# The Learning Citizen

**- issue n° 4, January - March 2003 -**

**– Editorial –**

## « Room Full of Mirrors[1] »

I personally do not have a crystal ball, nor do I know anyone who has one which is operational. People, nevertheless, need to spend some time looking into the future, otherwise the present loses some of its sense. But like in a room full of mirrors, we should avoid falling into the trap of living confined and staring at each other. We will only see a distorted view of what we think is the future, but which is only more of the same, seen from a different angle.

Looking into the future might require looking beyond what we know and probably making unusual associations with things we thought were not related in the first time.

In the present issue, we take a step back and try to see what eLearning could bring us in the future. *Where will the GRID take us; what is being developed as material to stimulate critical thinking and problem solving skills; what can be expected of accessibility standards; how can we create motivation for the isolated users; how will our children learn in the future?* These are some of the questions that we raise here. Hopefully, you will find some of the answers in our newsletter, but not all of them. Hopefully again, you will

find here also some inspiration to look for the rest of the answers. But remember that the rest of the answers lie in the most unusual places.

*Carlos Triay*

**In this issue:**



**– Foreword by Paul Lefrere –**

## eLearning in 2003 and beyond

In 2003, we can expect eLearning to follow much the same path as in 2002: large-scale adoption of relatively limited forms of eLearning, accompanied by many small-scale, more innovatory "expeditionary" projects, some of which will lead to disruptive change. Many examples of expeditionary projects can be found in Norris et al [2](2003). These will be based on processes or enabling technologies or specifications or prospective standards that are not yet widespread, or are new to the people trying them out.

Paul Lefrere

Newsletters such as this one help to make the outcomes of some of those projects known to a wider audience. In a few cases, those outcomes lead to the development of popular products and services, or shared resources (as in the Open Source model of software development and open-access databases of "re-usable learning objects"). The European Commission's RTD programmes have funded many relevant projects (e.g., Ariadne, Easel, Guardians, Universal), as well as providing support for the development of relevant specifications (e.g., Quality Assurance, within the CEN/ISSS Learning Technology workshop). The key issues have been covered well in such projects, and knowledge of the results has diffused fairly quickly into the eLearning market, as well as into the practices of the actors involved in each project, who have been active in disseminating the results. All that work should be built upon, rather than being repeated.

As in previous years, we can expect some of the successes in eLearning to be based upon the work of just one or two individuals (e.g., WebCT). More often, projects that become influential will be the result of relatively well-funded efforts by teams tasked with developing not just some good ideas, but with developing a complementary Technology Implementation Plan that they must try to implement. This is the pattern established in the FP5 programme in its Technology-Enhanced Learning projects and elsewhere. In line with experience in other countries, and unsurprisingly, the proportion of truly influential ("big win") projects is relatively low, and most projects meet much more modest objectives: delivering results that have value to very specific communities. As we have seen in 2002, we can magnify that value by sharing experiences. The Learning Citizen Cluster, and its association with the project MOBIlearn, is an example of sharing across a set of projects. Another, complementary approach is to run special events and workshops at which experiences can be shared. The K2 workshops are an example used in the Commission's concertation days. In 2003, we can expect to see more use of specific events for eLearning, some of which will include American-style "tool-bash" meetings at which vendors and developers can test the interoperability of their content and their systems.

From 2003, I anticipate that the European Commission will make more targeted use, notably through the instrument of "Integrated Projects", of the team model that was the backbone of FP5 projects. In the case of eLearning, we will see this approach continued in FP6 through support from, amongst others, the directorate "Interfaces, knowledge and content technologies, applications information market". The title of that directorate captures a number of the "hot" areas attracting attention across the world. Other areas that will

### European Commission RTD programmes

European Union research activities are implemented for the most part under multi-annual research, technological development and demonstration (RTD) framework programmes.

The current **sixth RTD Framework Programme** (2002-2006) is the instrument to make the European Research Area a reality.

More details can be found at:

*www.cordis.lu/fp6*

### The Open University UK

The Open University is Britain's largest university, with more than 200,000 people studying its courses. Since its establishment by Royal Charter in 1969, it has opened the door to higher education for more than 2 million people.

OU courses are designed for students studying in their homes or workplaces, in their own time, anywhere in the UK, Ireland, throughout Europe and often further afield. Courses use a range of teaching media – specially-produced textbooks, TV and radio programmes, audio and video tapes, computer software and home experiment kits. Personal contact and support comes through locally-based tutors, a network of 330 regional study centres in the UK and overseas and annual residential schools.

*www.open.ac.uk*

undoubtedly feature in many FP6 projects on eLearning and knowledge management, and seem to be priorities for action, include the semantic web, the semantic grid, mobile technologies and "ambient intelligence". The kinds of learning scenarios in which such technologies can be helpful have been set out particularly clearly by the IST programme's Advisory Group [3](ISTAG, 2001) and more can be expected of that group in 2003-4.

What has been done less well?

It is clear from "observatory" studies is that many eLearning projects are unnecessary, in that they replicate much that is already known from previous projects. This is a common finding about RTD and is not specific to eLearning. So it must be addressed generally. Ways must be found to manage FP6 projects to avoid substantial unwanted duplication of RTD in Europe and the rest of the world, particularly in "hot" areas to do with the knowledge economy and the learning citizen such as eLearning. The Commission seems well aware of the issues here, and to minimise waste it is liaising with non-EU agencies (e.g., in the USA and Canada).

Globally, there seems to be a higher level of duplication in the eLearning area than in other areas of RTD, which perhaps indicates a lack of awareness of who is doing what, or a "race to market". To address this at European level, the Commission has funded a number of "road map" projects on eLearning and related matters (e.g., ROCKET and eLearnTN). Those projects are tracking developments in Europe and beyond, to provide informed appraisals of trends in this area, and may well feature in future issues of this newsletter.

At the same time, eLearning vendors and developers are working together, across national boundaries. An example of this collaboration can be seen in Europe's eLIG (eLearning industry group), which contributes to meetings of European bodies such as the CEN/ISSS, in identifying priorities for developing specifications for eLearning. Members of the eLIG, such as IBM, have supported major events such as the eLearning summit and show every sign of continued interest in working closely with end-users to develop enhanced forms of eLearning, accessible to as many citizens as possible.

What kinds of "enhanced" forms of eLearning can we anticipate?

Some will represent fairly modest enhancements, such as linking eLearning to reading lists and library catalogues, or providing restricted forms of personalisation (e.g., large print

### Referenced EU projects

**Ariadne** implements methods for the effective and efficient use of telematics based solutions for academic education and corporate training.

*www.ariadne-eu.org*

**Easel** explores technologies which can be brought together to offer course constructors an environment in which they can readily combine existing learning objects to create new online educational offerings.

*www.fdgroup.com/easel*

**Guardians** identifies technology for the next generation of Information Management tools and specifies how the required infrastructure will allow distributed components to inter-work.

*www.fdgroup.com/guardians*

**Universal** develops an open exchange system for course units between institutions of higher education.

*www.ist-universal.org*

**MOBIlearn** deals with the creation of a virtual network for the diffusion of knowledge and learning via a mobile environment.

*www.mobilearn.org*

**K2** aims to share knowledge. This is achieved through a suite of events where the participating projects can meet and share experiences.

*www.know-2.org*

**Rocket** prepares a strategic roadmap for future developments in organisational learning related to education of engineers and workers.

*rocket.vub.ac.be*

**eLearnTN** studies the effects of IST in the education field by learning from the experience of its members from the contributions of external experts.

*www.elearntn.org*

versions of material, for older users), and the ability to provide instant access to glossaries and translations of technical terms. Little or no RTD is needed here. Target dates of 2003-4 could realistically be set for implementations of those enhancements. There are more demanding enhancements that can better be described as In Concept (meaning that it is technically feasible, but no funding or timeline has been set), or In Dreams (meaning enhancements that are desirable but may not be technically feasible at this moment). The Americans use the phrase "grand challenges", to indicate areas of work that are interesting and important, but with no guarantee of success. In FP6, the equivalent programme would seem to be concerned with Future and Emerging Technologies. It is conceivable that 2003 will see some eLearning RTD there, for example in the area of the semantic grid.

Finally, it is likely that, both in RTD projects and in the eLearning industry, increasing attention will be given to how to obtain a significant reduction in the total costs of eLearning (to users as well as to providers of eLearning), how to integrate eLearning and other resources and approaches (e.g., blended learning) and how to improve the scalability of implementations of eLearning.

*Paul Lefrere*

**Paul Lefrere** trained as a scientist (BSc, Physics, University of London; MSc in Quantum Electronics and PhD in Physics, University of Keele). He moved into educational technology & psychology via a Nuffield Foundation project on remedying student misconceptions in physics.

After the Nuffield Foundation project, Paul joined the Open University. In his years there, he have consistently been at the forefront of developments which in due course become mainstream, such as networked collaborative learning and knowledge codification and management.

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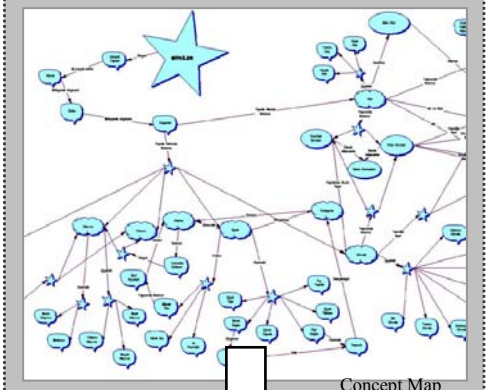
**– A question of Pedagogy –**

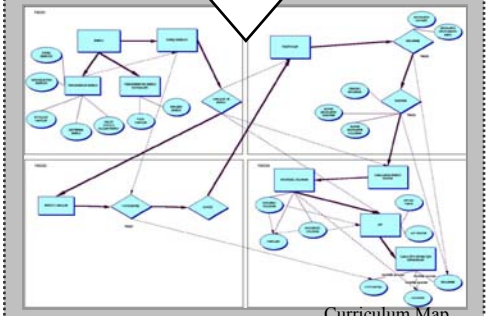
## eLearning for excellence

eLearning can dramatically change the way we learn by providing effective content to match learning needs and applying those materials successfully in classroom teaching. By the proper use of eLearning in K-12 education, the quality of education can be independent of the deficiencies in the learning process caused by non-standard practices and lack of resources.

For using eLearning effectively in K-12 Education, we need to analyze and thoroughly understand the ongoing process, needs, wants and deficiencies of the current education system. Once this is done, it becomes obvious that eLearning has to be positioned as a powerful tool to support the school teaching, not a substitute for it. The challenge is to design an adaptive and personalized education system with a holistic approach, develop all the tools to support the system like multimedia software, teacher's aids, community portals, platforms, etc. and successfully implement the system.



Concept Map



Curriculum Map

Siemens Business Services (SBS) has worldwide experience in developing the best-in-class education materials for K-12 education by combining conceptual learning with state-of-the-art visualization and interactivity. Three-dimensional animations, interactive simulations, experiments and exercises, entertaining lectures, and movies, provide a personalized, interactive and focused learning process. Siemens Business Services Turkey has developed the K-12 Education material and now it is globally responsible from K-12 education and enterprise eLearning content development within SBS' Centre of Community for eLearning.

Siemens Business Services' educational product line consists of one of the very few comprehensive curriculum-based education products in the world. At the moment there are over 90 CDs full of content in Mathematics, Science, Language, History, Social Sciences, etc. The products are originally in Turkish. The high school content is also localized in Chinese and localizations in several other countries are underway. The products have the following unique characteristics:

-- A vast number of learning objects in a variety of topics supported by high quality multimedia content make the system adaptive to any curriculum.

-- The use of concept maps in the development phase makes sure that the learning objects are in appropriate order and the concepts are broken down into smaller and more manageable chunks for the learner.

-- Different learning styles accompanied with an assessment system provide a unique learning environment.

-- For the empiric approach to instruction, virtual experiment environments are designed. 3D animations together with the feedback and reinforcement mechanisms support persuasion in learning.

-- Various animations, simulations and interactive exercises make sure that all lessons are understood thoroughly.

-- Detailed performance analysis is supported with a benchmarking system where the users can transmit their test scores via the Internet to make comparison with other users.

-- Thousands of Internet links are integrated into the learning objects where the user can have a structured access to selected relevant sources in the Internet, which acts as a portal.

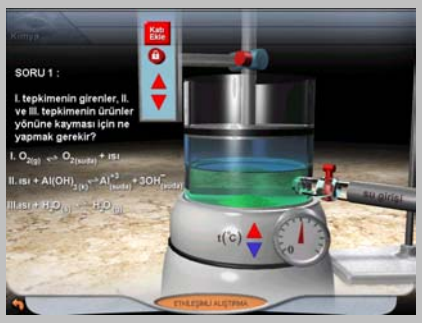
**About Siemens Business Services**

Organizations are in need of continuous change in order to pursue and catch new business opportunities and to improve and increase their efficiency and productivity under the market conditions and circumstances of today.

SBS supports such change and the associated transformation with its end-to-end solutions based on a chain of "consulting-design-installation-operation-maintenance" values by using the technology as a tool. Operating in the ICT sector, SBS Turkey is among the leading system integrators of Turkey with over 500 employees working in 15 different cities. Its fields of business are Telecommunication, Public Utilities (Electricity/Water/Gas Distribution), Industries, Retail, Finance & Insurance, Internet, Transport and many others.

As eLearning constitutes one of the most essential elements in e-transformation and it can be used in any of these sectors, SBS is doing major investment in eLearning technologies and content.

*www.sbs.com.tr*



-- Localization in several languages and adaptability to different curricula is possible due to the modular structure.

-- The products have received several awards from recognized authorities in ICT and education sectors.

-- The content is tested and certified by official authorities in various countries.

The system brings several advantages to everyone who is involved in the education system. Formal education institutions like schools can now offer a much more effective and entertaining learning process with the use of a rich multimedia environment. Ministries of Education can offer a more standardized learning environment especially in diverse locations that is less sensitive to inequalities in terms of teaching quality, different methods, etc. without compromising the advantages of the current system. Instructors and education professionals are equipped with very powerful tools to be more successful in their job. Finally the students learn better and enjoy their school life if eLearning is implemented properly.

These tools also provide the opportunity to extend the education system more to home use as the students can easily use parts of the same material themselves at home. Other benefits of SBS K-12 Education Content can be summarized as: stimulating critical thinking and problem-solving skills by enabling conceptual learning and providing a more individualized learning through an assessment system linked to learning objects.

Today, most of the education professionals can see the endless benefits that successful implementation and use of eLearning brings to the education system. One very key point is the successful implementation here. The aim always has to be to create a system that is sustainable with minimum intervention. In order to achieve this, teachers' training and virtual community building must be part of the implementation plan.

*Ahmet Eti*

Ahmet Eti

**Ahmet Eti** graduated from METU Electrical and Electronics Engineering in 1988. He first started his professional career in the Electronics Research Institute of Ankara-TUBITAK (The Scientific and Technical Research Council of Turkey).

He founded the Computer Aided Education and Multimedia Research Laboratories, in 1996 and became the General Manager of Sevgi Education and Information Technologies Inc.. In 1999, he founded Sebit Education and Information Technologies Inc. and he is currently eLearning director for Siemens Business Services in Ankara.

Ahmet Eti served as the Turkish representative in numerous Education Technology international events and conferences. He is also a member of The Institute of Electrical and Electronics Engineering (IEEE) and Association for Computing (ACM).

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## – Technology Watch –

# The GRID

The GRID is widely seen as a step beyond the Internet, incorporating pervasive high-bandwidth, high-speed computing, intelligent sensors and large-scale databases into a seamless pool of managed and brokered resources, available to industry, scientists and the man in the street.

The name, GRID, itself draws the analogy between the pervasive availability of electrical power and that of computing and data, coupled with mechanisms for their effective use.

For the scientist, the benefits of the GRID will include the enabling of large-scale scientific collaborations, encompassing distributed data from diverse sources, involving virtual teams spanning the globe, supported by ubiquitous computing power combining the power of many high-performance centres. For industry the benefits will include those available to scientists together with the enabling of new and collaborative methods of working. The man in the street will benefit from access to information and entertainment with an unprecedented level of flexibility and availability. This access will free him from the constraints of the traditional workplace and, at the same time, open up new possibilities for learning and leisure. All people will be able to benefit from the conversion of data into knowledge delivered through a hardware infrastructure driven by intelligent, multilayered and multifunctional software. Most importantly, because the GRID will be pervasive and available to all, its benefits will be available not only to large organisations, but also to small enterprises and the private individual. The power of the GRID will be accessible not only by the largest computers, but also from the smallest hand-held devices.

The GRID should be seen as much more than a “go faster” Internet. It will indeed incorporate higher bandwidth and access to remote data storage, intelligent sensors and computing power. These will exceed what is currently available by several orders of magnitude. However, the major advance of the GRID will be the combination of these resources through powerful management, brokering and searching software. This will bring new levels of functionality and economic and societal benefits to everyone, enabling the new “knowledge” society.

Although the technologies supporting the operation of the GRID are still under development and it will probably not support mass market applications for at least another five years, scientific and industrial applications are already beginning to make use of these emerging capabilities. It is now common for networked workstations to be harnessed to work together on a single large task to make use of their spare cycles. The seti@home project is an example of this technology in action and an example which shows a use transcending the boundaries of organisations and the barriers of resource ownership. New models for the use of computing resources, databases and other forms of

Francis Wray

**Francis Wray**'s career in the scientific consultancy and computer business extends over 20 years. During this period he has been involved in technical, managerial and strategic issues relating to the application of new technology, particularly computer systems, to practical problems. His technical specialism is in the areas of advanced signal processing algorithms and high-performance computing. He has held senior positions in private and public companies and has extensive experience of European collaborative projects.

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information are beginning to emerge and the "seamless pool of managed and brokered resources" is beginning to take shape.

Early opportunities to exploit the GRID may well lie in the areas of medicine and education. Medicine is a strong candidate to use this technology in a wide range of its activities: drug discovery which makes extensive use of large, distributed databases and powerful computers; image processing and volume reconstruction, for example in MRI, PET and 3D tomography, which need very significant computing power for results in a clinically relevant time; cytological classification which can become a powerful tool when coupled to large demographic and genome databases; and the numerically intensive simulation of a range of prosthetics from heart valves to replacement joints. All of these can benefit significantly from the capabilities which the GRID is beginning to offer, resulting in major improvements in patient care.

The potential the GRID brings to education and to remote and distance learning in particular, is significant. This significance lies not merely because of the powerful computing resources the GRID will make widely available, but rather because of the access to brokered resources it will bring. Of course the importance to education of powerful computing, for example in the wide range of simulations it enables, and of access to large databases and their conversion into knowledge is great, but it is the support for effective mechanisms for charging and supplying services which will open up the market for remote learning. The GRID will have the capability to support those business models essential to make that market happen by supporting a highly flexible environment where a range of educational resources from a range of suppliers will be available and highly adaptable to the needs of particular individuals and organisations. The GRID will enable the educational supermarket where an extensive range of products can be "put in the trolley" depending on the highly customised requirements of the particular purchaser. The vendors of these products may be as remote from the enduser as the beer manufacturer is from the person who opens the can, but the income streams and customer value will be equally real in both cases.

To put this all into some sort of tangible context, suppose I want to learn a foreign language. Several different suppliers will supply different products designed to develop my skills in that language. Some of these products will be on-line and interactive, such as practising to speak and

**Some References**

*"Nine EU-funded projects have been clustered with the intention to stimulate the wide deployment of appropriate technology and to support the early adoption of best practice. This will be achieved by raising the awareness of potential users of the solutions developed, by connecting technology suppliers with those who will deploy it and by fully identifying and exploiting synergies within the cluster."*

The Grid-Start website is a good starting point for world-wide GRID developments

*www.gridstart.org*

Health-Grid is a website dealing with the medical use of the GRID.

*"The Health GRID cluster gathers grid-related projects with the following goals :*

*- acquire and share experience in deploying biomedical applications using the existing middlewares*

*- promote the grid concept in the biomedical community*

*- identify the specific biomedical requirements on the middleware technology and make them known to the GridStart cluster*

*The HealthGRID cluster is the embryo of a proposal for an health grid in the 6th framework programme"*

*www.healthgrid.org*

listen in that language. Some of these products will work off-line, for example those developing my writing and reading skills. The GRID will make available brokered services in language training by giving me access to suitable modules which suit my levels of skill and the rate at which I want to progress. This brokering will involve supporting me in finding, choosing and paying for appropriate learning modules. It will support those providing language tuition, for example by creating a pool of online language tutors. In this way, I can be anywhere in the world and receive tuition, from a tutor based anywhere else in the world, at times and at a rate which suits my individual requirements. This brokering creates major opportunities for new business models for those receiving services and those supplying services. Language tuition is already moving online and the flexibility, effectiveness, interactivity and availability of what is offered will develop rapidly as the GRID matures. This simple example for language tuition can be repeated in many different areas of educational endeavour.

The Learning Citizen Cluster of projects is developing some of the components which will fill the shelves of the educational supermarket. These components will merge and mutate and some new ideas will be developed and incorporated into them. Our expectation is that what is being developed now will find a real and significant use in the highly connected world the GRID will bring about in the near future.

*Francis Wray*

**More References**

*"SETI@home is a scientific experiment that uses Internet-connected computers in the Search for Extraterrestrial Intelligence (SETI). You can participate by running a free program that downloads and analyzes radio telescope data"*

*www.setiathome.ssl.berkeley.edu*

There is also a good supporting article describing the GRID (in French) at the following URL address:

*www.swissup.com/art_content.cfm?upid=FR3130*

For an example of a brokered language service take a look at the following link on Online English tuition

*www.englishtown.com*

**– eLearning Standards –**

## The Accessibility Jigsaw Puzzle

Learning Technology Standards are a good thing – we should have lots of them! But we should make them fit together and work together. So what is this all about?

Learning Technology Standards fall into two camps:

-- Those that standardize existing practices

-- Those that enable new practices

Of course a really good standard does both. A standard that can do this is really all things to all people. By providing a focus for existing practices it gives ways that vendors can harmonise with each other and reap the benefits of: (1) Generic products, (2) Economies of scale and (3) Opening up new markets.

Andy Heath

By providing a focus for new practices such a standard can allow us to stand on each others' shoulders and share the benefits of our efforts. For accessibility this can mean using technology in ways that can improve participation and lessen social exclusion. In short – using technology to improve the quality of people's lives.

Accessibility benefits a much wider audience than those people who have in the past been described as disabled. A person's individual needs may not be obvious at all and may not even be known to that person. For example there are many people with dyslexia that do not know it. Demand for systems to be more accessible is often unintentionally repressed by the nature of existing systems and products. We use what is available because that is all that is available. Technologies that improve accessibility can release some of that repression and sometimes it will be surprise us where the benefits fall.

There is no shortage of work to do in providing Access for All to online systems and to eLearning. And there is no shortage of organizations working on the problems across the globe. Significant work is underway in several places in Europe, USA, Australia and Japan. What there is out there is a great many people working on the same problems and all producing slightly different solutions but with a great deal of common functionality. It is time to bring some of the pieces together. From fragmentation consensus is starting to emerge on how to make systems accessible.

The later we leave off from doing this the more work will need re-doing. Accessibility needs to be built into the fabric of our technology standards and products built to meet those standards. I believe the world of accessible technology standards and practices is ready to move to another level of cohesion and doing so is necessary so that all can benefit from the advantages of the eLearning expansion.

So what are the areas of diversity from which consensus and cohesion are ready to emerge, what are the jigsaw pieces and where might some of them fit?

A list of the diversities would include:

-- Disabilities and needs: Intrinsically diverse – the world and the condition of people are diverse and complex

-- Devices: from desktop computers to PDA's and mobile phones

-- Assistive Technology: as varied as disabilities, wide range, specialised, low level interfaces

### About Andy's Institution

The Telematics in Education Research Group (TERG) at Sheffield Hallam University aims to provide education and training providers with the best evidence base to improve the integration of new technologies into teaching and learning.

*www.shu.ac.uk/terg*

### Acknowledgments

Acknowledgments are owed for the contribution to the work by CERTH-ITI, particularly Dr. Demetrios Sampson and Mr. Nikos Manouselis, who provide the link with the LCC user communities and also the Verkkosalkku Project and Petri Virtanen who is providing input on symbol-based languages and other areas.

-- Approaches: bespoke approaches, Operating systems, applications, etc.

-- Standards and Guidelines: no shortage of these.

Then there are organizations and particular standards. I cannot hope to list them all here and my apologies go to those I omit, but here I give a few of the more significant ones and go on to point out the significance of their work.

One of the most significant is the World Wide Web[4] (W3C) consortium which is engaged in a very large number of pieces of relevant work. Firstly there is the family of works based around XML including media-level formats such as SMIL and SVG and MathML and process level languages and formats that work well with XML such as XSLT, CSS and many pieces of work around how to use XML in real networked environments. XML is of course a huge step forwards for accessibility. There is the W3C work on profiles for device description (CC/PP) and some work in the Semantic Web family on a language that can be used to express accessibility properties – Evaluation and Report Language (EARL).

With a very close relationship with the W3C work is the work of the Web Accessibility Initiative [5](WAI) with the Web Content Accessibility Guidelines (colloquially WCAG) – important technical heuristics, Authoring Tool Accessibility Guidelines (ATAG) and User Agent Accessibility Guidelines (UAAG).

There is IMS[6] with many relevant specifications, notably the IMS Learner Information Package specification. A current version of this specification can carry rudimentary information about the functional accessibility requirements of a learner and a more extensive version of this element is currently being worked on.

There is the International Committee for Information Technology Standards V2[7] group in the US who are designing an Alternative Interface Access Protocol (AIAP) and have recently announced their intention (meetings have begun) to bring agencies together to "do the accessibility roadmap".

There is CEN-ISSS Learning Technologies workshop whose work in this area (our work) will be described later.

Then there are the Meta-data initiatives, notably the IEEE LTSC Learning Objects Metadata Standard[8] (LOM) and the Dublin Core[9].

Last but no means least are the European Telecommunications Standards Institute[10] and the ISO body with a difficult acronym ISO/IEC JTC1 SC36[11]. All of

**CEN/ISSS and the Learning Citizen Cluster**

We are working with several projects in the LCC, through CERTH-ITI (Center for Research and Technology Hellas – Informatics and Telematics Institute, Greece) who are acting as the link between our working group and the user communities of the LCC projects.

In this way we have feedback from groups with special educational needs (illiterate youngsters, people with mental retardation etc).

We already have some experience of implementing current versions of IMS Learner Information Package suitably extended for this kind of context. In the end analysis I think you can only get this right if you build at least trial implementations for evaluation with real users.

The Finnish Verkkosalkku Digital Impartiality project (*www.verkkosalkku.net*) is also working with us. I'd like to stress that CEN-ISSS Learning Technologies (*www.cenorm.be/isss/Workshop/LT/Default.htm*) is an open forum and that all contributions are welcome. There's much to do if we can agree who does what and co-operate on things.

At time of writing we are in process of setting up our web pages and email list. If you would like to be included on the email list please contact the author, Andy Heath at

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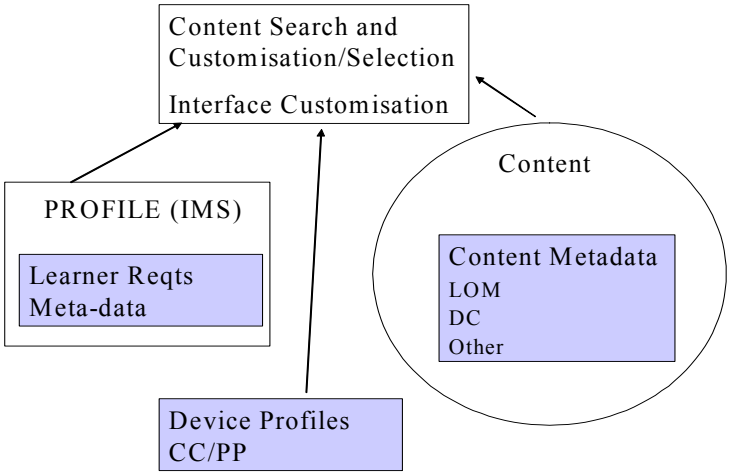
these bodies and many others are doing highly relevant work.

So how can any of these pieces fit together? There are many ways and many scenarios. One such scenario involves W3C device profiles, IMS Learner Profiles and Metadata as in the diagram.




In this scenario content is selected, customized and perhaps adapted according to the accessibility preferences of the learner, which are expressed in the Learner Profile. The content selection operates on Metadata that is associated with the particular content and matched to information about devices (input devices, output devices, control devices) that is expressed according to the CC/PP standard. So the parts that must work together here for this scenario to actually run are the device profiles (CC/PP), the Learner Profile and the content metadata. For our purposes here this is very simplified and there are many other factors to take into account. There are also many other possible scenarios, for example content needs to be discovered from wherever it is.

In order for this scenario to work at all there needs to be appropriate Metadata associated with a piece of content and that is where our work enters the picture.

In the accessibility requirements work we are studying the IEEE Learning Objects Metadata Standard to see how it can be used to carry appropriate Metadata for accessibility to work together with these other specifications. Our focus is mainly, not exclusively, on the Metadata needed for selecting/adapting content for persons having special learning needs such as particular cognitive impairments including such things as hearing impairment.

*Andy Heath*

**Andy Heath** is a lecturer in Computer Studies and Networking at Sheffield Hallam University and is attached to the TERG. He has worked in Learning Technology Standards for four years. He made major contributions to many specifications and standards including:

-- IMS Question and Test Interoperability

-- IMS Learner Information Package

-- IMS Guidelines for Developing Accessible Learning Applications

-- IMS Accessibility for Learner Information Project (under development)

-- BSI BS7988A code of practice for the use of information technology in the delivery of assessment (*edd.bsi.org.uk*)

His focus is on accessibility with also an eye to assessment.

He has been active in CEN-ISSS Learning Technologies Workshop for several years and is currently leading work in that forum on accessibility requirements Metadata.

IMS Specifications can be found at *www.imsglobal.org*

– Perspectives of eLearning –

# Search for the HERO…

The statistical narrative of the European prison system makes depressing reading. According to the latest figures, there are around 364,000 prisoners in EU jails. The prison population has been rising steadily, and has grown by 27% in EU member states over the past decade. The current average number of prisoners per 100,000 people in Europe as a whole is 88. In many EU countries, prisons are overcrowded. The UK, for example, currently jails 12,000 more prisoners than the 'official' maximum. This situation has a 'knock on' effect on rehabilitation. For example, a recent UK Home Office Audit of Prisons concluded that, because of space shortages, and a subsequent reduction in the free time available to prisoners, "the time inmates spent on education fell in 71% of prisons".

But overcrowding is not the only issue. Prisons could almost be seen as laboratories for health, social and psychological problems. On average, 56% of all prisoners entering EU jails are unemployed. The unemployment rate for ex-offenders is 88% within two years of release. A recent survey suggested that, in the current EU labour market, 90% of prisoners would be ineligible for current jobs on offer. Given these figures, it is perhaps not surprising that 60% of all released prisoners re-offend within two years of release, the figure rising to 70% for young offenders.

But the statistics that are really throwing a scare into European policy makers – and the public – are the figures on health. A range of surveys suggest that around 70% of prisoners suffer from some form of mental illness – typically depression, anxiety or a drug-related complaint. Indeed, the evidence suggests that around 60% of prisoners are drug-users on entry and that, despite the availability of drug support services within the prison system, around 40% of inmates use intravenous drugs whilst inside. Naturally, this situation is promoting widespread anxieties about the effects of IV drug use on HIV prevalence and that of similar diseases. Current figures suggest that HIV prevalence varies enormously within the prison system, from less than 1% to around 24% in Spain. However, some studies put the prevalence rate for hepatitis B at 78% and 75% for hepatitis C.

Dr. Joe Cullen

**Joe Cullen** is Director of the Collaborative Learning Unit and is the Academic Dean of the Tavistock Institute, London. Before joining the Tavistock Institute, Joe's career included teaching (at the Universities of Cambridge; Loughborough; Leeds Metropolitan; North London and the Open University), and working in social and environmental psychology; artificial intelligence and expert systems, and research methods. Joe also worked as a consultant on projects in urban regeneration and the film industry.

At the Tavistock Institute, Joe has focused mainly on health, learning and technology development. He has co-ordinated a range of large pan-European research and technology development (RTD) projects, including HERO, and his current research interests include research and evaluation methodologies; collaborative knowledge systems and virtual reality; drug misuse; HIV/AIDS; prisons and the criminal justice system; international development; and informal learning.

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And finally, there is the cost. To keep each prisoner locked up costs around 43,000 € per year. This means that the annual bill to the European taxpayer to maintain our overcrowded prison system runs at around euro 16 billion – around the cost of the entire Framework VI Programme. It needs to be emphasised, of course, that this 'general maintenance' bill represents the tip of the iceberg. Since around 60% of offenders re-offend, and most crime is the result of 'habitual re-offending', it doesn't take rocket science to predict that any measures that help to reduce re-offending will have a direct impact on both the economic cost of crime – which in the UK for example averages euro 96 billion a year – as well as its social cost.

Against this background, the HERO project explores what might be termed the extremes of social exclusion within the Information Society. HERO stands for Health and Educational Support for the Rehabilitation of Offenders. It is a research and technology development (RTD) project funded by the European Commission under the 'Information Society Technology' (IST) Programme, and involves nine partners from five European countries. HERO addresses the two key problems that the prison system faces: how to improve conditions in prisons, and how to reduce levels of re-offending, and so reduce the growing number of people sent to prison. HERO tackles these problems in two main ways. Firstly by helping prisoners and prison professionals make more informed and more effective decisions on things like health and education whilst 'inside'. Secondly, by helping offenders to prepare better for release, and for life on the outside.

HERO uses new technologies to help attack the prevailing cycle of marginalisation and re-offending. For prisoners with no basic numeracy or literacy or with low skills, multimedia and on-line distance learning can help offenders learn at their own time and in their own environment. In healthcare, access to on-line information and decision support services can help prisoners to make better and more informed decisions about things like exercise, drugs and sexual health. Two main types of prisoners are targeted: 'first timers' between 18 and 25 years old (typically awaiting sentence or 'on remand'), and prisoners due for release.

A key feature of HERO is that it adopts a particular pedagogy – collaborative learning. Within this overall pedagogic environment, we have been using collaborative knowledge tools (content management systems; chat rooms; rating scales; annotations) to provide prisoners with the means to access and customise information to their

**The Tavistock Institute**

The Tavistock Institute is an independent social science research, advisory and training organisation, established in 1947 as a 'not for profit' company.

The Institute publishes extensively, including an international social science journal "Human Relations" which is committed to the integration of the social sciences. It also publishes, in conjunction with SAGE Publications, the journal, "Evaluation: The International Journal of Theory, Research and Practice".

The Institute works in education and training, health, work organisation, partnerships and supply chains; employment and social inclusion; regional and rural development; and social care. Its work focuses on social, organisational and policy dynamics through action research, organisational analysis and formative evaluation.

The Tavistock has an extensive portfolio of projects in Research and Technology Development, mainly funded by the European Commission, and has also carried out research and evaluation projects for international organisations like the World Bank.

*www.tavinstitute.org*

own particular needs. But we continually come up against the same problems. Key problems are: *motivation* – prisoners, like most excluded groups, have a history of being let down by learning and technology, and tend to view education mediated by technology with suspicion and low expectation; *usability* – text-based information systems clash with prisoners' oral and visual communicative practices. They typically don't use text much and are attuned to its limitations; *relevance* – there is typically a mis-match between the 'life scenarios' used in learning and the realities and experiences of prisoners' lives.

One of the prisons involved in HERO

We have been working with these problems by, amongst other things, developing a design for an interactive game. The game offers the user a choice of selecting one of three avatars that represent a particular configuration of motivations and strategies for dealing with the choices and dilemmas prisoners face. The game leads users through a series of levels that mirror the prison life cycle – induction; work; education; health choices; preparing for release – and steers the user towards choosing a particular strategy, whilst presenting ways of unpacking what that strategy implies. Users are supported in their strategies (and unpacking) with 'hot spots' that allow access to the HERO resources database – 'ask an expert'; video clips of 'real life experience' of ex-offenders; links to relevant web sites.

Though still in its initial verification stage, the lessons we are beginning to learn from HERO reinforce the conclusions we have drawn from previous projects in field of learning, health and social inclusion. Most fundamentally, it is clear that the application of learning and health technologies in the context of social exclusion confronts a highly politicised agenda. In the criminal justice domain, for example, many EU countries apply stringent restrictions on the use of ICTs in prisons. It could be argued that these restrictions are sensible precautions aimed at maintaining security. It could also be argued that they reflect a more profound mistrust of the real liberating potential of technology – freeing the mind. HERO hopes to make a contribution to reducing this mistrust.

*Dr. Joe Cullen*

**Press release**

***"Core funding for prison education to increase to £125 million by 2005-06" (19 December 2002)***

*"Education Secretary Charles Clarke has announced that core funding for prison education will rise to £85 million in 2003-04, £110 million in 2004-05 and £125 million in 2005-06 (compared with the £66 million invested in 2002-03).*

*The funding will allow the Prisoners' Learning and Skills Unit, which is managed jointly between DfES and The Home Office, to increase dramatically both learning opportunities and learning outcomes in prisons, with particular focus on provision for 18-21 year olds.*

*Together with the Capital Modernisation Funding agreed in April, these funds will help deliver a tailored coherent programme of learning for prisoners from induction and assessment on arrival in prison through to resettlement in the community on release.*

*The Education Secretary's announcement was part of a wider statement on DfES spending in 2003-06."*

*www.dfes.gov.uk/prisonerlearning/press_releases.cfm*

– Beyond Europe –

# Toward closing the technological and digital divides

*The LCCN team has contacted Dan Davis from The Hebrew University of Jerusalem. Dan and his colleagues from the NCJW Research Institute for Innovation in Education are responsible for a series of tutoring programmes aimed at children in poor neighbourhoods or towns but which are adaptable to other populations. Our purpose here is to establish links between the Yachad initiatives ("yachad" means "together" in Hebrew) and the Learning Citizen community for further development and co-operation. Through Dan, the Yachad programmes are looking for partners to help expand and evaluate them, and to integrate their use on a regular basis in schools, as well as to fully adapt the programmes to eLearning.*

The implementation of computer applications in schools is beset with many problems. Briefly, these involve the difficulties of teachers in their own use of computers, and difficulties in adapting the present structure of the classroom unit to individual and small-group work. In addition, educational software developers are likely to introduce products which have minimal field-testing, and which lack a suitable guidance and support system. We feel that the children-tutoring-children approach provides a unique opportunity to overcome the above problems, and that it will lead to optimal usage of computers by school children in general, but more importantly, by children in low income areas.

Our programme is called "Collaborative Inquiry in Computer Environments" (CICE) and it is part of a variety of Yachad programmes. The Purpose of CICE, is to facilitate the intelligent use of computers as an educational resource by children. At present 85 fourth-grade classes in poor neighbourhoods or towns throughout Israel are participating. However, it can be applied to most pupil populations, as well as adult populations. In addition, we have started adapting it to eLearning.

The specific purposes of CICE are:

-- To develop computing skills and reading skills which are needed to realize the full potential of using computers in the learning process

-- To develop Inquiry Skills through a class-wide research project and the use of a local data-base

The **NCJW Research Institute for Innovation in Education** was established in 1968, by the U.S. National Council of Jewish Women (NCJW), at the School of Education of the Hebrew University of Jerusalem, with the goal of carrying out research and creating innovative educational programs directed at the education of the socially at-risk segments of the Israeli population.

Through a wide range of research and applied activities, the Institute aims to address the special educational problems and needs of children and youth, and thereby to promote their educational and social advancement. The main goal is to provide youngsters with opportunities to develop their potential, to attain social mobility and to fully participate in Israeli society.

The accumulated knowledge and expertise attained through these activities also lead to the Institute's professional contribution to deliberations associated with public educational policy.

A CICE tutor and one of her tutees

-- To develop and foster social skills through Peer Tutoring and Collaborative Investigation

-- To improve teachers' motivation and ability to use computers in the learning process

The support system of CICE includes:

-- Extensive training of teachers and tutors

-- Use of Simulation in teacher and tutor preparation

-- A strong guidance and support framework for tutors and teachers during implementation

-- Use of Structured Materials

-- Activities which are challenging, but which are likely to lead to success

The program includes three phases:

-- Phase 1- Children (who were weak readers in the second grade and were tutored by 5th graders) are given extensive training and support in their transformation from tutees to tutors. They then tutor two of their class-mates (separately) in the use of Windows and Microsoft Word skills. This phase has been translated and implemented in several Arabic-language schools.

-- Phase 2- This includes a class wide research project in which groups (a tutor and his/her two tutees) are responsible for some aspect of the research. Each group uses the computer for entering and analyzing the data.

-- Phase 3- Using a multimedia program (PowerPoint, from Microsoft in this case), each group presents its findings and conclusions during a convention at the end of the year.

Two controlled evaluations of CICE have demonstrated that Phase 1 had a powerful effect on a wide variety of windows and word processing skills and that the program led to a large increase in the tutor's social status.

Given the universal nature of its context (Windows), CICE can easily be adapted for use throughout Europe and other countries. A broad body of research literature indicates that children tutoring children is a powerful tool for improving the achievement and motivation of tutees. An important additional effect is that the tutors reap the benefits of the volunteering, helping, and teaching experiences. However, to be effective, a strong guidance and support framework must accompany tutoring activities. This approach lies at the heart of the Yachad programmes.

*Dan Davis*

**Modules developed with graduate students**

-- Beginning reading for 1st grade Arab pupils tutored by teacher-trainees using MSword

-- Analytic geometry for High school dropouts engaged in Reciprocal Peer Tutoring using Microsoft Excel

-- Mathematical functions and Chemistry for 8th graders tutored by 11th graders using commercial computer-based programmes

-- Collaborative inquiry on the internet by heterogeneous student populations is in the planning stage

-- A computer-supported tutoring programme in English as a foreign language for "delayed readers" is in the planning stage.

**Dan Davis** is a Professor in the School of Education, the Hebrew University of Jerusalem. His activities and classes are devoted to tutoring and collaborative inquiry. He and his colleagues have carried out three evaluation studies that are being translated to English. In addition, he is participating in the evaluation of Reading Together (USA).

His Yachad colleagues are Prof. Elite Olshstain, who participated in the development of Reading Together, and is Co-Director of Yachad Reading and Ms Aviva Aisen, who has been the national director of all Yachad Programmes in Israel for over 15 years.

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– Synergy with other initiatives –

# Investing in human capital for the jobs of today and tomorrow

As we are all aware globalisation has brought with it a pressing need for companies to be more competitive whilst maintaining a high quality of service and performance. In Europe this growth is being hindered by a growing skills gap as the time to performance of our human capital is too long and costly. There is an urgent need to reduce the time needed to (re) train people for the jobs of tomorrow and to improve their current knowledge base and expertise. At the moment training means most often taking time out of ones working day or even going back to full -time training to gain the skills and knowledge necessary for pursuing one's career.

Time2Learn is a network of researchers and professionals who have come together under a EC funded project to address this need by developing a roadmap for European professional and vocational training enabled through ICT to reduce the 'time to performance' of citizens, enabling them to be more effective, adaptable and employable. This will be done by looking at the current status of research and standards in eLearning and matching this against the identified needs for professional development over the next decade. The roadmap will be elaborated with key experts and stakeholders and present the critical areas for research to be addressed in Europe.

Are you an actor in the field of eLearning research and development?

Does your company use eLearning to train your employees?

Are you involved in vocational and professional training?

If so, we would like to hear from you and invite you to participate in the Time2Learn network both virtually and physically at our workshops. All are welcome to the Time2Learn public seminar which will be held in Stuttgart on 2nd and 3rd June 2003 where the first draft of the roadmap will be presented. All participants will be invited to comment on the roadmap and all contributions will be acknowledged.

*Angela Baker*

Time2Learn

Find out more about the work of the Time2Learn members by browsing through our site and let us know if you would like to join in!

A central objective of the Information Society Technologies programme is to provide all people across the EU with an equal opportunity for participation in the information society.

To enable groups of people with special needs – people with various disabilities, the elderly, and immigrants, among others – to participate in this development, Internet-based services are to be implemented in accordance with their needs and requirements.

*www.eu-projects.com/time2learn*

**Angela Baker** is a project manager for ARTTIC Paris. Angela specialises in the set-up and management of large Education and Training projects and initiatives.

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## – Events –

### LEARNTEC 2003, 4-7 February 2002 in Karlsruhe

The 11th European conference and specialist trade fair for Educational and Information Technology will be held on 4-7 February in Karlsruhe, Germany. During the four days of the LEARNTEC conference, speakers from the fields of industry, science and politics offer a total of 28 lecture series, 16 workshops and a number of panel sessions

*www.learntec.de*

### eLearninternational 2003, 9-12 February 2003 in Edinburgh

eLearninternational 2003 is a Global eLearning event taking place in Scotland on 9-12 February 2003. The non-vendor led conference is the destination for Company Directors, Government Officials, Academia and Practitioners to network, debate and listen to the world's foremost eLearning authorities on its impact on business and global skills development.

*www.elearninternational.co.uk*

### eLearning event, 18-19 March 2003 in Manchester

eLearning Manchester will be held on 18-19 March 2003. The event will offer an exhibition and major conference all under the same roof. The exhibition is highly focused, making it an ideal research and information gathering opportunity.

*www.e-learningevent.com*

### ETSI, CEN CENELEC Conference 2003 - Accessibility for All, 27-28 March 2003 in Nice

ETSI, CEN CENELEC Conference 2003 - Accessibility for All will be held on 27-28 March 2003 in Nice, France. The Conference on "Accessibility for All" addresses the role of European Standardisation for accessibility to products, services and environments for all, i.e. for you and me, including young, elderly and disabled people.

*www.etsi.org/cce*

### CAL 03, 8-10 April 2003in Belfast

CAL 03 aims to provide a forum for sharing experiences, knowledge and research among those working at the forefront of learning and teaching with technology

*www.cal2003.com*

### Links this Winter:

**www.learndev.org**

A Transdisciplinary Networked Learning Community Devoted to Excellence in the Development and Study of Learning.

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**www.elearningpost.com**

elearningpost is an intelligent digest of daily links to articles and news stories about Corporate Learning, Community Building, Instructional Design, Knowledge Management, Personalization and more. Besides the daily links, elearningpost brings out feature articles and related special reports on the above topics. elearningpost's mission is to provide quality eLearning content that attracts a diverse and emerging audience.

### I am not leaving you

No, I am not leaving you entirely.

I will stay around the LCCN team as senior adviser.

Claudine Debray will be taking over the co-ordination for our initiative. See more on Claudine on next page. Hopefully, I will stay around to tell you some stories.

In any case, I am leaving you in good hands.

*Carlos Triay*

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The **Learning Citizen Newsletter** comes out every three months and is published by the LCCN team:


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We are preparing the fifth newsletter; please send your contribution to: editors@learningcitizen.net

Let me present to you **Claudine Debray**. Claudine is taking over the co-ordination of the LCCN initiative. She has a wide experience in education and training, first as a trainer, then as a training manager in a big IT company and finally as a consultant at ARTTIC where she has been involved in various European eLearning projects in recent years.

*Carlos Triay*

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1 Jimi Hendrix, 1970
2 Norris, Don et al (2003). Transforming e-knowledge, SCUP Press, Ann Arbor. www.transformingeknowledge.info
3 ISTAG Scenarios for Ambient Intelligence in 2010, European Commission. ftp://ftp.cordis.lu/pub/ist/docs/istagscenarios2010.pdf
4 www.w3.org
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8 ltsc.ieee.org
9 www.dublincore.org
10 www.etsi.org
11 www.jtc1sc36.org

**ARTTIC (Paris & Brussels)**

ARTTIC is the leading European group of companies specialised in consultancy and management services to international R&D technology-related partnerships.

ARTTIC is specialised in setting up and managing very large technology related projects, including those in the area of eLearning.

*www.arttic.com*

**e-mediate**

e-mediate is an international, interdisciplinary and multilingual team with significant experience both in promotional work and in the implementation of effective solutions for industry.

A unique blend of marketing, promotional and media skills and in-depth expertise in databases, the internet, intranets and e-commerce enables e-mediate to tackle a wide range of assignments flexibly and effectively.

*www.e-mediate.co.uk*

**They have also contributed to this newsletter:**

Paul Lefrere, Open University UK

Ahmet Eti, Siemens Business Services

Francis Wray, e-mediate

Andy Heath, Sheffield Hallam University

Dr. Joe Cullen, Tavistock Institute

Dan Davis, The Hebrew University of Jerusalem

Angela Baker, ARTTIC Paris

**Thank You !**