS roadmaps, various EC strategy papers, web surveys and by means of a nanoExpert panel consisting of academic and industrial representatives.

The major conclusions from the roadmaps are that a stimulation of course provision is needed in areas like nanoscience and nanotechnology, including beyond CMOS. In order to stimulate the recruitment of young people it is also concluded that training is needed for all ages (school, graduate, post-graduate). However special attention is needed for actions on teachers' training (train-the-trainers) and educational materials (e.g. use of Internet and course sharing).

In order to support industrial exploitation in these areas, EuroTraining has offered a series of Training-the-Trainers courses in countries where nanoelectronics and micro-/nanosystems are less deployed.

Youngster stimulation

The electronics industry has a general concern about the tendency in recent years that young people are reluctant in choosing engineering/electronics education. This dramatically shows the importance of stimulating the interest of young people in science and technology, in helping to ensure a steady flow of qualified engineers. As an initial step, EuroTraining has collected information on national stimulation actions carried out in the Member States. This survey has resulted in a database identifying nearly 500 initiatives in the Member States.

Results and recommendations derived from this database and questionnaires sent to the national initiatives are:

- Promote incentive actions towards pupils in primary schools by offering scientific and logistic support to the teachers (example: “hands on science” in France)
- Encourage research organisations in the area of nanotechnologies to directly or indirectly promote awareness actions based on leisure activities (example: “RVO” in Belgium)
- Support awareness actions toward a diverse public and based on practical experiments (example: “nanoTruck” in Germany)
- Keep a significant part of research budgets for awareness actions towards youngsters.
- Promote meetings between youngsters and professionals working in industry and laboratories.

List of conference/journal publications:

- EuroTraining makes a great effort in disseminating the recommendations through presentation at conferences, workshops and in journals dealing with education and training. A list of recent presentations resulting from the EuroTraining programme is given below.
- Erik Bruun and Ivan Ring Nielsen, “Presentation of a Nanoelectronics Curricula Study,” Proc. 7th European Workshop on Microelectronics Education, pp. 74-75, Budapest, Hungary, May 27-30, 2008. http://www.eda-publishing.org/ewme2008/htmls/pdfs/A301.pdf
- Zsolt Illyefalvi-Vitéz and Hervé Fanet, “EuroTraining develops the Nanoelectronics Training Roadmap,” Proc. 7th European Workshop on Microelectronics Education, pp. 76-77, Budapest, Hungary, May 27-30, 2008. http://www.eda-publishing.org/ewme2008/htmls/pdfs/A302.pdf
- Zsolt Illyefalvi-Vitéz and Hervé Fanet, “The Nanoelectronics Training Roadmap of EuroTraining,” Proc. 20th EAEEIE Annual Conference (European Association for Innovation in Education for Electrical and Information Engineering), pp. 1-6, Valencia, Spain, May 22-24, 2009.
- Erik Bruun and Ivan Ring Nielsen, “University Curricula in Nanoelectronics,” Proc. 20th EAEEIE Annual Conference (European Association for Innovation in Education for Electrical and Information Engineering), pp. 1-6, Valencia, Spain, May 22-24, 2009.
- Ivan Ring Nielsen and Erik Bruun, “EuroTraining - Supporting University Programmes in Nanoelectronics,” Proc. 8th European Workshop on Microelectronics Education, pp. 86-88, Darmstadt, Germany, May 10-12, 2010. http://www.mes.tu-darmstadt.de/media/mikroelektronische_systeme/pdf_3/ewme2010/proceedings/sessioniii/nielsen_paper.pdf
- Erik Bruun and Ivan Ring Nielsen, “A model for the development of university curricula in nanoelectronics,” European Journal of Engineering Education, vol. 35, pp. 655-666, December 2010
- Illyefalvi-Vitéz, Zsolt; Bátorfi, Réka: EuroTraining survey on Microsystems curricula, COMS 2009
- Hervé Fanet, Annette Locher, Chantal Tardiff: Eurotraining survey on Microsystems training requirements, COMS 2009
- Réka Bátorfi, Zsolt Illyefalvi-Vitéz, Göran Wendin, Harry Heinzelmann, Danilo Demarchi, Pierluigi Civera: EuroTraining Courses of Microsystems Technology and Nanotechnology for Electronics, oral session, 16th Internaitonal Symposium for Design and Technology in Electronic

Packaging (SIITME), September 23-26, 2010, pp. 73 - 78, ISBN: 978-1-4244-8123-1, Digital Object Identifier: 10.1109/SIITME.2010.5653755, IEEEXplore.

4.1.5 The address of the project public website, if applicable as well as relevant contact details.

www.eurotraining.net

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4.2 Use and dissemination of foreground

The Management Board has developed a business model for the management of the knowledge (IPR) originating from the project. It is the intention of the plan to maximise the take up of nanoelectronics and micro-/nanosystems in European industry and academics. The IPR asset management programme helps to manage the intellectual property created in the EuroTraining project. The purpose of this programme is to maximise the value of the project's IP, to enable competitive advantage to be derived from it, and to minimise infringement risks.

The consortium has identified three major exploitable results arising from the project work (foreground):

- Training roadmaps
- European Training Infrastructure (web service)
- Mailing list

Training roadmaps (Joint ownership)

EuroTraining has developed training roadmaps describing the requirements with respect to developing new nanoelectronics and micro-/nanosystems curricula. Major influencers in the development of new curricula have been defined and discussed and a model for the development of new curricula has been presented. As part of the road mapping activity two major reports have been provided:

- D2.1-nano: Description of nanoelectronics courses and syllabuses from selected universities
- D2.1-mst: Description of micro/nanosystems courses and syllabuses from selected universities.

EuroTraining has developed training roadmaps describing the requirements with respect to industrial training needed when adopting nanoelectronics and micro-/nanosystems. Two major reports have been published:

- D1.1-nano: Report with training roadmap of industrial course requirements in nanoelectronics
- D1.1-mst: Report with training roadmap of industrial course requirements in micro/nanosystems

Exploitation:
Taking into account the validity of the findings reported in these deliverables it is important that exploitation takes place without any delay. Therefore the project partners have pursued general publication of the results made available both at www.eurotraining.net as well as through several dissemination activities as described in section 2.

European Training Infrastructure (Joint ownership)

The web service developed as part of the project forms the key IPR asset. The infrastructure enables the establishment of a *single European training market* supporting the Commissions ERA strategy.

EuroTraining is working with a wide variety of course suppliers, ranging from professional vendors, IPs/NoEs to individual lecturers. Most of these suppliers are rooted in national, European or international R&D. Therefore the training supplied through EuroTraining facilitates the exploitation of knowledge originating from all over Europe. In recent years EuroTraining has been promoting courses derived from many RTD projects like Stimesi (IST-027773), CLEAN (IST-026980), REASON (IST-30193), InTraLed (IST-2001-34631), microBUILDER (IST-027175), IDESA and many more.

As described in section 2 above, the number of training provider subscribers, the number of courses and the availability of training material has been steadily growing over the duration of the project. Consequently, being the only single European training provider, also means that we have reached a level of nearly 200.000 monthly users looking for the right training (this has more than doubled over the duration of the project).

The system has been developed in such a way that training providers can by themselves enter new course information. However, most other information will remain static after the completion of the project. Experience from the past has also shown that the usage of the infrastructure will decrease after the completion of the project.

Exploitation:
Taking into account the tremendous effort laid down in establishing and maintaining the infrastructure the partners will ensure that the monthly mail shots with upcoming courses is maintained. Thereby the customers (the course providers) will appreciate the service and the users will continuously be reminded on the joint European course offer.
None of the partners will, however, have resources available to keep alive the material brokerage, the road mapping, Quality Labeling and the customized training activities. It is the hope of the partners that a new EC supported project will create the framework for a continued support of the industrial take-up of nanoelectronics and micro-/nanosystems (around 50% of the users are coming from industry).

Mailing list (Joint ownership)

A long microelectronics training track record of the partners involved in the consortium has helped to establish an authentic database of interested industrial and academic contacts throughout Europe. The database contains more than 10,000 European nanoelectronics and micro-/nanosystems training users. The mailing list is used to reach the training users on a monthly basis offering upcoming courses and relevant training news.

Exploitation:
The list of training subscribers will be used to distribute the above mentioned monthly mail shots. It is however, the experience of the partners that without continuous efforts on attracting new users the mailing list will erode with 500-1.000 subscribers every year (mainly caused by changes in the subscribers change of professional careers).

Section A (public)

TEMPLATE A1: LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS, STARTING WITH THE MOST IMPORTANT ONES										
NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers[2] (if available)	Is/Will open access[3] provided to this publication?
1	A model for the development of university curricula in nanoelectronics	Erik Bruun	European Journal of Engineering Education	Vol35, Dec 2010	Taylor & francis	London	2010	655-666		no
2	EuroTraining develops the nanoelectronics training roadmap	Zsolt Illyefalvi-Vitéz	Proc. of 7th European Workshop on Microelectronics Education	2008	EWME	Budapest	2008	76-77		no
3	Presentation of a nanoelectronics curricula study	Erik Bruun	Proc. of 7th EWME	2008	EWME	Budapest	2008	74-75		no
4	The nanoelectronics training roadmap of EuroTraining	Zsolt Illyefalvi-Vitéz	Proc. 20th EAEEIE	2009	EAEEIE	Valencia	2009	1-6		yes
5	University curricula in nanoelectronics	Erik Bruun	Proc. 20th EAEEIE	2009	EAEEIE	Valencia	2009	1-6		
6	EuroTraining – Supporting university programmes in nanoelectronics	Ivan Ring Nielsen	EWME	2010	EWME	Darmstadt	2010	86-88		no
7	EuroTraining survey on Microsystems curricula	Zsolt Illyefalvi-Vitéz	COMS 09	2009	COMS	Copenhagen	2009			

[2] A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

[3] Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.

TEMPLATE A2: LIST OF DISSEMINATION ACTIVITIES								
NO.	Type of activities[4]	Main leader	Title	Date	Place	Type of audience[5]	Size of audience	Countries addressed
1	Poster	Ivan Ring Nielsen	IEEE NORCHIP	2007-11-19	Aalborg, DK	Scientific Industry	120	Nordic
2	Paper presentation	Zsolt Illyefalvi-Vitéz	EWME	2008-05-28	Budapest, HU	Scientific	100	EU
3	Paper Presentation	Erik Bruun	EWME	2008-05-28	Budapest, HU	Scientific	100	EU
4	Poster	Zsolt Illyefalvi-Vitéz	ESTC	2008-09-01	Greenwich, UK	Scientific Industry	150	EU
5	Exhibition booth	Caroline van Oosterhout	IMAPS	2008-09-15	Helsingoer, DK	Industry	120	Nordic
6	Paper presentation, flyer distribution	Zsolt Illyefalvi-Vitéz	SIITME ISDT	2008-09-18	Brasov, RO	Scientific	100	EU
7	Paper presentation	Zsolt Illyefalvi-Vitéz	IEEE CMPT	2008-09-21	Warsaw, PL	Scientific Industry	80	EU
8	Poster presentation of ET Roadmap, flyer distribution	Zsolt Illyefalvi-Vitéz	Zoltán Bay Nanotechnology Workshop	2008-12-10	Miskolch, HU	Scientific Industry	100	EU
9	Poster at SYSMODEL	Ivan Ring Nielsen	ARTEMIS	2009-02-18	Copenhagen, DK	Scientific Industry	30	Nordic
10	Flyer distribution	Ivan Ring	ARTEMIS	2009-02-26	Copenhagen,	Scientific	60	EU

[4] A drop down list allows choosing the dissemination activity: publications, conferences, workshops, web, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

[5] A drop down list allows choosing the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias ('multiple choices' is possible.

		Nielsen			DK	Industry		
11	Paper presentation	Zsolt Illyefalvi-Vitéz	ISSE	2009-05-13	Brno, CZ	Scientific Industry	80	EU
12	Panel session + papers	Erik Bruun	EAEEIE	2009-06-24	Valencia, ES	Scientific	80	EU
13	Panel session + papers	Hervé Fanet	COMS	2009-09-02	Copenhagen, DK	Scientific Industry	30	EU
14	Poster presentation	Ivan Ring Nielsen	NORCHIP	2009-11-16	Trondheim, NO	Scientific Industry	120	EU
15	Poster presentation	Ivan Ring Nielsen	IP-ESC	2009-12-03	Grenoble, FR	Scientific Industry	300	EU
16	Presentation on ET Courses	Zsolt Illyefalvi-Vitéz	IEEE Hungarian Sector	201001-07		Scientific Industry	100	EU
17	Exhibition boot	Ivan Ring Nielsen	DATE	2010-03-11	Dresden, DE	Scientific Industry	2500	EU
18	Paper presentation	Ivan Ring Nielsen	EWME	2010-05-11	Darmstadt, DE	Scientific	80	EU
19	Panel session + papers	Hervé Fanet	MINATEC	2010-06-23	Grenoble, FR	Scientific Industry	40	EU
20	Paper presentation	Zsolt Illyefalvi-Vitéz	SIITME	2009-09-25	Pitesti, RO	Scientific Industry	80	EU

Section B (Confidential[6] or public: confidential information to be marked clearly)
Part B1

The applications for patents, trademarks, registered designs, etc. shall be listed according to the template B1 provided hereafter.

The list should, specify at least one unique identifier e.g. European Patent application reference. For patent applications, only if applicable, contributions to standards should be specified. This table is cumulative, which means that it should always show all applications from the beginning until after the end of the project.

TEMPLATE B1: LIST OF APPLICATIONS FOR PATENTS, TRADEMARKS, REGISTERED DESIGNS, ETC.					
Type of IP Rights[7]:	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Application reference(s) (e.g. EP123456)	Subject or title of application	Applicant (s) (as on the application)

[6] Note to be confused with the "EU CONFIDENTIAL" classification for some security research projects.

[7] A drop down list allows choosing the type of IP rights: Patents, Trademarks, Registered designs, Utility models, Others.

Part B2 Please complete the table hereafter:

Type of Exploitable Foreground[8]	**Description of exploitable foreground**	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	**Exploitable product(s) or measure(s)**	**Sector(s) of application**[9]	**Timetable, commercial or any other use**	**Patents or other IPR exploitation (licences)**	**Owner & Other Beneficiary(s) involved**
General advancement of knowledge	Training roadmaps	No		Nano roadmap: Industry Academia MNT roadmap: Industry Academia	Nanoelectronics industry Nanoelectronics education	2010 -	None	Joint ownership
exploitation of results through EU policies	European Training Infrastructure (web)	Yes		Web service with training	Nanoelectronics industry Nanoelectronics education	2010 -	None	Joint ownership
exploitation of results through EU policies	Mailing list	Yes		Promotion of service	Nanoelectronics industry Nanoelectronics education	2010 -	None	Joint ownership

In addition to the table, please provide a text to explain the exploitable foreground, in particular:

- Its purpose
- How the foreground might be exploited, when and by whom
- IPR exploitable measures taken or intended
- Further research necessary, if any
- Potential/expected impact (quantify where possible)

[19] A drop down list allows choosing the type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

[9] A drop down list allows choosing the type sector (NACE nomenclature) : http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

A General Information *(completed automatically when **Grant Agreement number** is entered.*

Grant Agreement Number:	ICT-211806
Title of Project:	Provision of a European Training Infrastructure
Name and Title of Coordinator:	Mr. Ivan Ring Nielsen, Director

B Ethics

1. Did your project undergo an Ethics Review (and/or Screening)? • If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports? Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 *'Work Progress and Achievements'*	***0No***
2. Please indicate whether your project involved any of the following issues (tick box) :	***NO***
RESEARCH ON HUMANS	
• Did the project involve children?	
• Did the project involve patients?	
• Did the project involve persons not able to give consent?	
• Did the project involve adult healthy volunteers?	
• Did the project involve Human genetic material?	
• Did the project involve Human biological samples?	
• Did the project involve Human data collection?	
RESEARCH ON HUMAN EMBRYO/FOETUS	
• Did the project involve Human Embryos?	
• Did the project involve Human Foetal Tissue / Cells?	
• Did the project involve Human Embryonic Stem Cells (hESCs)?	
• Did the project on human Embryonic Stem Cells involve cells in culture?	
• Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	
PRIVACY	
• Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	
• Did the project involve tracking the location or observation of people?	
RESEARCH ON ANIMALS	
• Did the project involve research on animals?	
• Were those animals transgenic small laboratory animals?	
• Were those animals transgenic farm animals?	
• Were those animals cloned farm animals?	
• Were those animals non-human primates?	
RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	
DUAL USE	
• Research having direct military use	0 Yes 0 No
• Research having the potential for terrorist abuse	

C Workforce Statistics

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator		1
Work package leaders		4
Experienced researchers (i.e. PhD holders)		4
PhD Students		
Other	7	17

4. How many additional researchers (in companies and universities) were recruited specifically for this project?	**2**
Of which, indicate the number of men:	1

D Gender Aspects

5. Did you carry out specific Gender Equality Actions under the project?

○	Yes
X	No

6. Which of the following actions did you carry out and how effective were they?

		Not at all effective				Very effective
❑	Design and implement an equal opportunity policy	○	○	○	○	○
❑	Set targets to achieve a gender balance in the workforce	○	○	○	○	○
❑	Organise conferences and workshops on gender	○	○	○	○	○
❑	Actions to improve work-life balance	○	○	○	○	○
○	Other:					

7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?

○ Yes- please specify

X No

E Synergies with Science Education

8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?

○ Yes- please specify

X No

9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?

X Yes- please specify Website

○ No

F Interdisciplinarity

10. Which disciplines (see list below) are involved in your project?

X Main discipline[10]:

○ Associated discipline[10]: ○ Associated discipline[10]:

G Engaging with Civil society and policy makers

11a Did your project engage with societal actors beyond the research community? *(if 'No', go to Question 14)*

○	Yes
X	No

11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?

○ No

○ Yes- in determining what research should be performed

○ Yes - in implementing the research

○ Yes, in communicating /disseminating / using the results of the project

[10] Insert number from list below (Frascati Manual).

11c In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?	○ ○	Yes No

12. Did you engage with government / public bodies or policy makers (including international organisations)

○	No
○	Yes- in framing the research agenda
○	Yes - in implementing the research agenda
X	Yes, in communicating /disseminating / using the results of the project

13a Will the project generate outputs (expertise or scientific advice) which could be used by policy makers?

○	Yes – as a **primary** objective (please indicate areas below- multiple answers possible)
X	Yes – as a **secondary** objective (please indicate areas below - multiple answer possible)
○	No

13b If Yes, in which fields?

Agriculture		Energy		Human rights	
Audiovisual and Media		Enlargement		Information Society	
Budget		Enterprise		Institutional affairs	
Competition		Environment		Internal Market	
Consumers		External Relations		Justice, freedom and security	
Culture		External Trade		Public Health	
Customs		Fisheries and Maritime Affairs		Regional Policy	
Development Economic and Monetary Affairs		Food Safety		Research and Innovation	
		Foreign and Security Policy		Space	
Education, Training, Youth		Fraud		Taxation	
Employment and Social Affairs		Humanitarian aid		Transport	

13c If Yes, at which level?

- ○ Local / regional levels
- X National level
- ○ European level
- ○ International level

H Use and dissemination

14. How many Articles were published/accepted for publication in peer-reviewed journals?	**1**
To how many of these is open access[11] provided?	**0**
How many of these are published in open access journals?	**0**
How many of these are published in open repositories?	**0**
To how many of these is open access not provided?	**1**
Please check all applicable reasons for not providing open access:	
X publisher's licensing agreement would not permit publishing in a repository ❑ no suitable repository available ❑ no suitable open access journal available ❑ no funds available to publish in an open access journal ❑ lack of time and resources ❑ lack of information on open access ❑ other[12]: ……	

15. How many new patent applications ('priority filings') have been made? *("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).*		**0**
16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).	Trademark	**0**
	Registered design	**0**
	Other	**0**
17. How many spin-off companies were created / are planned as a direct result of the project?		**0**
Indicate the approximate number of additional jobs in these companies:		**0**

18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:

❑	Increase in employment, or	❑	In small & medium-sized enterprises
❑	Safeguard employment, or	❑	In large companies
❑	Decrease in employment,	❑	None of the above / not relevant to the project
X	Difficult to estimate / not possible to quantify		

19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (*FTE = one person working fulltime for a year*) jobs:	*Indicate figure:*

[11] Open Access is defined as free of charge access for anyone via Internet.
[12] For instance: classification for security project.

Difficult to estimate / not possible to quantify	X

I Media and Communication to the general public

20. As part of the project, were any of the beneficiaries professionals in communication or media relations?

○ Yes X No

21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?

○ Yes X No

22 Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?

X	Press Release	X	Coverage in specialist press
❑	Media briefing	❑	Coverage in general (non-specialist) press
❑	TV coverage / report	❑	Coverage in national press
❑	Radio coverage / report	❑	Coverage in international press
X	Brochures /posters / flyers	❑	Website for the general public / internet
❑	DVD /Film /Multimedia	❑	Event targeting general public (festival, conference, exhibition, science café)

23 In which languages are the information products for the general public produced?

❑	Language of the coordinator	X	English
❑	Other language(s)		

***Question F-10*:** Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

FIELDS OF SCIENCE AND TECHNOLOGY

1. NATURAL SCIENCES

1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]

1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)

1.3 Chemical sciences (chemistry, other allied subjects)

1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)

1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)

2 ENGINEERING AND TECHNOLOGY

2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)

2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]

2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as

geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

3. MEDICAL SCIENCES

3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)

3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)

3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

4. AGRICULTURAL SCIENCES

4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)

4.2 Veterinary medicine

5. SOCIAL SCIENCES

5.1 Psychology

5.2 Economics

5.3 Educational sciences (education and training and other allied subjects)

5.4 Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary , methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

6. HUMANITIES

6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)

6.2 Languages and literature (ancient and modern)

6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]