

# IST PROGRAMME



**Action Line: IST-2002-8.1.2**



## **End-User Development**

**Empowering people to flexibly employ advanced  
information and communication technology**

**Contract Number IST-2001-37470**

### **D1.3 Two EUD-Net Workshops Reports**

Editor:

Maria Francesca Costabile

University of Bari, Italy

#### **Summary**

This document presents the background and the activity leading to and the materials used in two workshops organized by EUD-Net. The 1st EUD-Net Workshop took place at CNR/ISTI in Pisa, Italy, during September 23 and 24, 2002. The 2nd EUD-Net Workshop took place at Philips High Tech Campus in Eindhoven, The Netherlands, during January 16 and 17, 2003.

**February 2003**

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## **Executive summary**

This document represents EUD-Net Deliverable D1.3 and includes the reports of two workshop organised by EUD-Net.

The 1st EUD-Net workshop was held during 23-24 September 2002, immediately after the Mobile HCI 02, the Fourth International Symposium on Human Computer Interaction with Mobile Devices, 18-20 September 2002, Pisa (Italy). The choice of the venue and of the dates has permitted several participants of the Workshop to also attend Mobile Symposium thus having the opportunity to disseminate the EUD-Net ongoing activities.

The 2nd EUD-Net workshop was held during 16-17 January 2003, at Philips High Tech Campus in Eindhoven, The Netherland. A visit of the Philips Home Lab to see the demos of some Ambient Intelligence projects was also included.

## 1. The first EUD-NET workshop

Workshops are a fundamental part of the EUD-Net activities. The project plans to organise and deliver three workshops over a period of eighteen months. The content of these workshops will vary and reflect the main objective of the thematic net, namely the research agenda in the end-user development field for the VI Framework. The target audience includes all members of the EUD-Net, researchers of the European countries whose research area maps to those of End User Development, and a number of invited speakers specialized in the End-User Development (EUD) area. The first EUD-Net Workshop had three distinguished invited speakers:

- Brad Myers from the Human-Computer Interaction Institute - School of Computer Science of the Carnegie Mellon University, Pittsburgh, PA, USA
- Henry Lieberman from Media Laboratory of the Massachusetts Institute of Technology (MIT) - Cambridge, MA, USA
- Alexander Repenning from the L3D, dept. of Computer Science, University of Colorado, Boulder, CO, USA

### 1.1 Background

The 1<sup>st</sup> EUD-Net workshop was organised immediately after the Fourth International Symposium on Human Computer Interaction with Mobile Devices (Mobile HCI 02) to permit the participants to attend the two events. This was the first workshop of the network and aimed at introducing the objectives of EUD-Net, that are here reported:

- to help the European Commission to prepare a research agenda in the end-user development field for the next framework,
- to increase contacts among highly-qualified research centres, both academic and industrial, in order to speed-up the production of innovative approaches,
- to promote end-user development principles and practices through a mix of activities, including workshops and participation in international events.

EUD-Net planned for its 1<sup>st</sup> Workshop immediately after its start on July 1st. The consortium decided to schedule the workshop in association with an international event likely to permit a better dissemination of EUD-Net thematics and to have common invited speakers of certain relevance in the field. Members of the consortium investigated alternatives and the best venue and dates were individuated in the symposium venue and in the working days immediately after the ones of Mobile HCI 02, namely September 23 and 24, 2002.

### 1.2 Preparatory activities

The preliminary Workshop program was proposed by the coordinator and discussed in details between the partners by e-mail.

Once the details of the workshop were finalised, the project coordinator drafted an announcement over the EUD-Net's web site. A specific one-page description of the workshop, accessed by a specific link on the home page ("EUD-NET workshop"), was up-loaded.

Moreover, a flyer was prepared and put on the EUD-Net's home page (you can see it in detail in Appendix 1). This flyer was distributed to the Network members, so that

each member could use it for dissemination purposes. To give an example, preliminary activity of dissemination of this workshop and of the EUD-Net in general, was done by UNIBA researchers when attending the following international events:

- 13th European Conference on Machine Learning (ECML'02) jointed with 6th European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD'02) held in Helsinki, Finland, 19-23 August 2002.
- 2002 IEEE Symposia on Human Centric Computing Languages and Environments (HCC'02) held in Arlington (VA), USA on 3-6 September 2002;

## 2. Organisation, structure and content of 1<sup>st</sup> workshop

### 2.1 Organisation

The EUD-Net workshop organization decided to accommodate the workshop in one of the rooms of the recently built conference center of the CNR research area in Pisa. The main conference room can accommodate about 360 people. In that center, there are several rooms for smaller meetings. At the first floor, there is a restaurant, used for coffee breaks and lunches. The workshop organization also provided help in finding the hotels to all participants that attended the workshop, whose names are in following table:

Name	Institute	e-mail
Nikolay Mehandjiev	University of Manchester Institute of Science and Technology – United Kingdom	ndm@co.umist.ac.uk
Daren Lee	University of Manchester Institute of Science and Technology - United Kingdom	darren.lee@umist.ac.uk
Alistair Sutcliffe	University of Manchester Institute of Science and Technology - United Kingdom	a.sutcliffe@co.umist.ac.uk
Volker Wulf	Fraunhofer-Institut für Angewandte Informationstechnik FIT - Germany	Volker.Wulf@fit.fraunhofer.de
Markus Eisenhauer	Fraunhofer-Institut für Angewandte Informationstechnik FIT - Germany	markus.eisenhauer@fit.fhg.de
Maria Francesca Costabile	Università di Bari, Dipartimento di Informatica - Italy	costabile@di.uniba.it
Antonio Piccinno	Università di Bari, Dipartimento di Informatica - Italy	piccinno@di.uniba.it
Olle Lindeberg	Blekinge Institute of Technology - Sweden	Olle.Lindeberg@ipd.bth.se
Yvonne Dittrich	Blekinge Institute of Technology - Sweden	yvonne.dittrich@bth.se
Anders Morch	University of Oslo - Norway	a.i.morch@intermedia.uio.no
Jan Dolonen	University of Oslo - Norway	j.a.dolonen@intermedia.uio.no
Cinzia Iacono	Think3 - Italy	Cinzia.iacono@think3.com

William Marchesini	Think3 - Italy	William.Marchesini@think3.com
Gregor Engels	Paderborn University, Dept. of Computer Science - Germany	engels@upb.de
Stefan Sauer	Paderborn University, Dept. of Computer Science - Germany	sauer@upb.de
Aldo Reolon	Telecom Italia Lab - Italy	Aldo.Reolon@TILAB.COM
Stephane Chatty	Centre d'Etudes de la Navigation Aérienne - France	chatty@cena.fr
Yannick Jestin	Centre d'Etudes de la Navigation Aérienne - France	jestin@tls.cena.fr
Philippe Palanque	LIHS-IRIT University Paul Sabatier Toulouse - France	palanque@irit.fr
Karl Hettling	Siemens Business Services GmbH & Co. OHG - Germany	karl.hettling@siemens.com
Daniela Fogli	Università di Brescia - Italy	fogli@ing.unibs.it
Boris De Ruyter	Philips Research PR Department, Eindhoven - The Netherlands	boris.de.ruyter@philips.com
Alan Blackwell	University of Cambridge – United Kingdom	Alan.blackwell@cl.cam.ac.uk
Brad A. Myers	Carnegie Mellon University - USA	brad.myers@cs.cmu.edu
Henry Lieberman	MIT Media Laboratory, Cambridge, MA - USA	lieber@media.mit.edu
Alexander Repenning	L3D, dept. of Computer Science, University of Colorado, Boulder - USA	ralex@cs.colorado.edu
Catherine Letondal	HCI group at LRI, Université Paris-Sud - France	letondal@pasteur.fr
Fabio Paternò	ISTI Istitute - Consiglio Nazionale delle Ricerche - Italy	fabio.paterno.cnuce.cnr.it
Carmen Santoro	ISTI Istitute - Consiglio Nazionale delle Ricerche - Italy	carmelina.santoro@cnuce.cnr.it
Silvia Berti	ISTI Istitute - Consiglio Nazionale delle Ricerche - Italy	Silvia.Berti@guest.cnuce.cnr.it

The hotels were located in the city center and buses were provided to transfer the attendees from hotels to the conference center in the morning, and back in the evening.

## 2.2 Structure

The workshop was organised in two days as follows:

- a background day (September 23, 2002)
- a discussion day (September 24, 2002)

The program of the two days is in Appendix 2.

## 2.3 Content

### *Background day*

The first day was organized to permit the EUD-Net partners and the invited speakers to present their contribution to the thematic network.

The first presentation of the EUD-Net coordinator was a general introduction to the network objectives, the role of workshops as outreach activity, followed by a brief overview of the aim and focus of the 1<sup>st</sup> Workshop. The documentation, due during the activities of the network, was presented.

Next the invited speakers and the persons responsible of managing nodes presented their role and their work. In the afternoon all the remaining partners presented their organization and working area.

Both morning and afternoon sessions provided a overview of various notions such as End-User, Domain-Expert User, End-User Programming and End-User Development. It was reported of some studies that say that by 2005, there will be 55 millions of end-users compared to 2.75 millions of professional users. This increases a lot the need of EUD environments. EUD is seen as multidisciplinary: it includes HCI and Cognitive Sciences, Requirements Engineering, Software Engineering, Artificial Intelligence, CSCW, Informations Systems, Psychology of programming, etc.

A first proposal of a framework for EUD was presented, with the aim of helping in a critical review of existing EUD tools and theories (see slides of A. Sutcliffe's presentation). This proposal was taken up in the discussion of the research agenda on the second day. The framework consists of three dimensions: *Representation*, *Scope*, *Initiative*. *Representation* refers to the nature of the representations used in the programming tasks between computer and end-user, ranging from abstract to concrete. *Scope* means the breadth of EUD problems and environments can support, ranging from task or domain specific to general purpose. *Initiative* (or *System Initiative*) refers to the degree to which the user is required to directly specify software, ranging from active to passive.

The importance of tailorable environments was stressed. Tailorability means the possibility to change aspects of an application's functionality. This can be done in a persistent way (by means of tailored artefacts), during the use of an application (at runtime), and be performed by users or local experts.

The ability of EUD environments to evolve as users evolve is also an important feature that was discussed.

Several domains for end user perspectives were outlined; they include education, professional domains, and domestic domains.

The slides used in the presentations are available at <http://giove.cnuce.cnr.it/EUD-NET/workshop.htm>.

### *Discussions*

According to the program in Appendix 2, the second day started with an industrial panel to discuss the industrial impact of End-User Development. Representatives of all

industrial members participated on the panel, in which they provided primarily their views on the market needs related to EUD. Some promising scenarios from industrial perspectives were outlined. They will be reported in another document related to the *Road Map* EUD-Net will define.

Indeed, the second part of the morning was concerned with the development of a *Road Map*. The discussion involved all participants, with a moderator. The emerged proposals for the Road Map are reported in a specific document. The aim of the Road Map is to provide a picture of EUD by including: what it is, what should be done, user needs, market needs, scenarios, current technology, state of art in industry, state of art in research.

The early afternoon focused on the *Research Agenda* on EUD. Again, the discussion was driven by a moderator and involved all participants. It was discussed whether and how the three dimensional framework presented the first day should be updated. It was proposed to add *domain* as a fourth dimension. Various domains were outlined, as well as significant scenarios. Current problems and future visions were also analysed.

The discussion was interesting and deep. It was also decided to summarize a first tentative definition of End-User Development, that will serve as a basis on which researchers can further argument.

**Def.** “*End User Development is a set of activities or techniques that allow people, who are non-professional developers, at some point to create or modify a software artefact*”.

The results of this discussion will be reported in a specific document related to the *Research Agenda*.

### ***Planning of activities***

As indicated in the program, at the end of the second day, future activities were discussed. The next meeting was proposed to be held in January 2002. The venue should be the Philips site in Eindhoven (The Netherlands). Philips should also try to involve other companies.

Important international conferences were analysed with the aim of organizing the next EUD-Net workshops jointly with these conferences. A proposal for a workshop at CHI 2003 (Computer Human Interaction) was submitted during the first day of the workshop, since September 23<sup>rd</sup> was the deadline for workshop submission to CHI 2003, which is the major international conference on HCI. Other candidates are INTERACT 2003 that will be held in Zurich in September 2003, and another conference (possibly CAISE - International Conference on Advanced information Systems Engineering) whose main topic is software engineering.

The coordinator is also organizing an invited session on EUD at the UAHCI 2003 in Crete, with contribution from the EUD-Net members.

### ***Network Management Meeting***

This part of the workshop was concerned with specific activities related to the network management, and involved the managing nodes. Membership agreements between

associate members and managing members, which must be defined by the end of September, were also discussed.

## **2.4 Dissemination materials**

Dissemination materials of the 1st EUD-Net workshop are provided on the EUD-Net website <http://giove.cnuce.cnr.it/EUD-NET/workshop.htm>. The transparencies used by members attending the workshop are also available at that website.

Dissemination materials for EUD-Net were also discussed in general at the workshop. The network website already mentioned is very important for information about the network. In addition, the flyer reported in Appendix 1 is frequently distributed at important conferences by attending members of the network.

Moreover, it was decided to set up two mailing lists: one internal, for all the members of EUD-Net, and the other public; the latter will allow anybody interested in the field of End User Development to subscribe and post messages of relevance to the EUD community.

The invited session on EUD organised by Fabio Paternò at UAHCI 2003 in Crete is also worth for dissemination. Finally, it was discussed to contribute to an edited book, to be published by MIT Press or Kluwer. Contacts by partners with publishing companies are now in progress.

## **3. Concluding remarks about 1<sup>st</sup> workshop**

The 1st EUD-Net Workshop aimed at introducing the EUD field and the objectives of EUD-Net. During the first day, the notions of End-User, Domain-Expert User, End User Programming and End User Development were widely discussed among all attendees.

From the “discussion day”, it became clear that participants appreciate the importance of EUD and look forward to the EUD-Net research agenda. The industry partners also demonstrated a significant amount of their particular interests.

In conclusion, the 1<sup>st</sup> EUD-Net workshop turned out to be a useful working meeting for EUD-Net, as well as a valuable dissemination activity, which raised the awareness of the participants about EUD-Net, its aims and objectives, and the working methodology.

## **4. The 2<sup>nd</sup> EUD-NET workshop**

### **4.1 Background**

The 2nd EUD-Net workshop was organised in the 7<sup>th</sup> month of EUD-Net activity in order to provide the possibility to all members to directly be involved in the discussion for revising the drafts of the deliverables due at the end of the first six months.

Preliminary versions of each draft were prepared in advance and already circulated among the net members in order to collect feedback and suggestions. However, in order to agree on the final version to be submitted to European Commission, it was

decided to have at the second workshop presentations of such deliverables with a following discussion among the participants.

The workshop was also organized in order to plan the activities of the second semester of EUD-Net work and to have a meeting of the executive committee.

This 2<sup>nd</sup> Workshop was planned during November 2002. Boris Van de Ruyter made the proposal to the coordinator to host the workshop at the Philips High Tech Campus in Eindhoven, and the coordinator discussed the proposal via email with the executive Committee. The Committee was very pleased of such a proposal, that is a sign of significant interest about the activity of the net by one of the most important companies in EU. The committee also defined the date of the workshop.

## **4.2 Preparatory activities**

The preliminary Workshop program was proposed by the coordinator and discussed in details among all partners by e-mail.

Once the details of the workshop were finalized, the project coordinator drafted an announcement in the EUD-Net's web site.

# **5. Organisation, structure and content of 2<sup>nd</sup> workshop**

## **5.1 Organisation**

The EUD-Net Workshop organization decided to accommodate the workshop in one of the meeting room of the Philips High Tech Campus in Eindhoven (The Netherlands), during 16 and 17 January 2003. The Philips High Tech Campus in Eindhoven is the biggest site of Philips in Europe in which thousands of people work in research. The most important laboratory in such site is HomeLab in which Ambient Intelligence is studied.

In a building close to that one in which the meeting was held, a reserved room in the canteen of the High Tech Campus provided lunches. Coffee breaks was served directly in the meeting room.

About accommodation, the workshop organization provided a list of comfortable hotels in the city center together with a shuttle service to the High Tech Campus in the morning and back in the evening .

In the following table the list of participants that attended the workshop is reported:

<b>Name</b>	<b>Institute</b>	<b>e-mail</b>
Daren Lee	University of Manchester Institute of Science and Technology - United Kingdom	darren.lee@umist.ac.uk
Volker Wulf	Fraunhofer-Institut für Angewandte Informationstechnik FIT - Germany	Volker.Wulf@fit.fraunhofer.de
Markus Klann	Fraunhofer-Institut für Angewandte Informationstechnik FIT - Germany	markus.klann@fit.fhg.de

Maria Francesca Costabile	Università di Bari, Dipartimento di Informatica - Italy	costabile@di.uniba.it
Antonio Piccinno	Università di Bari, Dipartimento di Informatica - Italy	piccinno@di.uniba.it
Lars Lindberg	Blekinge Institute of Technology - Sweden	Lars.Lindberg@bth.se
Yvonne Dittrich	Blekinge Institute of Technology - Sweden	yvonne.dittrich@bth.se
Anders Morch	University of Oslo - Norway	a.i.morch@intermedia.uio.no
Elvira Donzelli	Think3 - Italy	Elvira.Donzelli@think3.com
William Marchesini	Think3 - Italy	William.Marchesini@think3.com
Stefan Sauer	Paderborn University, Dept. of Computer Science - Germany	sauer@upb.de
Stephane Chatty	Centre d'Etudes de la Navigation Aérienne - France	chatty@cena.fr
Philippe Palanque	LIHS-IRIT University Paul Sabatier Toulouse - France	palanque@irit.fr
Daniela Fogli	Università di Brescia - Italy	fogli@ing.unibs.it
Piero Mussio	Università di Brescia - Italy	mussio@ing.unibs.it
Boris De Ruyter	Philips Research PR Department, Eindhoven - The Netherlands	boris.de.ruyter@philips.com
Reinder Haakma	Philips Research PR Department, Eindhoven - The Netherlands	reinder.haakma@philips.com
Catherine Letondal	HCI group at LRI, Université Paris-Sud - France	letondal@pasteur.fr
Fabio Paternò	ISTI Istitute - Consiglio Nazionale delle Ricerche - Italy	fabio.paterno.cnuce.cnr.it
Carmine Ciavarella	ISTI Istitute - Consiglio Nazionale delle Ricerche - Italy	carmine.ciavarella @guest.cnuce.cnr.it

## 5.2 Structure

The workshop was organised in two days as follows:

- The first day (January 16, 2003) with presentation of deliverables, presentation and visit of HomeLab, preliminary discussions on Research Agenda and Roadmap and finally administrative issue discussion (cost statements);
- The second day (January 17, 2003) with presentation of the results of the discussions, planning of future work and concluding remarks.

The program of the two days is in Appendix 3.

### 5.3 Content

#### *First day*

The first day was organized to permit the presentation and the relative discussion of deliverables due within the end of January 2003 (D1.1 Roadmap, D1.2 Research Agenda and D4.1 Evaluation Report).

The first presentation was by the Thematic Network coordinator Fabio Paternò about the two workshops. He primarily appointed that the Roadmap should be a picture of what we now have, and the Research Agenda should describe the future of the research in the Europe on the EUD field. Then the other deliverables was presented and discussed too.

Next Markus Klann, Fabio Paternò and Maria Francesca Costabile presented respectively the three Deliverables above mentioned.

Markus Klann presented goals of the Roadmap written so far, its structure, an overview of the topics involved and so on. The structure of the research topics concerns

- the current perspectives of EUD;
- a first systematization of questions, approaches, areas of applications, projection of how the field will or should unfold
- unfolding of research;
- strands of research: understanding people as end-users developers;
- research activities and directions;
- industrial application;

Furthermore, an overview of topics to be considered has been done: co-evolution, gentle slope to complexity, design during use vs. design before use, from user interface design to adaptation, shared initiative adaptivity vs. adaptability. During the presentation a number of issues for further discussion on the Roadmap raised: a common glossary on EUD terms, timeline, reference to the contribution of members of the Net, separation between Roadmap and Research Agenda, market opportunity for EUD.

In the discussion followed the talk was addressed:

- by prof. Mussio the issue to understand the users' needs.
- The awareness of being an end-user developers by an end-user.
- The possibility that the presently approach top-down from Computer Science to Industry will evolve in the future in a bottom-up approach.
- A first classification of end-users.

- How to have information about EUD from industries; it's not easy to catch information because they aren't prepared to reply on this matter.
- Definition of the differences between Research Agenda and Roadmap. The Roadmap as a state of the art, at the present. One way to ground the Roadmap is to see the papers proposed so far in the EUD area.

In the following, Fabio Paternò gave a presentation of the Research Agenda. He presented the definition of EUD found out from the first workshop in Pisa. Software applications from the Office™ platform already present features for EUD, but we are far from a systematic adoption of them in the commercial software. A characteristic in which industries are interested is the tailorability of products (instead of development from scratch), because the cost of software development is prohibitive for narrow domains.

Two principal requirements for EUD are to have no rigid burden between use and design, and to have not many details confusing the user. This needs adequate support. A possibility would be UML, but unfortunately UML and related tools are not enough because they are designed for communities of software engineers. In EUD we have to design system languages for some communities of users.

The promising research lines seems to be domain-specific Design and Tailoring Languages and a particular area that suites EUD needs seems to be the environments for Component-Based Development (a type of this environment is now developing at Bonn University, a Net partner).

An other interesting area is Natural Development, even if the term is confusing and nowadays isn't still so clear and defined. It should better to speak of Incrementally Formalized Development.

Then it was the turn of Maria Francesca Costabile presenting deliverable "D4.1 Evaluation Report".

Just after the lunch (from 1:30 p.m. to 2.30 pm.) the attendees had the opportunity to visit HomeLab. HomeLab will serve a great purpose in the integration and deployment of Ambient Intelligence-related technologies in novel applications and at the same time will be used to better understand human interaction with the entire new world researchers working in Philips try to create. HomeLab consists of a true Ambient Intelligent environment with all electronic features and functions integrated into people's backgrounds. This is realized by a wide spectrum of technologies, ranging from micro-sized radio devices with autonomous power support, via all kinds of portable, wirelessly interconnected devices for personal communication, vast amounts of distributed storage functions, up to large wall-sized displays that support virtual and multi-modal interaction. Comprising a fully equipped home, complete with living, sleeping and kitchen facilities, HomeLab is equipped with a distributed infrastructure in which Ambient Intelligence can be developed and investigated very well.

Coming back to the meeting room, a presentation titled "Ambient Intelligence – Experience Technologies" on "Imagineering the Future" was given by Emile Aart, vice president and scientific director of Philips Research, to better explain the reasons of the existence of the innovative HomeLab. He pointed out that the results of ongoing miniaturization of electronic circuits and the corresponding exponential increase in

embedded computational power, gives the possibility to integrate electronics into people's environments. However the way people experiences that computing power is about to change. The awesome buttons and menu options of present-day equipment will disappear, to be replaced by intelligent systems that people can operate through user interfaces that are an extension of their natural speech and movements, through touch panels, heat and weight sensors, and intelligent cameras that track people eyeball movements. The intelligent system responds to and even anticipates people needs by the sound of their voice, the gestures of their hands and the expressions on their face. The corresponding paradigm is called Ambient Intelligence: it refers to electronic environments that are sensitive and responsive to the presence of people. It improves the quality of life by creating the desired atmosphere and functionality via intelligent, personalized interconnected systems and services. Ambient Intelligence environments, as the one implemented by HomeLab, are characterized by their ubiquity, transparency and intelligence. Ubiquity because the user is surrounded by a multitude of interconnected embedded systems. Transparency because the equipment is invisible and integrated into the background of user's surroundings. Intelligence because the system is able to recognize the people that live in it, adapt itself to them, learn from their behaviour, and even show emotion. Ambient Intelligence aims at enhancing people leisure experiences and enriching the quality of his life. The main reason is to investigate the practical, psychological and social implications of Ambient Intelligence, Philips Research created HomeLab.

The talk was appreciated very much by all attendees. Afterward, workshop attendees were divided into two groups to discuss, separately, on the two main deliverables: Roadmap and Research Agenda. The discussions have been very useful to better define the two documents and to outline the directions toward the two deliverable should go.

Finally, network administrative issues about cost statements of the first period were addressed.

### ***Second day***

The second day started with the presentation of the new partner Università di Brescia (Italy) recently introduced in EUD-Net, to which Prof. Piero Mussio and Dr. Daniela Fogli belong.

Then the evaluation report was discussed. In particular the discussion was addressed by Maria Francesca Costabile toward quantitative and qualitative evaluation and the process to be followed.

About quantitative indicators, suggestions was to monitor the number of posting in the EUD-Net mailing list and the number of persons subscribing it (Sauer), number of accesses to EUD-Net Web site (Palanque). Furthermore, Mussio and Sauer proposed to have also as indicators the number of events in which EUD-Net has been disseminated by the members.

A qualitative evaluation could come from activities to increase the access to the mailing list as putting the glossary on-line (Palanque), forwarding messages of others mailing lists external to the net (Dittrich) and finally (from Paternò) to have a database of the mailing list.

In the end, future activities of the net were planned.

### ***Executive Committee Meeting***

During the Executive Committee it was decided to organize a workshop on EUD at CHI '03 conference, substituting the summer school foreseen among the various activities of the net.

This workshop should be a good starting point to publish in a book, with Kluwer, the EUD-Net activity.

### **5.4 Dissemination activities**

Activities and materials to disseminate about EUD-Net were also discussed in general at the workshop. The network website is very important for information about the network. It includes dissemination material of the 2nd EUD-Net workshop that is provided on the EUD-Net website <http://giove.cnuce.cnr.it/EUD-NET/eindhoven.htm>.

The summer school planned as one of the various activities of the net has been substituted by the workshop on EUD at CHI '03 conference in Fort Lauderdale (FL) USA organised by Fabio Paternò, Volker Wulf (members of the Net), Henry Lieberman (from MIT), and Alex Repenning of University of Colorado (invited speakers at the first EUD-Net Workshop in Pisa). The results of selected papers of the workshop will be published in a book by Kluwer. This book will be an important contribution to raise interest among researchers of the international community.

Other activities planned by members of the net and discussed at the workshop are:

- an Industrial seminar on End User Development was organized by UMIST on April 15<sup>th</sup> in Manchester (UK);
- a two day working meeting on Tailorability, organized by Anders Morch from University of Oslo, and Ivonne Dittrich from Blekinge Institute of Technology (Sweden). It will be held in Ronneby (Sweden);
- a proposal for a special interest group on EUD at Interact '03 conference, that will be held in Zurich (Switzerland) in September 2003.

## **6. Concluding remarks about 2<sup>nd</sup> workshop**

The 2nd EUD-Net workshop was organised in the 7<sup>th</sup> month of EUD-Net activity. The main reason was to provide the possibility to all members to directly be involved in the discussion about the activity performed in the previous six months, also revising the drafts of the deliverables due at the end of the first six months.

The other reason for meeting was to plan further work of the network. In fact ,as described in the previous sections, a number of events and other activities useful for dissemination were planned. Lastly, a meeting of the executive committee took place at the workshop.

## Appendix 1: the EUD-Net flyer

# EUD-Net - End-User Development - Empowering people to flexibly employ advanced information and communication technology

<http://giove.cnuce.cnr.it/eud-net.htm>

The low price of computing devices and the increasing availability of Internet connections have made a large percentage of the European population able to and interested in accessing computer-based applications. Most European citizens have become familiar with the basic functionality and interface of computers. In addition, some results from the research in human-computer interaction and usability have started to penetrate certain product markets, thus improving the levels of usability there.



However, we believe that while some substantial progress has been made in improving the way users can access interactive software systems, developing applications that effectively support users' goals still requires considerable expertise in programming that cannot be expected from most European citizens. Thus, one fundamental challenge for the coming years is to develop environments that allow people without particular background in programming to develop their own applications, with the ultimate aim of empowering people to flexibly employ advanced information and communication technologies within the future environments of ambient intelligence.

Over the next few years we will be moving from *easy-to-use* (which has yet to be completely achieved) to *easy-to-develop interactive software systems*.

The main purpose of the network of excellence is to help the European Commission to prepare a research agenda in the end-user development field for the next framework and to increase contacts among highly-qualified research centres, both academic and industrial, in order to speed-up the production of innovative ideas and approaches.

During the lifetime of this network, we plan to consolidate and to build on that we have achieved to date. We aim at promoting end-user development principles and practices through a mix of outreach activities, which include workshops and participation in major international meetings. Further, having established a Europe-wide community of research groups in end-user development, we aim at defining the shared vision of the future of RTD in this research area. This shared vision will provide a focus for European RTD, highlighting our strengths and leading to promotion of European expertise on the global marketplace.

**Consortium:** The consortium is composed of the following academic partners: ISTI, CNR, Pisa, Italy; UMIST - Manchester, UK; University of Bari, Italy; FRAUNHOFER-FIT, Sankt Augustin, Germany; University Toulouse 3, France; University Paris-Sud, France; University of Cambridge, UK; University of Oslo, Norway; Blekinge Institute of Technology, Sweden; University of Paderborn, Germany; and the following industrial partners and representatives of application domains: Philips, The Netherlands; CENA, France; Think3, France; Telecom Italia Lab, Italy; Siemens, Germany.

### Recent Publications

P. Bottoni, M.F.Costabile, D. Fogli, S.Levialdi, P.Mussio, *Multilevel Modelling and Design of Visual Interactive Systems*, Proc. Of Human-Centric Computing Symposia HCC 2001, Stresa, Italy, September 5-7, 2001, IEEE CS Press, pp. 256-263.

N. Mehandjiev and L. Bottaci, guest editors. *Journal of End User Computing: Special Issue on Scaling Up End User Development*. 10 (2), Spring 1998.

G.Mori, F.Paternò, C.Santoro, *CTTE: Support for Developing and Analysing Task Models for Interactive System Design*, IEEE Transaction on Software Engineering, August 2002.

R Oppermann.; H.Simm.; *Adaptability: User-Initiated Individualization*, In: Oppermann, R. (ed.): *Adaptive User Support – Ergonomic Design of Manually and Automatically Adaptable Software*. Hillsdale, New Jersey 1994: Lawrence Erlbaum Ass.

## Appendix 2: 1<sup>st</sup> Workshop program

September 23, 2002 - Background day			
9.00	9.30	Fabio Paternò (ISTI)	<a href="#">Introduction to the EUD-Net EU Network of excellence</a>
9.30	10.00	Brad Myers (Carnegie Mellon university)	<a href="#">Making Programming Easier by Making it More Natural</a>
10.00	10.30	Fraunhofer-FIT	<a href="#">Tailorable and Situation-Aware Applications</a>
10.30	11.00		Coffee break
11.00	11.30	Henry Liberman (MIT MEDIA Laboratory)	<a href="#">Your Wish is My Command: Programming by Example for End-User Development</a>
11.30	12.00	Università di Bari, Dipartimento di Informatica	<a href="#">Supporting Domain-Expert Users</a>
12.00	12.30	Alexander Repenning (University of Colorado)	<a href="#">End User Development: Who needs it?</a>
12.30	13.00	ISTI Istitute - Consiglio Nazionale delle Ricerche	<a href="#">Visual Model-based Design of Multi-platform Interactive Applications</a>
13.00	14.30		Lunch
14.30	15.00	University of Manchester Institute of Science and Technology	<a href="#">A Comparative Framework for End User Development</a>
15.00	15.15	Paderborn University, Dept. of Computer Science	<a href="#">Visual model-based software development</a>
15.15	15.30	Cambridge University	<a href="#">User priorities for EUD: Review and research agenda</a>
15.30	15.45	HCI group at LRI, Université Paris-Sud	<a href="#">Programming or Flexibility? Design of Programmable Applications with Biologists</a>
15.45	16.00	Philips Research Eindhoven	<a href="#">End-user development for consumer electronics</a>
16.00	16.30		Coffee break
16.30	16.45	Telecom Italia Lab	<a href="#">Service Lab: a way to design new TLC products and services</a>
16.45	17.00	Laboratoire de l'IRIT en Interaction Homme- Systèmes, Université Toulouse 3	<a href="#">Formal Notations and Tools for addressing both Safety and Usability concerns for Interactive Systems</a>
17.00	17.15	University of Oslo	<a href="#">End-user participation in evolutionary development</a>
17.15	17.30	Blekinge Institute of	<a href="#">Designing for changing work and business</a>

		Technology	<a href="#">practices</a>
17.30	17.45	Think3 corporate info	<a href="#">Multimedia CAD user interfaces: experiences and challenges</a>
17.45	18.00	Siemens Business Services GmbH & Co. OHG	<a href="#">Enterprise Application Integation, an intelligent way to integrate existing application islands</a>
18.00	18.15	Centre d'Etudes de la Navigation Aérienne	<a href="#">Of programming GUIs, robots and aircraft pilots</a>
20:00			Social Dinner

September 24, 2002 - Discussion day		
9.00	10.30	Discussion on industrial impact of end-user development
10.30	11.00	 <i>Coffee break</i>
11.00	13.00	Development of research agenda on end-user development
13.00	14.30	 <i>Lunch</i>
14.30	16.00	Development of research agenda on end-user development
16.00	16.30	 <i>Coffee break</i>
16.30	17.00	Planning of activities
17.00	18.00	Network Management Meeting

### Appendix 3: 2<sup>nd</sup> Workshop program

<b>January 16, 2003</b>		
9.00	9.30	Welcome and introduction
9.30	10.00	Presentation and discussion Roadmap deliverable - Markus Klann - FhG FIT
10.00	10.30	Presentation and discussion Research Agenda deliverable - Fabio Paternò - ISTI/CNR
10.30	11.00	Presentation and discussion Evaluation deliverable - Francesca Costabile - University of Bary
11.00	12.00	Discussion chaired by Nikolay Mehandjiev - UMIST
12.00	13.00	Break for Lunch
13.00	15.00	Visit to HomeLab
15.00	17.00	Discussion chaired by Nikolay Mehandjiev - UMIST
17.00	18.00	Network Administrative issues

<b>January 17, 2003</b>		
9.00	10.00	Presentation of the results of the discussion
10.00	12.00	Finalization of the deliverables (including a eud-net vocabulary)
12.00	13.00	Discussion of planning of work
13:00 Closing of the workshop		