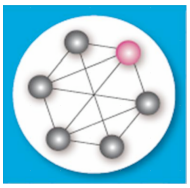

DBTech EXT* WP6: Dissemination of Deliverables

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The activities and outcomes/results reported herewith comprise the result of collaborative work undertaken by the following DBTech EXT partner institutions/organizations (listed alphabetically, by acronym):

ATEI	Alexander Technology Educational Institute, Greece
ESAIP	Group ISAIP-ESAIP, France
HH	HAAGA-HELIA University of Applied Sciences, Finland
HRT	Reutlingen University, Germany
IES	Technical Secondary School Jesus Marin, Spain
OMNIA	Joint Authority of Education in Espoo Region, Finland
SLK	Finnish Business College, Finland
TE	TietoEnator GMR Oy, Finland
UMA	University of Malaga, Spain
UoM	University of Macedonia, Greece
UWS	University of the West of Scotland, United Kingdom

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1. Introduction

DBTech EXT stands for “DataBase Technology Pro Framework and Workshops EXTended”. The project is a follow-up to the DBTech Pro (“Database Professional”) project which ran from 12/2002 to 05/2005 with the financila support from the LdV Programme. The aim is to utilize ICT in order to offer high quality education and training (E&T) to those interested in achieving a competitive edge in professional database technology (DBT) skills and practice, as well as to bridge the existing gap on professional DBT E&T across the academic, industrial/commercial, and vocational education and training (VET) communities in Europe.

Involving seven (7) higher level academic institutions, three (3) VET centers, and one (1) I.T. company from six (6) European Union member states, the DBTech EXT partnership set off in January 2009 with an aim to achieve a three-fold goal, namely to: (a) establish a world-wide accessible, Internet residing resource of DBT E&T material and references, (b) design, develop, and offer virtual workshop type course modules on selected DBT themes/topics, and (c) extend the project partnership by including outer-circle members who act as project deliverable recipients, and evaluators.

The present document comprises the final report on the activities relating to the sixth (6^{th}) DBTech EXT workpackage (information dissemination). Considering the nature and the aims of the project, information dissemination relating activities comprise the following:

- the utilization of ICT both for intra-partnership communication, as well as for disseminating the project deliverables to the outer-circle partnership, and to the public
- the organization and offering of live workshop events, each focusing on a different database technology theme/topic
- the offering of virtual laboratory workshop sessions, over the Internet
- the promotion of the project and its deliverables via person-to-person communication
- the promotion of the project and its deliverables at academic and/or professional events, discussion fora, etc.
- project relating article/paper presentations at (peer reviewed) national and international conferences
- project relating article/paper publications in (peer reviewed) international journals and series
- the establishment of a outer-circle project partnership/community of academics, I.T. professionals, and VET trainers who act as project deliverable recipients, and they are willing to utilize part of the DBTech EXT E&T in their own academic course, or vocational training curricula

The content of the present report is organized as follows:

- Section 2 (Dissemination of Deliverables) summarizes on the WP6 relating activity in the context of the original DBTech EXT (application) plan.

- Section 3 (ICT Infrastructure) reports on the IT technologies utilized in order to facilitate the intra-partnership communication and collaboration, as well as for the dissemination of the deliverables to all interested parties, in the course of the two-year project.

- Section 4 (DBTech EXT Workshops) reports on the four (4) live workshop events organized during the two-year period of the project.

- Section 5 (Workshop Themes, DBT Labs, and VLWs) considers the Database Technology (DBT) themes addressed at the live workshop events, and the corresponding educational and training (E&T) content. It focuses on the way the latter is further developed, test-run, and offered over the Internet, in the form of DBT Lab, or Virtual Laboratory Workshop (VLW) E&T content.

- Section 6 (Presentations and Publications) summarizes on the DBTech EXT relating presentations made at international conferences, and article/paper publications which appeared in newsletters, or made with accredited international journals. The section also reports on the DBTech EXT Symposium organized and hosted by the HAAGA-HELIA University of Applied Sciences on 26 November 2011.

- Section 7 concludes on the WP6 final report

Finally, Appendix A (WP6 Deliverables) lists and briefly comments on each one of the WP6 deliverables enumerated in the original project (application) plan, and Appendix B (WP6 Dissemination Instances and Events) comprises a concise enumeration of information dissemination activities, accredited by name to the DBTech EXT partners involved, and presented in chronological order.

2. Dissemination of Deliverables

Work package 6 (WP6) involved activities relating to the effective dissemination of information relating to the project deliverables, The DBTech EXT members committed themselves to work closely and establish a group of *Outer-Circle* (OC, silent) partners. The latter were expected to act as recipients of the project deliverables, namely: have full access to all DBTech EXT education and training (E&T) material, acting both as trainees/trainers, and as evaluators. OC partners are not eligible for, and they do not have a share in the project's budget; still, they may freely use the E&T content for their own, personal, benefit as well as trainers, by having it extend/enrich existing course curricula.

DBTech EXT OC partners are companies, HE institutions, or VET centers in the vicinity of the project's *Inner-Circle* (IC) partners. The latter act as local DBTech EXT promoters and information dissemination centers in their region. In this respect, it was agreed in the second general meeting (GM2) that each and every IC partner reports on at least three (3) dissemination activities they undertake in their region, each month (GM2, Thessaloniki, September 10, 2009).

Utilizing all possible channels of communication, from person-to-person and conference presentations, to conducting promotional activity via internet-based discussion lists/fora, and social networking environments, DBTech EXT today (February 2011) has established a list of forty one (41) contacts in ten EU member states (Belgium, Finland, France, Germany, Greece, Hungary, Poland, Spain, Sweden,and UK), and two non-EU countries (Republic of Serbia, and India). The (outer-circle) contacts in question are kept up-to-date on the latest developments in DBTech EXT and DBTechNet, either via email or as registered DBTechNet portal users. The contacts list in question involves sixteen (16) academics, ten (10) IT company representatives, nine (9) IT professionals, and six (6) VET teachers/trainers. It has been said before, but it is worth repeating that the DBTech EXT outer-circle partners are not required to have an active participation in the project, other than receiving news and information on the E&T content that is available for retrieval and use, as well as for participating in DBTechNet events like live and virtual laboratory workshops. Of these contacts, five have expressed their dedication to the (common) DBTech EXT effort, participated actively in project events, plus they have expressed their interest to participate as full partners in future DBTechNet activities and EU project candidacies. The five contacts in question represented four HE institutions: Umeå University (Sweden), University of Zaragoza (Spain), University of Novi Sad (Republic of Serbia), ATEI of Athens (Greece), and one I.T. company: EUtrek (Greece). The absence of expression of an analogous interest by the VET center representatives may be taken to comprise an indication that the DBTech EXT project has not been as successful as it was originally expected in attracting the interest and the active participation of the EU VET trainers.

To facilitate information dissemination, and to promote intra-project communication, WP6 deliverables included the design and development of the DBTech portal. Via the latter, IC and OC partners communicate and obtain access to educator and learner guides, self-study exercises, internet-based (virtual) laboratory environments, as well as to relevant tutorials in digital video format. The web portal started operating in November 2009, and today it comprises the internet gateway to participation in the DBTech EXT workshops (http://dbtech.uom.gr/). In addition, information relating to deliverables of other work packages (not only those of WP6, under which the organisation of the content as well as the implementation of agreed content access policies are administered) may also go public via the same web portal, e.g. the Framework of Courses (WP3), VET provision plan (WP4), Postgraduate Studies Roadmap, and the Certificate Plan (WP5):

http://dbtech.uom.gr/mod/resource/view.php?id=519.

The 24-month project, in its original plan, involved the organisation and offering of eight (8) workshops: four (4) live events for training educators (VET/corporate trainers, and academics), and learners (professionals, and HE students), and four (4) virtual events, over the internet. The workshop E&T content, as such or as a part of one or more HE courses, is expected to receive accreditation by the participating HE institutions, preferably as flexible course modules of an interdisciplinary value. This in order to have participants with non-formal or informal learning backgrounds, or with experiential learning qualifications, participate in the workshops and, upon successful completion, to be encouraged to enrol in HE programs of study that emphasise on providing employability-driven education and skills in state-of-the-art database technologies.

Last but not least, WP6 includes dissemination activities in the form of the presentation of DBTech EXT at international conferences, and with international journals, and/or newsletters.

3 ICT Infrastructure

The DBTech EXT partnership involved eleven (11) inner-, and more than twenty two (22+) outer-circle partners. In this respect, the utilization of a range of ICT tools in order to facilitate intra-partnership communication and make support joint collaborative activities over the Internet, involving participants based in disparate geographical locations has been both of utmost importance to the partnership as well as challenging task to be tackled.

As in the case of the DBTech Pro project [DBTPWP4R], the Blackboard® virtual learning environment (VLE) was used for the organization and filing of working documents. However, this time Blackboard® VLE was not used for collaborative document compilation over the Internet; the much more sophisticated and easy to use Google Docs® service was utilized in this respect (http://www.google.com/google-d-s/documents/).

Once the DBTech EXT documents and E&T content material reached their final (stable) form, they were ported to the DBTechNet portal (http://dbtech.uom.gr/). The latter comprises a deliverable of the DBTech EXT project; it is a Moodle CMS® (http://moodle.org/) implementation, tailored to support the functional requirements of the DBTech EXT project, and DBTechNet community in general.

The project's ICT tools and services suite includes also the organization and management of digital video content, plus the use of freely accessible communication and web conferencing type software like Skype (www.skype.com), ShowMyPC® (http://showmypc.com), and TeamViewer® (http://www.teamviewer.com). Still, the latter came to be inefficient when it came to conducting virtual laboratory workshop, many-to-many/web-conference type meetings over the Internet. For this reason, the (proprietary) Adobe Acrobat Connect Pro® web conferencing system was used (http://www.adobe.com/products/adobeconnect.html).

Lastly, the requirement pertaining to the use of proprietary (licensed) software by the DBTech EXT virtual laboratory workshop participants who were neither HE academics nor HE students was met by utilizing the University of Malaga (DBTech EXT inner circle partner) PCVirtual environment (https://pcvirtual.cv.uma.es).

3.1 Blackboard® VLE

More during the first months of the project, less when the DBTechNet portal came into service, the HAAGA-HELIA Blackboard© Virtual Learning Environment (VLE, https://bb.haaga-helia.fi/) serviced well the needs of the partnership for documents organization, and sharing.

Figure 3.1 is indicative of the project documents categorization and the way are organized in order to (a) be easily accessible by the members of the partnership, and (b) comprise a means of archiving and documenting all project relating activities.

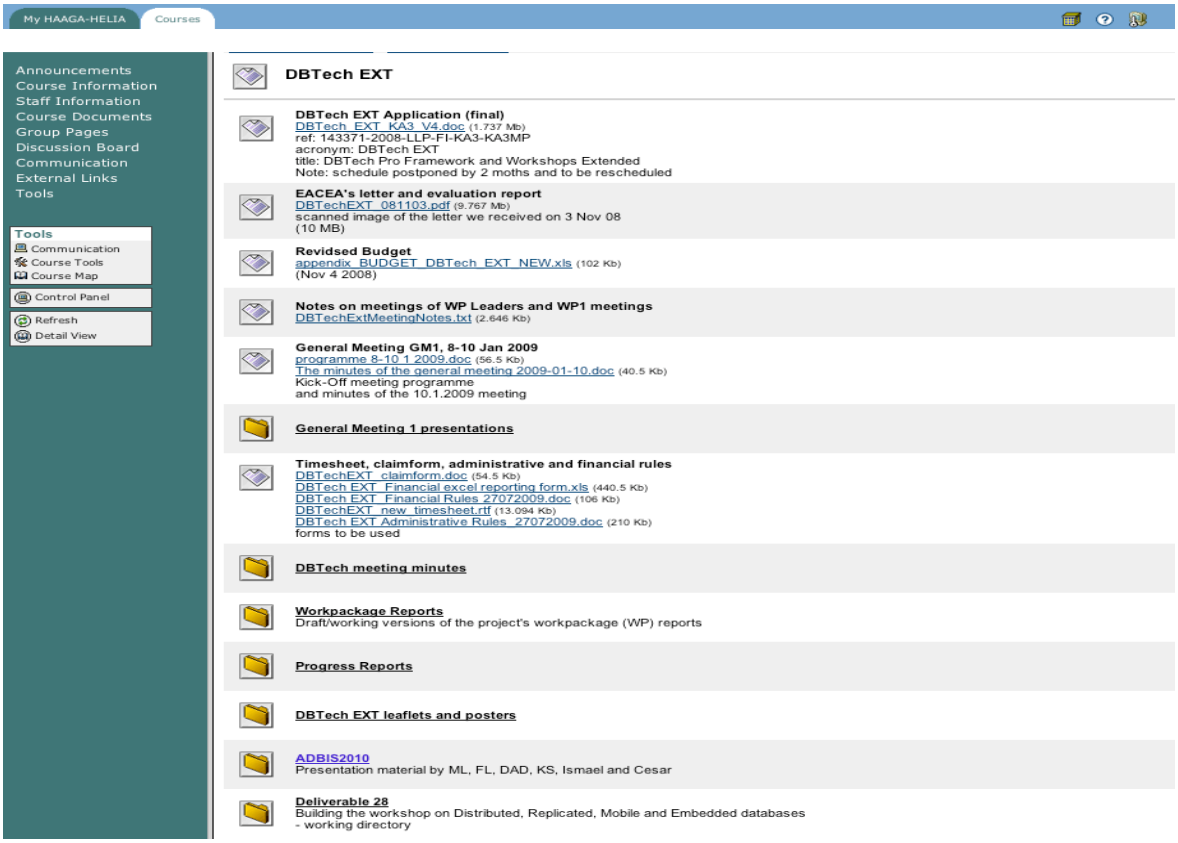

Figure 3.1 HAAGA-HELIA Blackboard "DBTech EXT" documents organization

To facilitate the communication and document sharing between amongst the partners who are members to project workpackages (WP), distinct groups were established in Blackboard, in a way analogous to that in the case of the DBTech Pro project (Figure 3.2, [DBTPWP4R]).

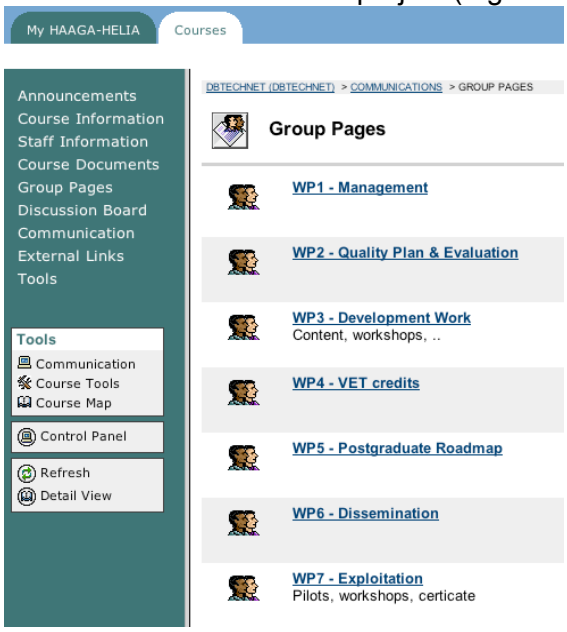

Figure 3.2 HAAGA-HELIA Blackboard Group Pages (one per WP)

3.2 DBTechNet portal

Beginning from November 2009, the DBTechNet portal (http://dbtech.uom.gr) serves the communication and information dissemination needs of the DBTech EXT partnership. As explained in [EVERA09], the intended use of the portal imposed a number of challenging functional and design issues that needed to be addressed at model construction phase, as well as requirements with regard to user and content access policies. The service is implemented utilizing the Moodle CMS® (http://moodle.org/) platform.

The screen that welcomes the user categorizes/organizes the content into logical units: one unit for the DBTech EXT project as a whole, and one unit per virtual laboratory workshop offered (Figure 3.3).

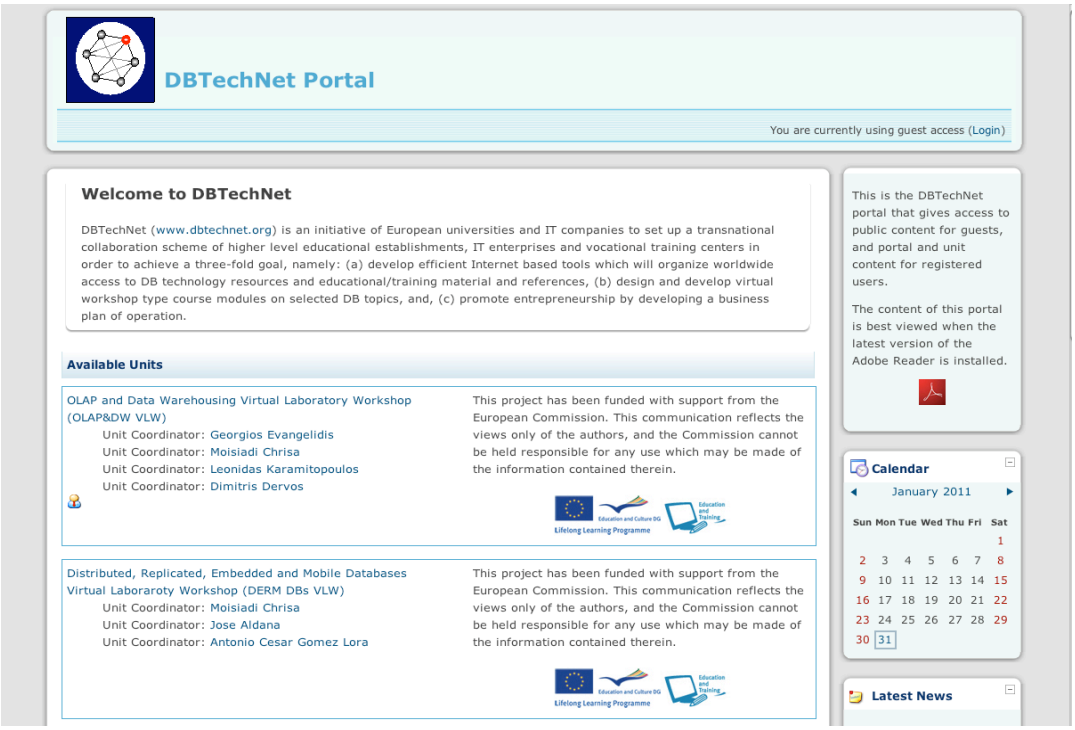

Figure 3.3 DBTechNet portal: welcome screen

What is not so obvious from the beginning is the three-level access authorization scheme implemented. As stated previously, within the portal exist a number of logical units, each one unit having its own group of users. A registered portal user may be a member to many units within the portal, simultaneously at any given instance of time. The administrator of the portal is the one who registers and de-registers portal users, however: it is the co-ordinator of each one unit the one who decides on unit (user) membership. One can be declared to become a member to a unit, only when s/he is a registered portal user, of course.

Figure 3.4 illustrates the three-level access authorization scheme: the content consists of resources organized under units in the portal. The way it is accessed is color encoded in the labeling of the resource in question: resources listed with a blue color-encoded hyperlink are publicly accessible (i.e. even those who cannot login to the DBTechNet portal can access them), whereas a red resource label implies that the latter is accessible only by (all of the)

registered portal users, not by the public. Lastly, a green label implies that the resource is accessible only by those registered portal users who are members of the unit in question, not by the rest of the portal users and, moreover, not by the public.

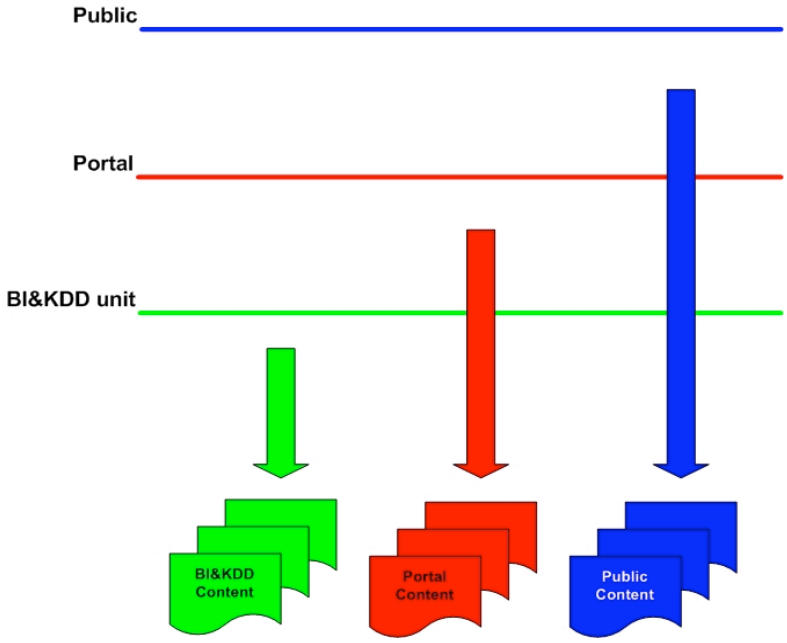

Figure 3.4 Color encoding of the three-level access authorization scheme

For example, the resources associated with blue color-encoded hyperlinks in Figure 3.5 (e.g. bibliography, IBM DB2 DWE v.9.5 client software installation guide, etc.) may be retrieved/viewed by the public, whereas those which are color-encoded green (e.g. tutorial lecture slides, worked example documents, etc.) may only be retrieved/viewed by the portal users who are members of the unit in question (Knowledge Discovery from Databases Virtual Laboratory Workshop, KDD VLW in this case).

It worth stating that the portal was designed with the aim of developing a flexible, practical tool meant to be used by the DBTechNet community on a daily basis for: (a) collaborative content development, (b) sharing the content for educational and training purposes, and (c) introducing DBTechNet to potentially new outer-circle partners. In this respect, the portal does not have the look and the feeling of an “attractive” web site with background/watermark images, etc.

Figure 3.5 Color encoded resources categorization in the KDD VLW unit

The "practicality of use" priority approach in the design of the portal sometimes led to a situation whereby functionality assumed that the visitor/user was using the latest version of the corresponding browser/client software. This itself led to a software mismatch/compatibility situation that was more problematic than the original, non-practical, one that called for rectification. For example, the portal design team originally came up with the idea of implementing each and every one of the intermediary (tree hierarchy) nodes of the content as PDF documents. This way, one could easily download the node(s) of interest, store it(them) locally and use them for accessing directly the E&T content of interest. However, this (desirable) functionality was made possible only under the assumption that the portal visitor/user was using the latest version of a (any) popular browser, and had installed the latest version of the corresponding Adobe Acrobat Reader®, Flash®, and browser addons/plugins. In

this respect, quite characteristic are the comments received by one of the outer-circle partners, Dr. Stephen Hegner of ÜMEA University, Sweden:

> *...When throwing the user to a PDF reader, that reader takes control of which browser to use to open its links. So, I did this on a Windows machine, using MSIE initially, but the default browser was Firefox and so Acroread insisted upon opening the link with FF, which did not work. I had to set the default browser for my user to MSIE to get this to work. (I could have changed a preference in Acroread also, I think, but either way requires changing a global setting, which must then be set back to the user's real preference after viewing the videos.)*
>
> *I suggest, first of all, to convert the PDF to HTML and provide the links directly within the browser. That will at least avoid the issue of having the PDF reader choose a different browser than the one which was used to reach it in the first place. This would be easiest to do by exporting from the source (which I guess was MS Word), but it is*
> *not impossible to do directly using the PDF either...*

As a reaction to this, a major effort was undertaken in November 2010 to convert all the intermediary (node) PDF documents to browser-friendly HTML files, leaving only the terminal (leaf) documents in PDF format, to facilitate downloading and portability across different operating system platforms.

Concluding with the DBTech portal, the content types supported have as follows:

1. **Labels:** These are simple text elements used to categorize content or further explain special content.
2. **Documents on the fly:** Text or web documents can be created on the fly and become available to other users in “txt” or “html” format.
3. **Links**: These are links to external web sites or documents with a given url, title and description. Advanced customization can be added, in order to specify if links are opened in the same window, in a new window, or as popups.
4. **Document Files**: All known types of documents can be uploaded to portal units and become available to users: text documents, spreadsheets, presentations, pdfs etc.
5. **Media Content**: The portal automatically recognizes media files. Supported media content are audio (mp3, ogg, wma, etc.) and video files (flv, wmv, etc).
6. **Discussion Fora**: Each DBTechNet portal unit may have its own (one or more) online discussion fora.

DBTechNet portal users statistics on 31 December 2010:

	Registered Users	Academics	IT Professionals	VET Trainers	HE Students
Number	**113**	41 (37%)	19 (17%)	19 (17%)	33 (29%)
Inner-Circle	65 (58%)	24 (59%)	1 (5%)	7 (37%)	32 (7%)
Outer-Circle	48 (42%)	17 (41%)	18 (95%)	12 (63%)	1 (93%)

3.3 UMA PCVirtual Service

An attempt is made for the software that is utilized in the DBTech EXT virtual laboratory workshops to be of the open source type and/or freely available via the GNU general public licensing scheme (http://www.gnu.org/licenses/gpl.html). However, this priority issue is not applied in a way that sacrifices the quality, and the professional competitiveness of the VLW E&T content and the new skills the VLW participants are introduced to/acquire. Utilizing commercial software does not introduce the need for any extra arrangements to be made or costs to be undertaken in the case of HE student audiences. All DBTech HE institutions are members to special programs the major database vendors operate for the purpose of promoting the use of their software for educational/research purpose (e.g. http://msdn.microsoft.com/en-us/academic/default, https://www.ibm.com/developerworks/university/academicinitiative/, https://academy.oracle.com/). But, how about the non-academic participants of the DBTech EXT VLWs (e.g. IT. Professionals, industrial partners, VET trainers, etc.)? Arrangements may of course be made for the latter to go to the nearest partner HE institution and practice in one of the student laboratory rooms. This is not always easy to arrange though, considering the work schedule restrictions as well as the distances involved and prohibit such an arrangement to be made in most of the cases.

A most flexible and effective solution to the aforementioned software user licensing issue is the PC Virtual service operated by one of the inner-circle partners, the University of Malaga in Spain (https://pcvirtual.cv.uma.es). The service utilizes top-of-the-line virtualization technology making possible the cloning of PC workstation operating system environments and having them become accessible for use over the Internet, requiring only the use of a standard browser. Each one PC clone (called: a virtual machine) has pre-installed on it the (proprietary) client software used to access the DBTech server in order to conduct the relevant hands-on, self-training laboratory sessions of the VLW, from home, or even from an internet cafe... Such an access and use of the proprietary software does not come to violate the software vendor's user licensing scheme, since the proprietary software (both client, and server) runs on the DBTech EXT academic HE institution partner's computing facilities; the VLW participants effectively 'visits' and works on the latter via the Internet, and s/he cannot use the (network accessible) virtual machine for any reason other than its intended use (i.e. for conducting the DBTech EXT VLW self-training, hands-on laboratory sessions).

Technically speaking, the University of Malaga Virtual Desktop Infrastructure (VDI) supports and facilitates the following services:

- Access control to the virtual machines by means of directory attributes (LDAP, Active Directory)
- Dynamic supply of virtual machines, according to their purpose, thanks to the concept of Linked PC. Linked PC supports multiple and customizable instances of a virtual machine using “templates”
- Automated management of the linked PC life cycle (creation, supply, destruction), optimizing the VDI infrastructure management
- Assignment of independent virtual machines from a VDI pool of resources to users
- Access to virtual machines with different operating systems (Linux, Windows 2000, 2003, 2007, XP, Vista)
- Linked PC assignment can be persistent or not persistent

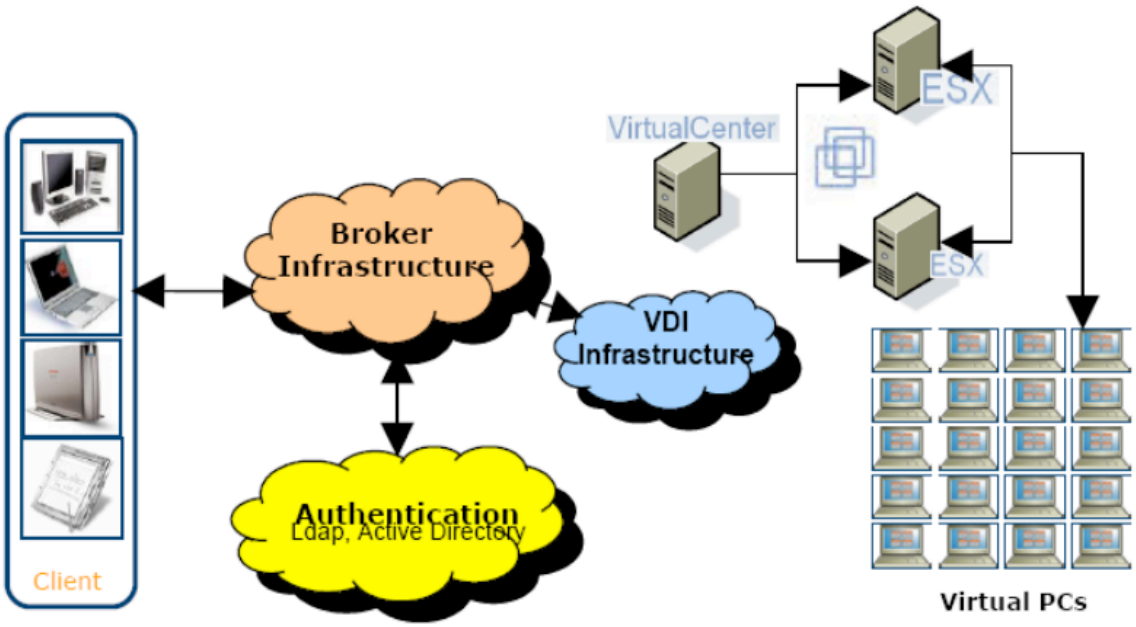

Figure 3.6 The University of Malaga (UMA) VDI Architecture

Figure 3.6 illustrates the principal components of the architecture which is underlying to the UMA PCVirtual service. The use of the latter by DBTech EXT comprised a major development for promoting and disseminating the project deliverables, since effectively opens the virtual laboratory workshops to the non-academic world.

For more information on the PCVirtual service and the UMA VDI infrastructure, please refer to the corresponding DBTech EXT publications [DELEDU09, DEIADAR09]

3.4 Google® Mail/Docs

The ICT tools and services considered so far come to serve the communication, publicity, and dissemination needs of the project partnership (inner-, outer-circle partners, and VLW trainee audiences/participants). How about utilizing ICT tools that facilitate and enable collaboration over the Internet? Google Documents (Google Docs) was the service used for this purpose. All the functionality of this type DBTech EXT was looking for, the Google Docs service supports (most happily) at no cost.

More specifically, the service was utilized by DBTech in tasks like:

- collaborative (realtime, online) document compilation [GD_Intro]
- forms design, deployment, and information collection over the Internet [GD_Form]
- questionnaire design, and deployment [GD_Questn]

In order to make the most of the Google Docs service, three Google Mail accounts were established:

- dbtech.ext@gmail.com
- dbtech.atei@gmail.com, and
- bikdd.vlw@gmail.com

The dbtech.ext email account is shared between the project manager and the WP6 (Dissemination) leader for the purpose of facilitating the maintenance of the (long) list of inner- and outer-circle contact information. The dbtech.atei email account is shared between the partners at the Alexander Technology Educational Institute (ATEI), and the University of Macedonia, for the purpose of facilitating activities relating to the design and organization of the DBTech EXT educational and training (E&T) content in the DBTechNet portal (http://dbtech.uom.gr). Finally, the bikdd.vlw email account was shared between the instructors of the KDD and OLAP and Data Warehousing virtual laboratory workshops, for the purpose of facilitating and co-ordinating the offerings of the VLWs , and for communicating with the VLW participants.

For the purpose of assisting the DBTech EXT partners to familiarize themselves with the use of the (powerful) Google Docs suite of cloud computing tools, a DBTech EXT video entitled “The Google Docs Service: A 'How To' Guide” was produced and went public via the DBTechNet portal [DERPCV09].

3.5 ATEI Video on Demand (VoD) Service

For the purpose of broadcasting/disseminating project relating video streams over the Internet, DBTech EXT utilizes the ATEI Video on Demand (VoD) server, a 2U rack-mounted server which operates within the ATEI Information Technology (IT) Department / Network Operations Center (NOC) infrastructure (Figure 3.7).

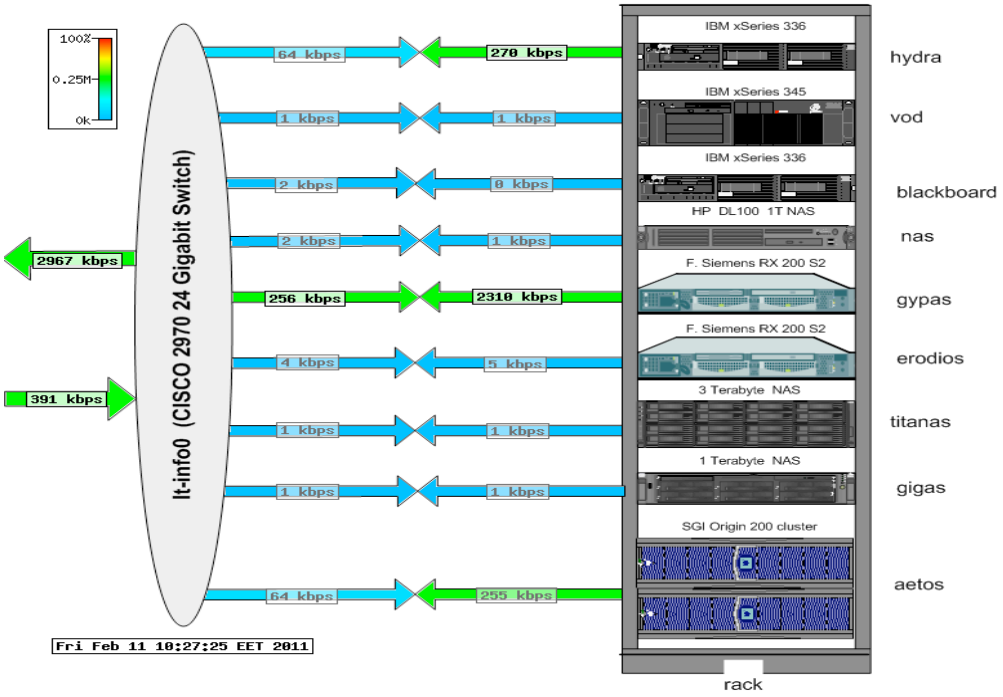

Figure 3.7 ATEI of Thessaloniki: IT Department / NOC servers infrastructure

The hardware is an IBM eServer xSeries 345 with:

1. Two Intel Xeon 3.00GHz processsors with hyperthreading
2. Microsoft Windows Server 2003 Standard Edition
3. 2.5GB main memory
4. 2x 70GB and 1x 280GB disks

The server is part of the Server Farm of the IT Department and it is directly connected to the departmental network backbone via a 1GBps Ethernet connection. The IT network is connected via a 1GBps connection to the ATEI network backbone. ATEI, in turn, is connected via a 1GBps connection to the Greek Research Network (GRNet) backbone (formerly known as the Greek Universities Network / GUNet) which consist of multiple 10GBps and 1GBps connections and connects to the rest of the world via GEANT, via a 10GBps connection (primary) and a 5GBps connection (secondary).

The ATEI VoD service operates on the Microsoft Media Services Version 9.0 streaming software platform, administering videos in **wmv** format with the following specifications:

1. Audio sample size 16 bit
2. Channels 2 (stereo)
3. Audio sample rate 44Hz
4. Video sample size 24 bit

3.6 Web Conferencing Tools

By web conferencing tools is meant web-based services allowing people to meet online, to conduct efficient, effective, and cost-saving meeting sessions, to collaborate from a distance over the compilation of a document without the hassle of emailing files and/or following up by phone, etc. In the case of DBTech EXT, effective usage of a web conferencing tool also means conducting instructor-to-learners training sessions, along the lines of the virtual laboratory workshop offerings.

From the early stages of the project, the partnership utilized Skype® (www.skype.com) for conducting one-to-one, and many-to-many (audio and audio+video) meetings over the Internet. As reported in the relevant activity logging timesheets, the four-member DBTech EXT Steering Committee conducted one-hour Skype® meetings, almost on a weekly basis during the two-year project. Conducting those meetings has made possible the planning of a large number of activities, as well as the efficient monitoring of their outcomes. Even when the participating HE institutions are willing to facilitate communication and interaction of their project representatives via telephone conference calls, the cost of the latter would have been prohibitive had they been conducted with a frequency that would come close to that of the Skype® meetings held during the January 2009 to December 2010 period.

A most positive development was the support of computer screen sharing during the Skype® session, a service introduced in the first months of 2010. The DBTech EXT partnership immediately utilized the new service in the design and planning of the virtual laboratory workshop (VLW) educational and training (E&T content: with the new service, the VLW E&T content developers could now address a number of technical issues relating to the installation and use of the VLW software, very efficiently: by sharing a common view to a computer screen, even when one of them was (say) in Finland and the other in Greece. Rather unfortunately, the Skype® screen sharing service is only available to one-to-one meeting sessions, not to one-to-many and many-to-many ones: this made impossible the utilization of the service in conducting instructor-to-learners (one-to-many) VLW web meetings / training sessions.

In search of a solution to the problem of conducting one-to-many, and many-to-many VLW web meetings (facilitating screen sharing) over the Internet, two software products (which are available for free) were tested during a pilot KDD VLW offering to ATEI students on 25 March and 19 April 2010: ShowMyPC® (http://showmypc.com), and TeamViewer® (http://www.teamviewer.com). The two products offer many-to-many screen sharing sessions with no audio link. The latter was not taken to comprise a problem, since a screen sharing service could be used in parallel to a many-to-many audio communication via Skype® (Figure 3.8). In theory, the scheme comprised a solution, however in practice it failed to work: quite naturally, both ShowMyPC® and TeamViewer® ended up utilizing the instructor's computer as the server to the screen sharing service. As a result, there was a communication bottleneck at the instructor's end, due to having the screen bitmap instances depart to the many web meeting participants all at once, via the one (instructor's) PC Internet connection. Consequently, each time the instructor pressed the 'next slide' button on his computer it would take many minutes (!) before the remote web meeting participants had their computer screens be refreshed to the new instance of the instructor's computer screen image... It was only that became crystal clear why Skype® offers/supports screen sharing possible only to one-to-one, not to conference calls!

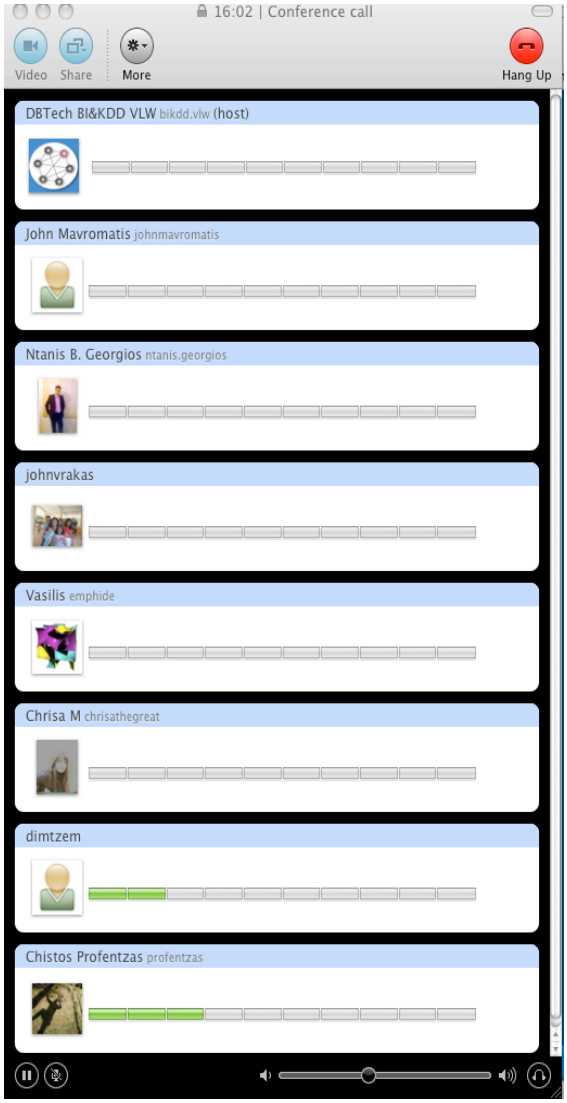

Figure 3.8 KDD VLW web meeting held on 25 Match 2010; Skype® conference call: list of participants

The problem relating to the lack of efficiency in conducting one-to-many and many-to-many web conferencing sessions involving the sharing of the (instructor's) computer screen was once and for all dealt with in June 2010. It was then when two of the HE academic institutions (both of them: inner-circle DBTech EXT partners) began offering the Adobe Connect Pro® (ACP, in short) web conferencing service and they made it available for conducting web meetings relating to DBTech EXT VLW offerings, over the Internet: the HAAGA-HELIA University of Applied Sciences (ACP URL: https://acopro.haaga-helia.fi/kdd/), and the University of Malaga (ACP URL: https://seminario.cv.uma.es/r28277445/). In response to the good news, A DBTech EXT video was produced and it was made available to all partners and VLW participants: an introduction to the basics of using the newly introduced Adobe Connect Pro® service [DERACP10].
The ACP was utilized in practice ny the Knowledge Discovery from Databases (KDD) VLW instructors and participants: four (4) 1-hour web meetings were conducted during the July – December 2010 period:

- one on 13 July 2010, involving nine (9) participants mostly VET trainers from Spain (Figure 3.9)
- three on 8 November, 15 November and 13 December 2010, involving an audience of fourteen (14) participants: 9 students from Greece, 1 student from Canada, 1 student from India, 1 academic from Sweden, 1 academic from Spain, and an 1 IT professional from Greece. The web meetings related to the November – December 2010 offering of the KDD VLW: Figures 3.10 and 3.11

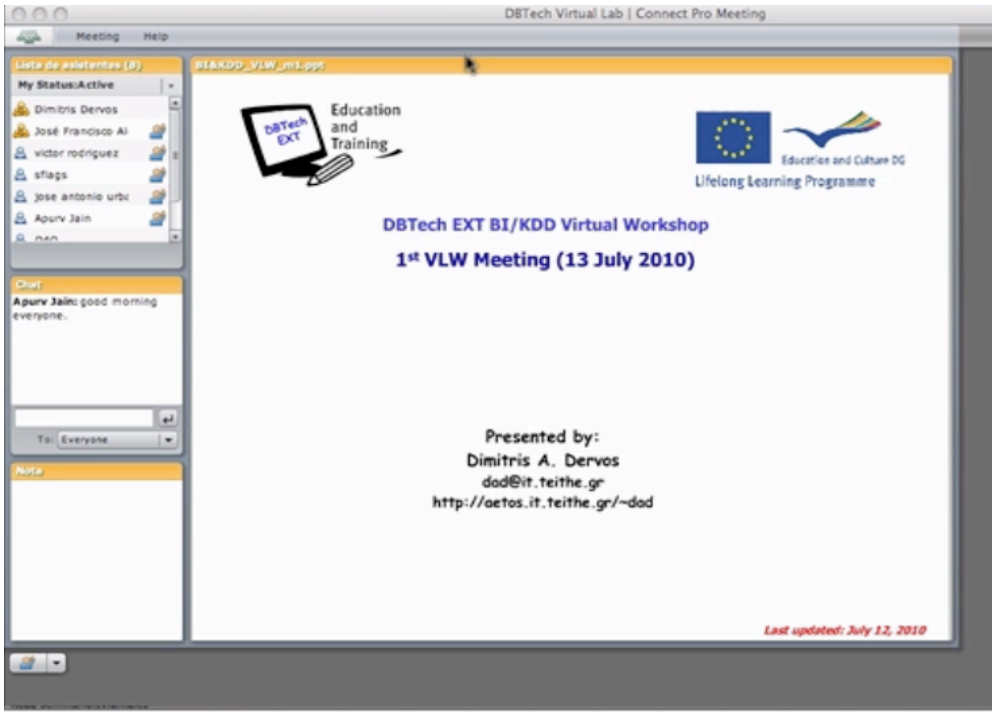

Figure 3.9 KDD VLW web meeting held on 13 July 2010; the first to utilize the University of Malaga Adobe Connect Pro® service.

All of the KDD VLW web meeting sessions have been video recorded and they are publicly available as streaming video media at the KDD VLW unit of the DBTechNet portal (http://dbtech.uom.gr/mod/resource/view.php?id=372).

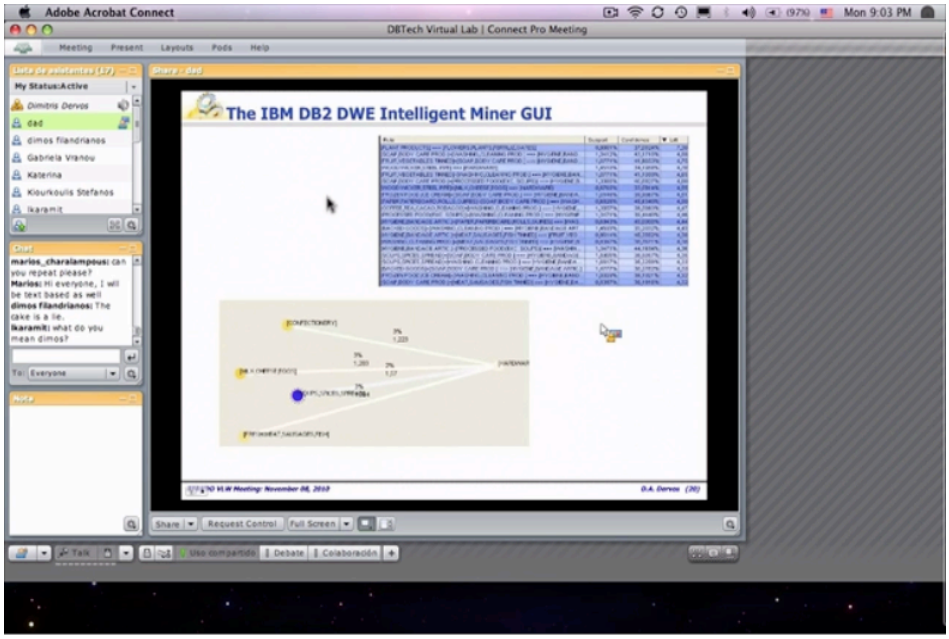

Figure 3.10 KDD VLW web meeting held on 15 November 2010: tutorial slides presentation.

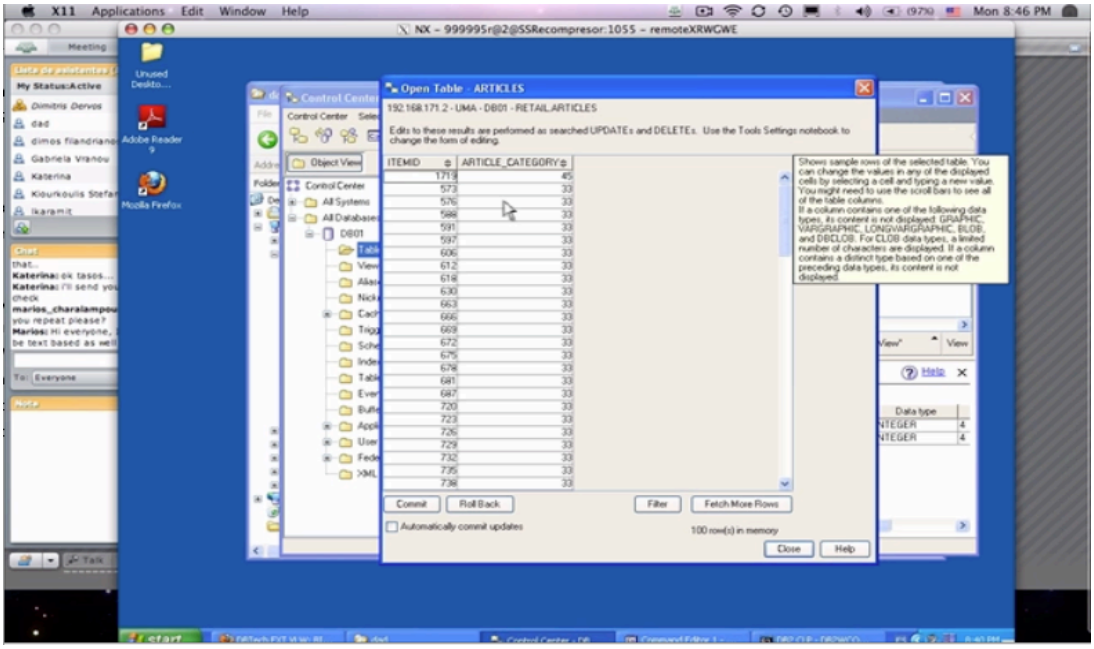

Figure 3.11 KDD VLW web meeting held on 15 November 2010: live demonstration of software usage

4 DBTech EXT Workshops

The original DBTech EXT (application) plan makes a provision for the organization of four (4) live workshops. The planned-for and actual dates when the latter materialized as well as their original and actual character have as follows:

W/shop code	Planned date	Actual date	Original character	Actual Character
WS-1	2008/11	2009/01	A *training for trainers*, 'kick-off' workshop	Dissemination day; review of the DBTech Pro project workshops. Considered updating them to become VLWs for DBTech EXT.
WS-3	2009/09	2009/09	Database Modeling and Semantics	Database Modeling and Semantics
WS-6	2010/05	2010/05	Data Access Patterns, O-R Mapping	Data Access Patterns, Technologies, and Frameworks
WS-7	2010/10	2010/11	Distributed, Replicated, Mobile, and Embedded DBs	Distributed, Replicated, Embedded and Mobile DBs

4.1 WS-1, Helsinki, Finland

As stated above, the original plan was to have WS-1 comprise both a DBTech EXT promotional event, as well as a training-for-trainers event with an audience that would include VET center teachers, as well as I.T. professionals from the industry. Due to the re-scheduling of the dates of the workshop (8-10 January 2009, instead of November 2008), this has not become possible. As a result, the event was one of a project activities planning and co-ordination (rather than educational/training/hands-on) nature. The participants attended a number of presentations, and they had no direct involvement/contribution to the event. The workshop participation profile had as follows:

Participants	HE Academics	VET Teachers	I.T. Professionals	Students
19 (100%) ***Of which***: 16 inner-circle (84%)	10 (52%) ***Of which***: 10 inner-circle (100%)	3 (16%) ***Of which***: 3 inner-circle (100%)	3 (16%) ***Of which***: 0 inner-circle (0%)	3 (16%) ***Of which***: 3 inner-circle (100%)

The workshop comprised the afternoon session of the Friday January 9, 2010, "Dissemination Day" event. The morning session of that day involved three (3) presentations by I.T. professionals and database software vendors:

1. IBM DB2 v.9 ORDBMS fundamentals, and the IBM Academic Initiative Program
2. Trends of the Oracle RDBMS, and the Oracle Academic Initiative
3. Trends of the SQL Server ORDBMS, and the Microsoft MSDNAA program

4.2 WS-3, Thessaloniki, Greece

An effort was made for the Thessaloniki workshop to attract participants from beyond the inner circle of the project's partnership. A 2-day event ran on 9-10 September 2009. Its theme/title was *Database Modeling and Semantics*. It was organized and taught by O. Virkki, with K. Silpiö, both of HAAGA-HELIA (day-1 tutorial/morning session, and day-1 hands-on laboratory workshop: Database Modeling), and J. Aldana of the University of Malaga, with L. Aunimo of HAAGA-HELIA (day-2 tutorial/morning session, and day-2 hands-on laboratory workshop: Semantic Modeling). The workshop participation profile had as follows:

Participants	HE Academics	VET Teachers	I.T. Professionals	Students
23 (100%) ***Of which***: 20 inner-circle (87%)	13 (56%) ***Of which***: 12 inner-circle (92%)	2 (9%) ***Of which***: 2 inner-circle (100%)	5 (22%) ***Of which***: 2 inner-circle (40%)	3 (13%) ***Of which***: 3 inner-circle (100%)

Considering the attendance profile of the Thessaloniki workshop, next to the Helsinki one, one notices: (a) an increase in the number or participants (23 vs. 19, i.e. 21%), (b) an increase in the percentage of I.T. professionals who participated (22% vs. 16%), and (c) a decrease in the number of student participants (13% vs. 16%).

To better interpret the above, one should bear in mind that the ATEI and University of Macedonia students were encouraged to work through the hands-on part of the workshop on their own, thus making room for the VET teachers and IT professionals in the laboratory room (subject to given space/number of workstations limitations). In this respect, a larger number of students attended the theoretical (tutorial) morning session, and they skipped the afternoon (hands-on) laboratory session of the workshop. Also, the workshop dates (September 11-12, 2009) coincided with the September final examinations period both of the Alexander TEI as well as of the University of Macedonia: this comprised yet one more reason that prevented a larger involvement/participation of the local student community.

In short, one may safely conclude that beginning with the Thessaloniki workshop, the DBTech EXT deliverables gradually start to attract the interest of the academics, and I.T. Professionals from the outer-circle section of the partnership. An effort was made to have three (3) Greek VET centers participate in the workshop. Unfortunately, we have not been successful in this respect. As a result, it was agreed that a special effort to be made to have Spanish VET centers (ideally: via their national co-ordinating authority) have an active role in the University of Malaga workshop which was to be held in May 2010.

For more information on the Thessaloniki workshop, please refer to the corresponding page of the DBTech EXT unit, at the DBTechNet web portal:

http://dbtech.uom.gr/mod/resource/view.php?id=379

4.3 WS-6, Malaga, Spain

The two-day event ran on 5 and 6 May 2010. Day-1 consisted of: (a) a theoretical (tutorial) introduction to the topics of data access technologies, architectures, patterns, and reliability, and (b) a hands-on laboratory workshop session on DB transactions, concurrency conflicts and control, row version verifying (RVV) exercises, and a TPCA2 experiment on performance and scalability of DB2 Express-C. The presentations and the laboratory workshop session were organized and taught by Mr. Martti Laiho (HAAGA-HELIA University of Applied Sciences), and Prof. Dr. Fritz Laux (Reutlingen University). Day-2 consisted of: (a) a theoretical (tutorial) introduction to the basics of Object-Relational Mapping (ORM) and the relevant persistence frameworks (Java EE, JDO, Hibernate, JPA), and (b) a hands-on laboratory session involving a JDO implementation example, plus ORM exercises using JBoss. The presentations and the laboratory workshop session were organized and taught by Mr. Arvo Lipitsäinen (HAAGA-HELIA University of Applied Sciences), and Prof. Dr. Fritz Laux (Reutlingen University). The workshop participation profile had as follows:

Participants	HE Academics	VET Teachers	I.T. Professionals	Students
26 (100%) ***Of which***: 20 inner-circle (77%)	14 (54%) ***Of which***: 12 inner-circle (86%)	5 (19%) ***Of which***: 3 inner-circle (60%)	0 (0%) ***Of which***: 0 inner-circle (0%)	7 (27%) ***Of which***: 7 inner-circle (100%)

Commenting on the above, in relation with the corresponding profile of the Thessaloniki workshop, one notices: (a) an increase in the number of participants, (b) an increase in the number of VET teachers/trainers, and (c) the absence of I.T. professionals. It is worth stating that one of the student participants was Mr. Grzegorz Majewski, a PhD candidate from the University of West of Scotland who came to know about DBTech EXT at the eRA-4 International Conference that was held in Greece on 24-29 September 2009, after attending the two DBTech EXT presentations at that conference [DERERA09, EVERA09]. Mr. Majewski's interest in DBTech EXT translated into his undertaking the cost of his own expenses for traveling to Malaga in order to attend/participate in WS-6. Mr. Majewski also enrolled as a participant in the May-June 2010 (pilot) offering of the Knowledge Discovery and Databases (KDD) VLW.

For more information on the Malaga workshop, please refer to the corresponding page of the DBTech EXT unit, at the DBTechNet web portal:

http://dbtech.uom.gr/mod/resource/view.php?id=376

4.4 WS-7, Helsinki, Finland

The workshop ran on 25 and 26 November 2010. Day-1 involved a 3-hour morning session (10.00 a.m. – 13.00 p.m.) during which the participants were introduced to the topics of Distributed and Replicated Databases. More specifically, the tutorial addressed the relevant topics across different technology fields, like databases, networking, and virtualization. Virtualization, in particular, was considered in detail regarding its use for testing distributed database configurations. During the 3-hour afternoon hands-on laboratory session (14.00 – 17.00 p.m.), two popular, freely available software products (MySQL and PostgreSQL) were used, together with a number of virtual machine (operating system) clones to put the theory of the tutorial session into practice. The presentations and the laboratory workshop session were organized and taught by Mr. Antonio César Gómez Lora, Lecturer, Department of Computer Languages and Computing Sciences, the University of Malaga. Day-2 involved a 3-hour morning session (10.00 a.m. – 13.00 p.m.) with a theoretical (tutorial) introduction to the topics of Mobile and Embedded Databases. More specifically, the audience were introduced to the Android environment and its emulation. During the 3-hour hands-on laboratory session in the afternoon (14.00 – 17.00 hours), the Android IDE was considered and configured utilizing the Eclipse application development framework and platform. Two sample applications were considered in the form of a hands-on practicing session: (a) Hello World and Bye!, and (b) a Notepad Tutorial. The presentations and the laboratory workshop session were organized and taught by Mr. Tim Lessner of Reutlingen University and the University of the West of Scotland.

The workshop participation profile had as follows:

Participants	HE Academics	VET Teachers	I.T. Professionals	Students
24 (100%) ***Of which***: 24 inner-circle (100%)	15 (63%) ***Of which***: 15 inner-circle (100%)	4 (17%) ***Of which***: 4 inner-circle (100%)	0 (0%) ***Of which***: 0 inner-circle (0%)	5 (21%) ***Of which***: 5 inner-circle (100%)

Commenting on the statistics of the Helsinki workshop, one notes that the participation list consists of DBTech EXT inner-circle partners and students. This is attributed mainly to the fact of the two-day workshop comprising part of a three-day event, the third day (DBTech EXT Symposium) comprising the main attraction event for the outer-circle partners, (mostly: I.T. Professionals from the Finnish industry), as it is reported in Section 6.2, below.

For more information on the Helsinki workshop, please refer to the corresponding page of the DBTech EXT unit, at the DBTechNet web portal:

http://dbtech.uom.gr/mod/resource/view.php?id=392

5. Workshop Themes, DBT Labs, and VLWs

As mentioned in the DBTech EXT application form and project outline [DBTEXT08], DBTech EXT involves the following seven (7) workshop themes (order by project deliverable number):

1. Concurrency Control and Recovery (deliverable number 22)
2. Database Administration and Tuning (deliverable number 23)
3. Business Intelligence (deliverable number 24)
4. XML and Databases (deliverable number 25)
5. Database Modeling and Semantics (deliverable number 26)
6. Database Access Patterns and OR-Mapping (deliverable number 27)
7. Distributed, Mobile, and Embedded Databases (deliverable number 28)

Of the above theme numbers 1 and 2 had been partly addressed by the DBTech Pro workshop entitled “Database Administration and Database Access” (Thessaloniki, November 2003 [DBTPRO05]). Quite analogously, theme number 3 had been partly addressed by the DBTech Pro workshop entitled “Data Warehousing and Data Mining” (Reutlingen, November 2004), theme number 5 by the DBTech Pro workshop entitled “Database Design”, and theme number 4 had the preliminary version of its content appear in the DBTech Pro workshop entitled “XML and Databases”. In this respect, theme numbers 6 and 7 comprised new topics to be considered and acted upon during the two years period of the DBTech EXT project.

The plan of the Database Technology (DBT) themes relating activity in the DBTech EXT project did not only involve the design, development and offering of new E&T material for theme numbers 6 and 7 above, but also the updating and enhancement of the E&T content of the other five themes, plus: the upgrading of the DBTech EXT workshops to the DBT Lab, and to the Virtual Laboratory Workshop (VLW) status.

With regard to the updating and the enhancement of the E&T content on order to have the DBTech EXT workshop reflect the current new trends and advances in the corresponding database technology areas, it was decided to:

(a) break-up deliverable number 24 (Business Intelligence) into two component themes: OLAP & Data Warehousing, and Knowledge Discovery from Databases
(b) rename deliverable number 28 to “Distributed, Replicated, Embedded, and Mobile Databases
(c) rename deliverable number 23 to “Database Administration and Tuning, Index Design”, and
(d) rename deliverable number 27 to “Data Access Patterns, Object Relational Mapping

In this respect, the DBT themes to be acted upon in DBTech EXT became the following eight (8), and they are listed in alphabetical ordering:

1. Concurrency Control and Recovery (deliverable number 22)
2. Data Access Patterns, Object Relational Mapping (deliverable number 27)
3. Database Administration and Tuning, Index Design (deliverable number 23)
4. Database Modeling and Semantics (deliverable number 26)
5. Distributed, Replicated, Embedded, and Mobile Databases (deliverable number 28)
6. Knowledge Discovery from Databases (deliverable number 24)
7. OLAP and Data Warehousing (deliverable number 24)
8. XML and Databases (deliverable number 25)

Regarding the “Workshop”, “DBT Lab” and “VLW” status levels of the DBTech EXT developed E&T content, the following set of criteria have been agreed upon and adopted by the project partnership:

DBTech EXT Workshop status requirements checklist:

1. Learning Objectives
2. Tutorial introduction material (in digital video and/or written text form)
3. Hands-on laboratory exercises
4. Accompanying software, and/or virtual machine(s) with pre-installed software

DBTech EXT DBT Lab status requirements checklist:

1. Learning Objectives
2. Tutorial introduction material (in digital video and/or written text form)
3. Self-study, and self-practicing material
4. Hands-on laboratory exercises
5. Recommended bibliography
6. Accompanying software with installation guide(s), and/or virtual machine(s) with pre-installed software with user/learner guide(s)

DBTech EXT VLW status requirements checklist:

1. Learning Objective(s)
2. Instructor's guide
3. Learner's guide
4. Tutorial introduction material (in digital video and/or written text form)
5. Sample Exercises with Model Answers
6. Self-study, hands-on laboratory practicing material
7. Hands-on laboratory exercises
8. Self-assessment (MCQs)
9. Test-run offering(s)
10. Actual (fully blown) offering(s)
11. DBTech EXT (webropol) evaluation
12. Recommended bibliography
13. Accompanying software with installation guide(s), and/or virtual machine with pre-installed software with user/learner guide(s)

Evidently, for a given DBT theme/topic, in the course of developing its E&T content, the latter first qualifies for the Workshop status, then for the DBT Lab, and lastly for the DBTech EXT VLW status level. The status level reached relates to the placement of the corresponding E&T content in the DBTech EXT unit's web pages at the DBTechNET portal: live workshops are listed under the "Workshops" label at http://dbtech.uom.gr/mod/resource/view.php?id=377, DBT Labls go public via the "DBT Labs" label at http://dbtech.uom.gr/mod/resource/view.php?id=374, whereas each one virtual laboratory workshop is assigned to a special DBTechNet portal unit of its own which is given the name of the VLW in question.

At project conclusion time (December 2010) four (4) themes were found to meet the requirements to be granted the DBTech EXT status:

1. Concurrency Control and Recovery
2. Knowledge Discovery from Databases
3. OLAP and Data Warehousing
4. XML and Databases

Two (2) themes were found to meet the requirements to be granted the DBTech EXT DBT Lab status:

1. Database Administration and Tuning, Index Design
2. Distributed, Replicated, Embedded, and Mobile Databases

Considering the above, the portal's "front window" web page at http://dbtech.uom.gr/ welcomes the user/visitor and directs him/her to visit the e-content of the following five (5) units:

1. DBTech EXT (the project)
2. Concurrency Control and Recovery (CC&R VLW)
3. Knowledge Discovery from Databases (KDD VLW)
4. OLAP and Data Warehousing (OLAP & DW VLW)
5. XML and Databases (XML & DB VLW)

5.1 Virtual Laboratory Workshops (VLWs)

In DBTech EXT, the notion of a virtual laboratory workshop (VLW) is simply the equivalent of a real laboratory workshop (as in the practice of the DBTech Pro project, namely: the well-focused treatise of a given database technology topic, complete with a theoretical/tutorial introduction, recommended bibliography, self-study, and self-practice material, and a hands-on laboratory session). The only one difference between a live laboratory workshop and a VLW is that the latter is offered via the internet, rather than during a live workshop event of pre-specified time duration (2-day, 1-week, etc.).

The original DBTech EXT (application) plan makes a provision for the organization of four (4) virtual laboratory workshop (VLW) events. By 'event', it is meant the (more or less) simultaneous offering of a number of virtual workshops: those expected to be ready at each DBTech EXT milestone instance, on the project's provisional timeline. The planned-for and actual dates when the latter materialized as well as their original and actual character have as follows:

W/shop code	Due date	Actual dates	Title and Brief Description	Comments
WS-2	03/2009	11/2009 & 07/2010	Updated VLWs Event: Test-Run	By 'updated VLW' it is meant the four (4) DBTech Pro workshops*, updated to their VLW versions. At test-run time, each one VLW was not expected to have reached its final / complete status. Also, the E&T content offering involves live meetings with the participants, it is not offered solely over the Internet. Only two of the four workshops in question were test-run as planned: KDD (as part of the Business Intelligence VLW, in November 2009), and XML and Databases (in July 2010). In both cases, the VLW participants evaluated the VLW by filling-in the DBTech EXT webropol questionnaire form.

* DBTech Pro workshops:
- Concurrency Control and Recovery
- DB Administration and Tuning (Index Design)
- Business Intelligence (KDD and Data Mining)
- XML and Databases

WS-4	11/2009	11/2010	Updated VLWs Event: Final Versions	As in WS-2, only this time each one of the four VLWs has reached its final / complete status, and its offered via the Internet. Only one VLW has been offered in its final version this way: the KDD VLW, in November 2011. The participants evaluated the offering by filling-in the DBTech EXT webropol questionnaire form.
WS-5	03/2010	11/2010	Three New VLWs: Test Run	The new DBTech EXT workshops, updated to their VLW versions. At test-run time, each one VLW was not expected to have reached its final / complete status. Also, the E&T content offering involves live meetings with the participants, it is not offered solely over the Internet. Only one of the three new workshop themes, OLAP and Data Warehousing, was test-run in November 2010 to an audience of fourteen (14) post-graduate students at the University of Macedonia.
WS-8	10/2010	NULL	Three New VLWs: Final Versions	As in WS-5, only this time each one of the three VLWs has reached its final / complete status.

5.2 WS-2, Updated VLWs Event: Test-Runs

One general statement to be made in relation to deliverable numbers 22 through to 28 is that they all involved considerable delays in having their E&T content be enriched/extended to reach the DBTech EXT VLW status level. Quoting the relevant section of the project's interim report, the delays were due to "... the current tutorials/VLW content has taken more time and effort to develop than what was originally expected. In the course of the project, also new versions of the software used (e.g. IBM's DB2 Express-C) support new technologies in a way that the XML standards and implementations in DBMS systems have totally changed...". In the same (interim) report it was also stated that "...In an effort to cover these new developments in the content we design/develop, this will come at the cost of decreasing the number of digital videos we were planning to produce. The only digital videos this far are created as part of deliverable 24 (KDD materials)".

The first DBTech EXT theme to enter its pilot (test-run) phase was the KDD part of the Business Intelligence workshop. An early version of the KDD VLW E&T content was test-run in May 2009 by the Alexander Technology Educational Institute (ATEI: inner-circle partner) students. The VLW content and laboratory practicing session was taught as part of the *Special Topics in Database Systems* course (a 7th semester elective course of the ATEI Information Technology Department). Eighteen (18) students test-ran the VLW and provided invaluable feedback. In the (ATEI provided) anonymous course evaluation questionnaire form, the students had an overall positive response to the new course content, despite the fact that the latter stood out from the rest of their courses as it was all in English. A relatively large number of students reported that they encountered difficulties while installing the IBM DB2 (proprietary) Data Warehouse client software in the Microsoft Vista operating system (OS) environment, compared to the well-documented, straightforward installation procedure in the MS Windows XP OS environment. This problem prevented a number of students from accessing the IBM DB2 Data Warehouse server over the Internet, from home.

The lesson learned from the 2008-09 Spring semester test-run of the BI&KDD VLW at ATEI was two-fold:

- the IBM DB2 DWE client software is complex and it requires some special handling during installation time in various (in particular: new) operating system environments, and

- the IBM DB2 DWE client software is made available to the project partnership via the IBM Academic Initiative Program:
  (http://www.ibm.com/developerworks/university/academicinitiative/)
  Being a proprietary software product, it cannot be distributed to VET center teachers/trainers, and I.T. professionals, so that they install it on their own, personal computers. The constraint in question was confirmed by a communication D.A. Dervos had with IBM: only academics and students of those HE institutions who are both members of the DBTech EXT partnership (inner-, and outer-circle partners alike) and they participate in the IBM Academic Initiative Program: only they are allowed to install/use the software in question for personal/educational use, only.

To overcome the two problems/constraints identified above, two actions were undertaken:

1. The current state-of-the-art OS virtualization technology was utilized, and the ATEI students were instructed to set up a virtual machine (VM) using freely available platforms of this type, like VMWARE, and VIRTUAL BOX and a stable version of the MS Windows XP Pro operating system. The ATEI Information Technology department is a member of the IBM Academic Initiative, and a member of the Microsoft Academic Alliance (http://msdn.microsoft.com/en-us/academic/default.aspx) programs. Thus, creation of a virtual machine run MS Winodws XP Professional and having the IBM DB2 DWE software installed possessed no violation to the software license policies of either one of the two software products (i.e. IBM DB2 DWE v.9.5, and MS Windows XP Professional).

2. A step forward the previous (1) comprised, yet: the software licensing remained to be a problem for the VET trainers and for the IT Professionals who would wish to join-in and enroll in a KDD VLW offering. To tackle this problem, the same (OS virtualization) technology was used, only this time via the University of Malaga (UMA) PCVirtual service: a virtual desktop infrastructure (VDI) environment involving a pool of virtual machine resources (virtual PCs) accessible over the Internet via a (any) browser

supporting either the ActiveX (MS IE), or the Java applet technologies (MS IE, Mozilla Firefox, Safari, etc.). The gain is that PCVirtual registered users may access MS Windows XP Professional virtual machines with the IBM DB2 DWE client software pre-installed, and use them to access the DBTech EXT IBM DB2 DWE server(s). Thus, VLW participants who are not authorized to install/use the IBM (proprietary) software can still work through the complete KDD VLW, provided that they are registered users of the University of Malaga PCVirtual service.

Given the developments outlined in (1) and (2) above, the KDD VLW was pilot-run for a second time, this time by both ATEI and University of Macedonia (MSc) students, during the 2009-2010 Fall semester. This time, the VLW educational and training content was (a) enhanced/extended to include lectures in digital video format, and (b) the complete KDD VLW content was organized in and made available via he newly developed DBTechNet portal (http://dbtech.uom.gr/).

The audience who tested the BI&KDD VLW during the November 2, 2009 – January 22, 2010 period consisted of ten (10) ATEI (undergraduate level), and eighteen (18) University of Macedonia (MSc level) students. This time, in addition to filling-in the corresponding (ATEI and UoM own) course evaluation forms, the VLW participants were encouraged to participated in the DBTech EXT (webropol-based) evaluation procedure. Evaluation results have been encouraging, as reported in [KDDVLWEV09].

Although complete regarding its tutorials, educational and training content, self-study, self-practice, and hands-on laboratory material, the KDD VLW had yet to “go-remote”, regarding the instructor's communication and interaction with the VLW participants. During its November 2, 2009 – January 22, 2010 test-run, the VLW participants conducted the hands-on laboratory session over the Internet, yet their interaction with the instructor was live, during the scheduled in-class sessions, at ATEI and at the University of Macedonia. In this respect, the VLW still remained to become 100% virtual.

The second DBTech EXT theme to be test-run in the form of a VLW was the XML & Databases one. It was taught in-class in July 2010, to an audience of seventeen (17) participants: sixteen (16) Enseignement supérieur et Recherche (ESAIP) students, and one (1) I.T. professional. The in-class sessions comprised part of the scheduled teaching sessions of the “XML Technologies” course at ESAIP. The test-run offering was evaluated via the DBTech EXT (webropol) evaluation procedure. The evaluation results are reported in [XMLDBEV10].

In addition to the above, a test-run of the OLAP and Data Warehousing VLW was conducted to an audience of fourteen (14) post-graduate students at the University of Macedonia in Thessaloniki. The offering involved only live in-class, and in-lab sessions and fulfilled its purpose, namely to test the newly-developed VLW E&T content. It is noted that the OLAP and Data Warehousing VLW comprises a new DBTech EXT theme, having its E&T content partially overlap with that of the DBTech Pro Business Intelligence workshop.

5.3 WS-4, Updated VLWs Event: Final Version

Deviating from the original plan, according to which the WS-4 event was scheduled to take place in November 2009, only one DBTech EXT theme was offered in the form of a fully-blown, Internet-based VLW in November-December 2010: Knowledge Discovery from Databases (KDD) VLW: http://dbtech.uom.gr/course/view.php?id=6

At this point, it is worth stating that, as it is reported in section 3.6 (Web Conferencing Tools), an attempt was made to offer the KDD VLW via the Internet in March-April 2010. The audience consisted of ATEI students who enrolled in the "Special Topics in Databases Systems" class. Unfortunately, the (free) web conferencing software used (ShowMyPC®, and TeamViewer®) turned out to perform very poorly in practice. For this reason, the idea of offering the KDD VLW over the Internet during the Spring semester of 2010-11 was abandoned, and the instructor-participants meetings were carried out as live in-class sessions, at ATEI.

The situation changed in June 2010. It was then when two inner-circle partner institutions (University of Malaga, and HAAGA_HELIA University of Applied Sciences) made available their Adobe Acrobat Connect Pro® web conferencing systems to be used for DBTech EXT VLW offerings, over the Internet. It was due to this development that an attempt was made to run the KDD VLW with an audience of nine (9), mostly VET trainers from Spain. The (new) KDD VLW offering was announced at a web meeting on July 13, 2010. It was the first web meeting to utilize the Adobe Acrobat Connect Pro® platform. The meeting was video recorded; the video may be viewed by visiting the main KDD VLW web page at the DBTechNet portal: http://dbtech.uom.gr/mod/resource/view.php?id=372).

Rather unfortunately, the VET trainers who participated in the web meeting on 13 July did not continue with the KDD VLW offering in September-October 2010. Their lack of interest and motivation may be attributed to any one of the following two reasons: (a) the summer vacations period that stood between the July web meeting and the offering of the VLW in September-October, and (b) the possibility that the VET trainers sampled/checked the KDD VLW E&T (as, in July, they were given full access to the DBTechNet portal and the KDD VLW unit) and found it to be of an advanced level with respect to the VET teaching and training curricula. Following this most unfortunate development, it was decided to proceed with a new KDD VLW offering during the November-December 2010 period.

The audience of the November 2010 KDD VLW offering involved fourteen (14) participants: 9 ATEI students from Greece, 1 I.T. professional from Greece, 1 student from Canada, 1 student from India, 1 academic from Sweden, and 1 academic from Spain. This time the VLW offering ran to completion. A total of three (3) Adobe Acrobat Connect Pro® web meetings were conducted during the November-December period, all of which are available for viewing at the KDD VLW page of the DBTechNet portal: http://dbtech.uom.gr/mod/resource/view.php?id=372). The VLW offering was evaluated by means of the DBTech EXT webropol-based procedure and the results of the evaluation appear in [KDDVLWEV10].

5.4 VLWs: Deliverables Checklist

Summarizing on the four (4) DBTech EXT themes the E&T content of which meets the set requirements to achieve the DBTech EXT VLW status level:

1. Concurrency Control and Recovery
2. Knowledge Discovery from Databases
3. OLAP and Data Warehousing
4. XML and Databases

The following tables present the E&T content developed and information relating to the VLW offerings for each one of the above, in the form of a checklist:

Concurrency Control and Recovery VLW (CC&R VLW)

Requirement	Check/Data/When
Learning Objectives	√
Bibliography	√
Tutorial slides	√
Video presentations / guides	
Self-study reading	√
Self-paced lab practicing	√
Exercises w. model answers	√
Hands-on lab exercises	√
Self-assessment (MCQs)	√
Instructor's guide	√
Learner's guide	√
Test-run	√ Apr-May 2010
Test-run: # of participants	15
Test-run: evaluation report	
Test-run	√ Nov-Dec 2010
Test-run: # of participants	15
Test-run: evaluation report	
Fully Blown Run (FBR)	
FBR: # of participants	
FBR: DBTech EXT evaluation report	
E&T Content in DBTechNet Portal	√

Knowledge Discovery from Databases VLW (KDD VLW)

Requirement	Check/Data/When
Learning Objectives	√
Bibliography	√
Tutorial slides	√
Video presentations / guides	√
Self-study reading	√
Self-paced lab practicing	√
Exercises w. model answers	√
Hands-on lab exercises	√
Self-assessment (MCQs)	√
Instructor's guide	√
Learner's guide	√
Test-run	√ (Nov-Dec 2009)
Test-run: # of participants	18
Test-run: evaluation report	√
Test-run	√ (May-June 2010)
Test-run: # of participants	10
Test-run: evaluation report	
Fully Blown Run (FBR)	√ (Nov-Dec 2010)
FBR: # of participants	14
FBR: DBTech EXT evaluation report	√
E&T Content in DBTechNet Portal	√

OLAP & Data Warehousing VLW (OLAP & DW VLW)

Requirement	Check/Data/When
Learning Objectives	√
Bibliography	√
Tutorial slides	√
Video presentations / guides	
Self-study reading	√
Self-paced lab practicing	√
Exercises w. model answers	√
Hands-on lab exercises	√
Self-assessment (MCQs)	√
Instructor's guide	√
Learner's guide	√
Test-run	√ (Nov-Dec 2010)
Test-run: # of participants	14
Test-run: evaluation report	
Fully Blown Run (FBR)	
FBR: # of participants	
FBR: DBTech EXT evaluation report	
E&T Content in DBTechNet Portal	√

XML & Databases VLW (XML & DB VLW)

Requirement	Check/Data/When
Learning Objectives	√
Bibliography	√
Tutorial slides	√
Video presentations / guides	
Self-study reading	√
Self-paced lab practicing	√
Exercises w. model answers	√
Hands-on lab exercises	√
Self-assessment (MCQs)	√
Instructor's guide	√
Learner's guide	√
Test-run	√ (Jun-Jul 2010)
Test-run: # of participants	17
Test-run: evaluation report	√
Fully Blown Run (FBR)	
FBR: # of participants	
FBR: DBTech EXT evaluation report	
E&T Content in DBTechNet Portal	√

6. Presentations and Publications

In the course of the 2-year project, the DBTech EXT partners conducted a number of DBTech EXT relating information dissemination activities, like presentations at international events, article publications with international journals, they operated stands at national or international events, demonstrated some of the project deliverables, etc. In this section, some of these activities are presented, categorized as follows:

- Conference and Journal Papers
- Presentations / Demonstrations
- Other Publications

For additional instances of project-relating information dissemination events and instances, please refer to Appendix B: WP6 Dissemination Instances and Events

6.1 Conference and Journal Papers

In June 2009, the DBTech EXT paper entitled "***DBTechNet: Innovation in Education and Training on Information Management Topics***" was accepted for presentation and it was presented at the 5th Intl. Conference on Education, in Bilbao, Spain. The paper was co-authored by I.N. Delgado, M.d.M. Roldán , G.J.J. Farfán-Leiva, and J.F. Aldana-Montes of the University of Malaga, M. Laiho of HAAGA_HELIA University of Applied Sciences, F. Laux of the University of Reutlingen, and D.A. Dervos of the Thessaloniki ATEI [DELEDU09].

The DBTech EXT presentation at the 5th International Conference on Education in Bilbao attracted the interest of the conference organizers and participants. This is reflected in the invitation the DBTech EXT partners received to publish an enhanced version of the presentation with the IADAT Journal of Advanced Technology on Education (IJAT-e). The paper published with the journal was entitled "*I**nnovative Unity in the Diversity of Information Management Skills Teaching and Training across Europe***", and it was co-authored by the same team of partners: I.N. Delgado, M.d.M. Roldán , G.J.J. Farfán-Leiva, and J.F. Aldana-Montes of the University of Malaga, M. Laiho of HAAGA_HELIA University of Applied Sciences, F. Laux of the University of Reutlingen, and D.A. Dervos of the Thessaloniki ATEI [DEIADATJ09].

Two (2) DBTech EXT papers were presented at the 4th e-RA International Conference on the Contribution of Information Technology to Science, Technology and Education which took place in Spetses, Greece, in September 2009:

- ***DBTechNet Portal: a Gateway to Educational and Training for the European Database Technology Professional***, co-authored by G. Evangelidis, and E. Pistiougkas (University of Macedonia), D.A. Dervos (ATEI of Thessaloniki), M. Laiho (HAAGA-HELIA University of Applied Sciences), F. Laux (University of Reutlingen), and J.F. Aldana-Montes (University of Malaga) [EVERA09], and

- ***DBTech EXT Virtual Lab Workshop: Business Intelligence****,* co-authored by D.A. Dervos (ATEI of Thessaloniki), G. Evangelidis and L. Karamitopoulos (University of Macedonia), L. Aunimo (HAAGA-HELIA University of Applied Sciences), J.F. Aldana-Montes and J.J. Farfán-Leiva (University of Malaga), K. Siakas (ATEI of Thessaloniki), and H. Valkama (HAAGA-HELIA University of Applied Sciences) [DERERA09]

A three-member delegation from HAAGA-HELIA University of Applied Sciences (M. Laiho, project manager, M. Heiniö, project co-ordinator, and L. Aunimo) operated a DBTech EXT stand, and made a presentation at the VKK09 Virtuaalikorkeakoulupäivät Conference, held in Espoo, Finland in November 2009 [AUNIMO09].

Three members of the project's partnership, L. Aunimo, M. Laiho, and A. Lassila, all from the HAAGA-HELIA University of Applied Sciences, co-authored the DBTech EXT paper entitled "***DBTech Database Virtual Laboratory Workshops in Teaching***" which was accepted for presentation and it was presented at the 14th IFIP WG5.7 Experimental Learning on Sustainable Management, Economics, and Industrial Engineering SIG Workshop, held in Milan in 14-15 June 2010 [AULALA10].

H. Valkama of HAAGA-HELIA University of Applied Sciences gave a presentation entitled "***Evaluation in multinational projects - case DBTech EXT***" at the 9th Congress of Methodology, Hämeenlinna Finland, May 18th-19th 2010 [VAHANK10]

A research paper which directly relates to the content of one of the DBTech EXT virtual laboratory workshops (Concurrency Control and Recovery VLW), was presented at the 5th e-RA International Conference for International Synergy in Energy, Environment, Tourism and contribution of Information Technology in Science, Economy, Society and Education, which took place in Athens, Greece, in September 2010. The paper is entitled "***On the Isolation Property of ACID Transactions***", and is co-authored by M. Laiho (HAAGA-HELIA University of Applied Sciences), T. Lessner (University of Reutlingen, and University of the West of Scotland), M. Kurki and K. Silpiö (HAAGA-HELIA University of Applied Sciences) [LALEKUSI10].

A major information dissemination event for the project has been the DBTech EXT presence at the ADBIS 2010 Conference in Novi Sad, Republic of Serbia (20-24 September 2010). The conference organizers allocated a one-hour *keynote speaker* session to DBTech EXT. Not only this, the project's 4-member delegation (M. Laiho, D.A. Dervos, F. Laux, and K. Silpiö) were able to setup a DBTech EXT stand which operated for all the four days of the conference. The paper entitled "***DBTech EXT: Education and Hands-On Training for the Database Professional*** " summarizes on the DBTech EXT presentation at ADBIS 2010, and it got published in the official (Springer Lectures Notes in Computer Science series) conference proceedings [LDALADBIS10]. The paper was co-authored by M. Laiho (HAAGA-HELIA University of Applied Sciences, D.A. Dervos (ATEI of Thessaloniki), J.F. Aldana-Montes (University of Malaga), and F. Laux (University of Reutlingen).

The DBTech EXT presence at ADBIS 2010 comprised a most important event of project-relating information dissemination activity. It is for this reason that a detailed report was compiled to record the occasion. The report can be retrieved as a separate document from http://dbtech.uom.gr/mod/resource/view.php?id=674, but it is also included herewith in subsection 6.1.1 that follows.

6.1.1. The DBTech EXT Presence at ADBIS 2010

ADBIS 2010 was the 14th annual Conference on Advances in Databases and Information Systems. Held in September 20-24, 2010 at the Novi Sad University in Novi Sad, Republic of Serbia, the event and attracted database academics and researchers from Central and East European countries, and the rest of the world. A selection of the papers presented at ADBIS 2010 (including the keynote presentations) are published with the Springer Lecture Notes in Computer Science (LNCS[1]). For more information, please refer to the conference web site at: http://www.adbis2010.org/.

For DBTech EXT, the ADBIS conference comprised a major event attracting European database researchers and teachers, an opportunity to achieve visibility of the project deliverables to the target audience in question. The following text, copied from the conference web site[2], explains why the event was rated to be highly important for disseminating information on the DBTech EXT project:

> "*The main objective of the ADBIS series of conferences is to provide a forum for the dissemination of research accomplishments and to promote interaction and collaboration between the database and information systems research communities from Central and East European countries and the rest of the world. The ADBIS conferences provide an international platform for the presentation of research on database theory, development of advanced DBMS technologies, and their advanced applications.*
>
> *The Conference continues the ADBIS conferences held in St. Petersburg (1997), Poznan (1998), Maribor (1999), Prague (2000), Vilnius (2001), Bratislava (2002), Dresden (2003), Budapest (2004), Tallinn (2005), Thessaloniki (2006), Varna (2007), Pori (2008) and Riga (2009). The conference will consist of regular sessions with technical contributions reviewed and selected by an international program committee, as well as of invited talks and tutorials presented by leading scientists. The official language of the conference will be English.*"

The Republic of Serbia is not an LLP country, however it can be seen in the above that the majority of the past ADBIS conferences have taken place in LLP countries, successfully targeting the same audience of European academics and researchers. An initial invitation was addressed to DBTech EXT to participate in ADBIS 2009 which was held in Riga, Latvia. Unfortunately, the days of the conference (7-10 September 2009) overlapped with the days of the second DBTech EXT workshop and general meetings, held in Thessaloniki, Greece from 8 to 11 September 2009.

Commenting further on the relation the ADBIS audience have to LLP countries, it is noted that next year's conference ADBIS 2011 will take place in Wien, Austria. Furthermore, the ADBIS Steering Committee membership involves members from many LLP countries such as Austria, the Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, and Poland[3]. The ADBIS 2010 list of participants[4] includes academics, researchers, and IT professionals from Europe and beyond.

1 http://www.springerlink.com/content/978-3-642-15575-8/
2 http://perun.pmf.uns.ac.rs/adbis2010/aims.php
3 http://perun.pmf.uns.ac.rs/adbis2010/organization.php
4 http://perun.pmf.uns.ac.rs/adbis2010/download/adbis2010participants.pdf

Based on a recommendation made by the ADBIS steering committee member Prof. Boris Novikov from St. Petersburg University, Prof. Dimitris Dervos from ATEI applied for a DBTech EXT dissemination event at ADBIS 2010. As a result, the ADBIS 2010 organizing committee invited DBTech EXT to give an 1-hour key note presentation at the conference. It also became possible to have a DBTech EXT stand operate during the days of the conference. In this respect, two (2) large and a number of smaller (A3) posters were printed at ATEI, and some 150 leaflets were printed at HAAGA-HELIA. The conference organizers provided WiFi access to the Internet, plus they kindly made available a number of hardware items to be used at the DBTech EXT stand: a multi-port power outlet, tables, chairs, a large silver projector screen, a 22-inch TFT computer monitor, and a USB keyboard. The DBTech EXT team of (four) conference participants contributed with their own laptops, a portable projector (HAAGA-HELIA), and a portable loudspeaker (ATEI). The pictures shown in Figures 6.1 and 6.2 have captured and display instances showing the ADBIS 2010 DBTech EXT stand at work.

Figure 6.1 The ADBIS 2010 DBTech EXT stand at autrium of the conference hall

Figure 6.2 Visitors at the stand, discussing with the DBTech EXT delegation

The keynote paper "*DBTech EXT: Education and Hands-On Training for the Database Professional*", co-authored by Martti Laiho, Dimitris Dervos, José Aldana and Fritz Laux is included in the Springer LNCS conference proceedings (ISBN 978-3-642-15575-8)[5].

The keynote presentation at ADBIS 2010 was organized as follows:

1. DBTech EXT project, presented by Dimitris Dervos
2. The live and virtual workshops of DBTech EXT, presented by Fritz Laux
3. Concurrency Lab, prepared by Martti Laiho and Kari Silpiö, presented by Kari Silpiö
4. KDD Virtual Workshop, presented by Dimitris Dervos
5. Video presentation on the theme of the upcoming (Helsinki, November 2010) DBTech EXT workshop on Distributed and Replicated Databases, prepared by Cesar Gomez of the University of Malaga
6. Video presentation of the DBTech EXT HE Survey (workpackage 5), prepared by Ismael Navas-Delgado of the University of Malaga

The keynote presentation took place in the central hall/auditorium of the ADBIS 2010 conference (Figures 6.3, 6.4, and 6.5)

5 http://www.springerlink.com/content/k2p4517547383p05/

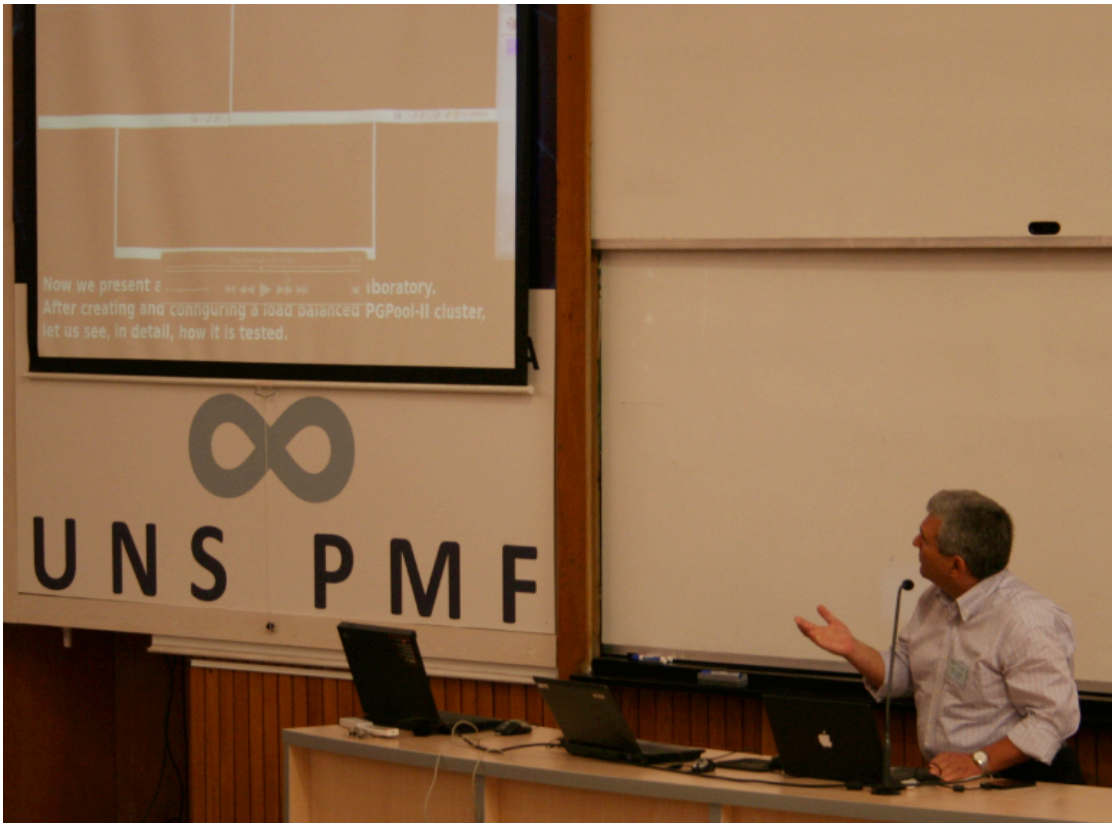

Figure 6.3 Prof. Dimitris Dervos presenting the Distributed and Replicated Databases video

Figure 6.4 A view of the audience who attended the DBTech EXT keynote presentation

Figure 6.5 ADBIS 2010 audience at the central hall/auditorium of the conference

A number of most useful contacts and discussions were made/held during and after the days of the ADBIS 2010 conference. For the purpose of disseminating information on the DBTech EXT project deliverables, and for receiving invaluable feedback with comments for the improvement of the latter, the project's presence at the conference is considered to be successful.

More specifically:

1. The conference chair, Prof. Mirjana Ivanovic expressed her interest to establish a collaboration with DBTech EXT on e-learning. She suggested that DBTech EXT compile an invited paper for the *Computer Science and Information Systems*[6] journal for which she acts as the editor-in-chief. It was agreed that the paper in question is to be prepared following the DBTech EXT project completion in December 2010. In addition, Prof. Ivanovic was granted access to the DBTech portal[7], enrolled as a participant in the virtual laboratory workshop on Knowledge Discovery from Databases (KDD VLW), and expressed the interest to establish a working collaboration with the ATEI of Thessaloniki. The latter will focus on organization and offering a LLL course on database technology, targeting student and IT professional audiences in the Balkan region: a possibility to be considered along the lines of the recently established ATEI LLL institute.

2. Prof. Ajantha Dahanayake of the Georgia College and State University expressed her interest to obtain further information on DBTech EXT and the project deliverables. She was granted access to the DBTech portal environment.

6 http://www.comsis.org/
7 http://dbtech.uom.gr

3. Dr. Stephen Hegner of Umeå University in Sweden provided invaluable feedback and comments on the DBTech EXT HE Survey outline and content. His suggestions were given immediate and serious consideration, and they (to some considerable extend) have shaped the current version of the HE survey's web form[8]. Following the ADBIS 2010 conference days, Dr. Hegner participated inDBTech EXT KDD VLW offering. He also attended the DBTech EXT Symposium at HAAGA-HELIA on November 26, 2010. Dr. Hegner has made some most useful comments on the current functionality and user-friendliness of the DBTech portal. The new (HTML-, as opposed to PDF-based) version of the latter is soon to become operational and it is attributed to Dr. Hegner's comments that will be included in the WP6 (Dissemination) final report.

4. Dr. Sonja Ristić of the University of Novi Sad, has expressed her interest in the DBTech EXT VLWs. Beginning in late December 2010, she will have a number of her students enroll in the KDD VLW for the purpose of gradually incorporating the VLW content into the curriculum of the courses she teaches at the University of Novi Sad. In this respect, she has been granted access to the DBTech portal, and she has enrolled in the KDD VLW.

5. Assistant Professor Sergio Ilarri of the University of Zaragoza has contacted DBTech EXT, expressing his interest in the project's virtual laboratory workshops. Dr. Ilarri, a member of the Spanish Excellence Network on Databases[9], is an active participant of the current offering of the KDD VLW, having participated in the VLW's web meeting held on November 15. 2010. He contributes invaluable feedback and comments for the improvement of the VLW content, and its teaching/training methodology.

For the entire set of the DBTech EXT presentation material at ADBIS 2010, please refer to the corresponding web page in the DBTechNet portal:

http://dbtech.uom.gr/mod/resource/view.php?id=477

8 http://www.webropol.com/P.aspx?id=437312&cid=57827217
9 http://www.redbd.es/

6.2 DBTech EXT Symposium

In view of the conclusion of the DBTech EXT project in December 2010, an International one-day event, the DBTech EXT Symposium, was held at HAAGA-HELIA University of Applied Sciences on 26 November 2010, alongside with the fourth DBTech EXT Workshop (24-25 November 2010). The aim was to bring together students, teachers on database technologies, and database professionals from the ICT industry, on the occasion of the summing-up of the results of the DBTech EXT project. Results that reflect upon the current technology trends in database applications, and the challenges they represent for the database professional. Last but not least, the impact such developments have to the shaping of new practices of teaching/training new database technology skills to students, graduates, and I.T. professionals.

The Symposium's theme was "*New Technology Trends and Challenges for the Database Professional*", and the statistics of its list of participants had as follows:

Participants	HE Academics	VET Teachers	I.T. Professionals	Students
54 (100%) ***Of which***: 19 inner-circle (35%)	22 (41%) ***Of which***: 15 inner-circle (68%)	4 (7%) ***Of which***: 4 inner-circle (100%)	13 (24%) ***Of which***: 2 inner-circle (15%)	15 (28%) ***Of which***: 28 inner-circle (100%)

The thirteen (13) I.T. professionals who participated represented eleven (11) Finnish industries, and the seven (7) outer-circle HE academics represented three (3) Universities (Umeå in Sweden, Helsinki and Tampere in Finland), and four (4) Finnish Universities of Applied Sciences.

Commenting on the aforementioned synthesis of the audience, a notable difference is that, when compared to the DBTech EXT workshops (Section 4, above), the Symposium has been very successful in attracting participation from outside the inner-circle of the partnership, from the I.T. industry, in particular.

The one-day event began with a welcome speech by Prof. T. Honkasaari, Director of the Information Technology Education Unit at HAAGA-HELIA University of Applied Sciences, followed by a preliminary session involving four (4) talks on results and representative deliverables of the DBTech EXT project:

- DBTech EXT
  (D. A. Dervos, ATEI of Thessaloniki)
- DBTech EXT Workshops and Virtual Labs
  (F. Laux, University of Reutlingen)
- DBTech EXT Concurrency Control and Recovery VLW
  (M. Laiho, and K. Silpiö, HAAGA HELIA University of Applied Sciences)
- DBTech EXT Knowledge Discovery from Databasse VLW
  (D.A. Dervos, and L. Karamitopoulos, ATEI of Thessaloniki,
  and University of Macedonia)

The introductory talks were followed by the keynote address of the day:

- Industry View on Future Database Education
  (A. Hovi, on behalf of Logica Finland)

Next came four (4) presentations on Database Technology (DBT) research topics DBTech EXT (inner-circle) partners are currently active at. Research activity and experience that is reflected upon upon in the project's workshop and virtually laboratory workshop educational and training content which is subject to continuous updating and enhancement in order to remain up-to-date with the latest developments in the corresponding DBT themes, with emphasis on the relevant professional skills and areas of specialization:

- Cloud Databases and Transaction Processing
  (M. Crow, University of the West of Scotland;
  additional reading: A Cloud Database With Transactions)
- From Flat to Complex Transactions
  (T. Lessner and F' Laux, University of Reutlingen, and
  University of the West of Scotland)
- Time Series Data Mining (L. Karamitopoulos,
  University of Macedonia)
- Database Design Based on Ontologies
  (M.d.M. Roldán, and I. Navas, University of Málaga)

The Industry Track (afternoon session) of the Symposium involved three (3) presentations from leading database software vendors:

- MySQL/InnoDB
  (H. Tuuri and K. Jacobs, Oracle Finland)
- In-Memory Databases
  (K. Laiho, IBM SolidDB)
- SQL Azure Cloud Computing
  (P. Mäkinen, Microsoft Finland; additional presentation material:
  Windows Azure Application Platform as a Service)

6.3 Presentations / Demonstrations

During the two years of the project, the members of the DBTech EXT partnership quite often took the initiative to organize and conduct acts of disseminating information in relation with the project. This included events like operating a DBTech EXT stand at conferences or exhibitions, presenting the project to professional groups/bodies either live, or by participating in discussion fora on the web, via professional social networking services (e.g. http://www.viadeo.com, http://www.linkedIn.com), etc.

A detailed list of project relating dissemination activity instances and events is presented, ordered chronologically, appears in Appendix B. The itemized list below highlights the instances/events rated to be most important, on the basis of the number of recipients (audience) they addressed:

- M. Laiho of HAAGA-HELIA University of Applied Sciences presented DBTech EXT alongside with the presentation of his (DBTech EXT CC&R VLW relevant) research at DB2-YTR (DB2 user group in Finland) meeting at OP-Pohjola, in May 8, 2009 [LADB2YTR09]

- A three-member delegation from HAAGA-HELIA University of Applied Sciences (M. Laiho, project manager, M. Heiniö, project co-ordinator, and A. Bruschi) operated a DBTech EXT stand at the VKK09 Virtuaalikorkeakoulupäivät Conference, held in Espoo, Finland in November 2009 [BRLAVKK09]

- A four-member delegation (M. Laiho and K. Silpiö of the HAAGA-HELIA University of Applied Sciences, D.A. Dervos of the Thessaloniki ATEI, and F. Laux of Reutlingen University) operated a DBTech EXT stand for the duration of the ADBIS 2010 Conference. Held in Novi Sad, Republic of Serbia, 20-24 September 2010 [LADELASI10]
  A promotional document was sent to all one hundred and six (106) conference participants, together with an invitation to fill-in the Undergraduate and Postgraduate Database Courses Survey form

- A. Duffoux of Groupe ISAIP-ESAIP presented DBTech EXT through viadeo (http://www.viadeo.com) and linkedIn (http://www.linkedin.com/) to a group of French companies (HCA International, Atos Origin, Amazon, Microsoft, MC2i, Sopra Group, Cap Gemini, Laval Mayenne Technopole). The relevant letter presenting DBTech EXT, and the presentation slides can be retrieved from:
  http://dbtech.uom.gr/mod/resource/view.php?id=715
  http://dbtech.uom.gr/mod/resource/view.php?id=717

6.4 Other Publications

In addition to the DBTech EXT conference and journal papers reported in Sections 6.1 and 6.1.1 above, the project partners have been active in conducting research and published research papers indirectly relating to the DBT topics/themes of their contribution to DBTech EXT. In this respect, the knowledge and the experience gained are reflected upon the project's workshop and virtually laboratory workshop educational and training content. Considering the fact that the latter is subject to continuous updating and improvement in order to remain up-to-date with the latest developments in the corresponding areas of DBT skills and specialization, the itemized list below briefly refers to these 'DBTech EXT peripheral' publications:

- Laiho M., Laux F., “Implementing Optimistic Concurrency Control for Persistence Middleware using Row Version Verification”, 2010 [LAILAU10]

- Hainey T., Connolly T.M., “Evaluating Games-based Learning”, 2010 [HAICON10]

- Karamitopoulos L., Evangelidis G., Dervos D., “PCA-based Time Series Similarity Search”, 2010 [KAEVDE10]

- Laux F., Lessner T., “Escrow Serializability and Reconciliation in Mobile Computing using Semantic Properties”, 2009 [LAULESS09]

- Hainey T., Connolly T., “Development and Evaluation of a Game to Teach Requirements Collection and Analysis in Software Engineering at Tertiary Education Level”, 2009 [HAICON09]

- Laux F., Lessner T., “Transaction Processing in Mobile Computing Using Semantic Properties”, 2009 [LAULESS09a]

- Laux F., Laiho M., “SQL Access Patterns for Optimistic Concurrency Control”, 2009 [LAULAI09]

- T.M. Connolly T.M., Stansfield M.H., Hainey T., “Games-based Learning Advancement for Multisensory Human Computer Interfaces: Techniques and Effective Practices”, 2009 [COSTHI09]

7. Conclusion

In the present report, the information dissemination activities undertaken by the DBTech EXT members during the two-year period of the project are considered. Emphasis is naturally given to the project deliverables that directly relate to and influence today's practice of professional education and training in the European Union. The database technology themes considered, the educational and training content developed and offered/taught in live as well as in virtual (i.e. over the Internet) sessions: all project deliverables that the members DBTech EXT partnership have worked systematically on, not just for their design development but also for spreading the news of their availability to all interested actors in as many EU member states as possible: HE academics, IT professionals, Vocational Education Training teachers, soon-to-be, or recent graduates, etc.

The result of the effort? In terms of what has been done by whom, how and when, it is all reported, herewith:

Section 2 summarizes on the outer-circle partners identified, and been kept informed throughout the project duration on the upcoming events, the project deliverables that became available for evaluation/testing, and, in addition: they have been asked to provide feedback as to whether what the project partnership considered to comprise a necessity for today's professional education and training practice in the EU, indeed comprised one.

Section 3 considers the ICT infrastructure used by the DBTech EXT partnership in: (a) collaborating with each other over the Internet, (b) conducting asynchronous and synchronous teaching/training sessions to audiences at disparate geographical locations, and (b) carrying out information dissemination tasks.

Section 4 reports on the four live DBTech EXT workshops organized, and their attendance (audience) statistics, whereas Section 5 considers the what becomes of the DBTech EXT workshops content after it is offered/presented at a live workshop session: DBT Labs and Virtual Laboratory Workshops (VLWs).

In Section 6, publicity in the formal sense of the word is considered: presentations of DBTech EXT members at international conferences, DBTech EXT relating papers that have been published with accredited, peer-reviewed journals, etc. Special (and detailed) reference is made to the two top DBTech EXT project information dissemination instances: (a) the DBTech EXT presence at the ADBIS 2010 Conference in Novi Sad (20-24 September 2010), and (b) the DBTech EXT Symposium (Helsinki, 26 November 2010).

Last but not least, Appendix B lists, in chronological order, information dissemination instances undertaken in the course of the project, the member(s) involved, plus a short description of the activity undertaken in each one case.

However, result of the effort does not only comprise the reporting of how information dissemination has been made, to what numbers of recipients/audiences, and by what statistics. Results of the effort also comprise the feedback obtained, and the lessons learnt. The former comprises the topic of another DBTech EXT workpackage final report (WP2, Pedagogy, Quality Plan, Evaluation). For the latter (lessons learnt) it is worth devoting one whole paragraph to, in this concluding section:

In the attempt that has been made to attract the interest of the IT industry and the VET teachers/trainers by offering them self-study, self-training virtual laboratory workshops (VLW) E&T content via the Internet, it has been realised that the initial DBTech EXT model whereby the self-motivated learner/participant goes through the E&T content and self-practising material himself, and contacts the instructors for assistance when needed, this model has failed to work in practice. The most effective approach appears to be one that involves the extensive use of web conferencing services for conducting synchronous meeting sessions, plus the use of virtual machines which are accessible over the Internet. Evidently, DBTech EXT has not been able to fully apply in practice this model of operation, due to its lacking: (a) the necessary I.T. infrastructure (for most of the part of its 2-year duration, as it only became available during the last six months of the project), and (b) the human resources for the required teaching/training workload.

Still, the experience of working together, and of having the DBTech EXT deliverables enjoy immediate applicability has made all the (both inner- and outer-circle) partners involved (from HE academics and students, to IT professionals and VET teachers/trainers) feel the aura, and be part of the upcoming new educational and training reality in the EU: a most refreshing, encouraging, and highly motivating feeling, indeed!

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Appendix A: WP6 Deliverables

Deliverable number	35
Title	*Outer-Circle Partners (OCP)*
Type of outcome / product / results	Establishment and Administration of the Service
Description:	
New OCPs to join-in, throughout the project duration period. Regular academic partners are expected to attract at least one industrial OC partner to the project, effectively becoming CE/LL actors in their region, linking HE with VET provision and certification. Analogously, academic OC partners will be advised to involve at least one of their industrial contacts. Indicative OC partnership activity indicators: number of OCPs, OCP participation in workshops, industrial/academic OCPs ratio, etc	
Reported: • Established a contacts-list of 41 who are kept up-to-date with the latest developments in the DBTech EXT/DBtechNet partnership (Section 2 in WP6 final report). • 113 registered DBTechNet portal users (42% of which are OCP, Section 3.2 in WP6 final report) • Helsinki 2009 Workshop OCP participation: 16% (Section 4.1 in WP6 final report) • Thessaloniki 2009 Workshop OCP participation: 13% (Section 4.2 in WP6 final report) • Malaga 2010 Workshop OCP participation: 23% (Section 4.3 in WP6 final report) • Helsinki 2010 Workshop OCP participation: 0% (Section 4.4 in WP6 final report) • Helsinki 2010 Symposium OCP participation: 37% (Section 6.2 in WP6 final report)	

Deliverable number	36
Title	*DBTech Web Portal*
Type of outcome / product / results	Communication, Info & Training Dissemination Tool
Description:	
The portal is to utilise open source course management software, tailored to the needs of DBTech EXT. To be developed and maintained by the same team who have developed and administer the University of Macedonia CoMPUs environment (http://compus.uom.gr), it will run on UoM provided hardware. First to become operational in March 2009, it will provide access to the servers implementing the DBTech EXT virtual workshops on the internet, and to Google Apps residing communication/collaboration tools.	
Reported: • A first (partially complete) version of the portal became operational in March 2009. It underwent thorough testing prior to going public (reference [EVERA09] in the WP6 final report) • The portal went public in its fully operational mode in November 2009	

Deliverable number	37
Title	*Video-on-Demand (VOD) Service*
Type of outcome / product / results	Digital Video Streamer Service
Description:	
Every DBTech EXT workshop is to involve a tutorial part which is to become available in digital video, over the internet (e.g. http://vod.it.teithe.gr/PE04//DM/part1/part1_files/Default.htm). The project's Video-on-Demand service will be implemented and administered by the same team who have implemented and operate the Information Technology Department's VOD server, at the ATEI (http://vod.it.teithe.gr). The service is to be accessible via the DBTech EXT web portal, beginning in March 2009.	
Reported: • The VOD service became operational, as planned, in March 2009 (Section 3.5 in WP6 final report) • Of the three DBTech EXT live workshop events, only the Thessaloniki workshop has had its tutorial part be video-recorded and become publicly available via the VOD video streaming service: http://dbtech.uom.gr/mod/resource/view.php?id=379	

Deliverable number	38
Title	*Workshop-1 (live)*
Type of outcome / product / results	Event: Updated DBTech Pro Workshops for Trainers
Description:	
The one-day event is to comprise a *training for trainers*, 'kick-off' workshop: each one team of those who have developed the four existing (DBTech Pro) workshops will be given two hours to outline the workshop content to educators (from the academia, and industry), plus pave the ground for the new version of the educational and training material which is to comply with the DBTech EXT set requirements (cf. WP3). The event is to take place at HAAGA-HELIA, in November 2008.	
Reported: • Workshop dates re-scheduled • The event took place in 8-10 January 2009 (Sections 4 and 4.1 in WP6 final report) • DBTech EXT inner-circle partners only event; did not involve a *training for trainers* session	

Deliverable number	39
Title	*Workshop-2 (virtual)*
Type of outcome / product / results	Updated Virtual Workshops Event: Test-Run
Description:	
The new versions of the four DBTech Pro workshops complete with tutorials in digital video, educator and learner guides, self-study exercises with model answers, assessment material, case studies, plus with the corresponding virtual lab environments become available on the internet in March 2009. DBTech EXT partners (both regular and OC) test-run the workshops and provide feedback for their improvement. Indicative usage indicators: enrolment, industrial/academic participation, %OCP, etc.	
Reported: • Delivery date shifted to November 2009 • DBT themes and Workshop, DBT Lab, VLW status levels (re-)defined (Section 5 in WP6 final report) • Four DBT themes: 1. Database Administration and Tuning, Index Design (DAT&IT), status level: DBT Lab 2. Concurrency Control and Recovery (CC&R), status level: VLW 3. Knowledge Discovery from Databases (KDD), status level: VLW 4. XML and Databases (XML&DB), status level: VLW • KDD VLW test-run in Nov-Dec 2009, 18 participants, with participants feedback (reference [KDDVLWEV09] in WP6 final report) • CC&R VLW test-run in Apr-May 2010, 15 participants, w/o participants feedback • XML&DB VLW test-run in Jun-Jul 2010, 17 participants, with participants feedback (reference [XMLDBEV10] in WP6 final report)	

Deliverable number	40
Title	*Workshop-3 (live)*
Type of outcome / product / results	Event: Database Modeling and Semantics
Description:	
A two-day event during which the first of the three new DBTech EXT workshops is to be presented to an audience that will include educators and learners from the academia and industry. The workshop is to be co-organized and it will be co-hosted in June 2009 by the two Greek academic partners: the ATEI, and the University of Macedonia (UoM). Workshop participants will evaluate the quality of the content and its presentation (cf. WP2) . Indicative usage indicators: as in deliverable no. 43, below.	
Reported: • Workshop dates and organisation plan re-scheduled • The event was organised and hosted by ATEI in 9-10 September 2009 (Section 4.2 in WP6 final report) • Workshop link: http://dbtech.uom.gr/mod/resource/view.php?id=379	

Deliverable number	41
Title	*Workshop-4 (virtual)*
Type of outcome / product / results	Updated Virtual Workshops: Final Versions
Description:	
The final (new) versions of the DBTech Pro workshops to become available on the internet in November 2009: (a) *Concurrency control and recovery technologies, extended to disconnected data access including Web Services* , (b) *Database administration and tuning, including Index Design*, (c) *Business Intelligence, including Data Warehousing and Data Mining*, and (d) *XML and Databases, standards and implementations, including XQuery*.	
Reported: • Delivery date shifted to November 2010 • DBT themes and Workshop, DBT Lab, VLW status levels (re-)defined (Section 5 in WP6 final report) • Four DBT themes: 1. Database Administration and Tuning, Index Design (DAT&IT), status level: DBT Lab DBT link: http://dbtech.uom.gr/mod/resource/view.php?id=683 2. Concurrency Control and Recovery (CC&R), status level: VLW VLW link: http://dbtech.uom.gr/course/view.php?id=9 3. Knowledge Discovery from Databases (KDD), status level: VLW VLW link: http://dbtech.uom.gr/course/view.php?id=6 4. XML and Databases (XML&DB), status level: VLW VLW link: http://dbtech.uom.gr/course/view.php?id=10 • KDD VLW final, fully-blown, version offered in Nov-Dec 2010: 14 participants (11 students, 2 academics, 1 I.T. professional) from Greece, Spain, Sweden, Canada, and India (Section 5.3 in WP6 final report). Participants (evaluation) feedback collected: reference [KDDVLWEV10] in WP6 final report	

Deliverable number	42
Title	*Workshop-5 (virtual)*
Type of outcome / product / results	Three New Virtual Workshops Event: Test-Run
Description:	
The three new DBTech EXT workshops, complete with tutorials in digital video, educator and learner guides, self-study exercises with model answers, assessment material, case studies, plus with the corresponding virtual lab environments become available on the internet in March 2010. DBTech EXT partners (both regular and OC) test-run the workshops and provide feedback for their improvement. Indicative usage indicators: enrolment,industrial/academic participation, %OCP, etc.	
Reported: • Due date shifted to November 2010 • DBT themes and Workshop, DBT Lab, VLW status levels (re-)defined (Section 5 in WP6 final report) • Four DBT themes: 1. Data Access Patterns, Object Relational Mapping, status level: Workshop 2. Database Modeling and Semantics, status level: Workshop 3. Distributed, Replicated, Embedded, and Mobile Databases, status level: Workshop 4. OLAP and Data Warehousing (OLAP&DW), status level: VLW • OLAP&DW VLW test-run in Nov-Dec 2010, 14 participants, w/o participants feedback (Section 5.4 in WP6 final report)	

Deliverable number	43
Title	*Workshop-6 (live)*
Type of outcome / product / results	Data Access Patterns, O-R Mapping Event
Description:	
A two-day event during which the second of the three new DBTech EXT workshops is to be presented to an audience that will include educators and learners from the academia and industry. The workshop is to be organised and hosted by the University Malaga, in May 2010. Workshop participants will evaluate the quality of the content and its presentation (cf. WP2). Indicative usage indicators: number of participants, industrial/academic participation ratio, %OCP participation, etc.	
Reported: • The event was organised and hosted by the University of Malaga in 5-6 May 2010 • Workshop link: http://dbtech.uom.gr/mod/resource/view.php?id=376	

Deliverable number	**44**
Title	*DBTech EXT Brochure*
Type of outcome / product / results	Dissemination brochure for the project
Description:	
A brochure will be produced outlining information about the DBTech EXT project and an invitation to all stakeholders to participate in it. The brochure will be available in both printed (for distribution at conferences, seminars, workshops and other events) as well as in digitalized (for email distribution to a wider audience) formats.	
Reported: • Instead of a single brochure, a number of leaflets, posters, and e-letters/reports were complied and produced both in hardcopy as well as in electronic form (collectively called: DBTech EXT promotional material). The material was produced on the occasion of specific events, in order to advertise/promote the project to the corresponding audiences, and it has also been used for the dissemination of project relating information in person-to-person and/or Internet-based social network type communication instances: 1. Thessalnoki workshop e-letter (English version) Link: http://dbtech.uom.gr/mod/resource/view.php?id=620 2. Thessalnoki workshop e-letter (Greek version) Link: http://dbtech.uom.gr/mod/resource/view.php?id=622 3. Thessaloniki workshop (triptych) leaflet (English version) Link: http://dbtech.uom.gr/mod/resource/view.php?id=647 4. Thessaloniki workshop (triptych) leaflet (Greek version) Link: http://dbtech.uom.gr/mod/resource/view.php?id=648 5. Thessaloniki workshop poster Link: http://dbtech.uom.gr/mod/resource/view.php?id=626 6. ADBIS 2010 conference poster Link: http://dbtech.uom.gr/mod/resource/view.php?id=661 7. ADBIS 2010 conference (triptych) leaflet Link: http://dbtech.uom.gr/mod/resource/view.php?id=663 8. ADBIS 2010 conference e-letter/report Link: http://dbtech.uom.gr/mod/resource/view.php?id=674 9. ADBIS 2010 conference e-invitation Link: http://dbtech.uom.gr/mod/resource/view.php?id=671 10. VKK09 conference poster Link: http://dbtech.uom.gr/mod/resource/view.php?id=709 11. e-letter to French I.T. companies (in French) Link: http://dbtech.uom.gr/mod/resource/view.php?id=642	

Deliverable number	45
Title	*Publicity*
Type of outcome / product / results	Interim Report
Description:	
WP6 to report on the actions (to be) taken in disseminating information about the project, namely: presentations at international conferences, articles in journals/newsletters/newspapers, webcasts, etc. Typical performance indicators: number of articles/presentations at various events or communication media, number of third party references to DBTech EXT in the web and/or in other communication media, etc. The interim report is to be presented at the DBTech EXT meeting in Malaga (May 2010).	
Reported: • WP6 interim report presented at the DBTech EXT meeting in Malaga (5-6 May 2010)	

Deliverable number	46
Title	*Conference with Workshop-7 (live)*
Type of outcome / product / results	Event
Description:	
A 3-day event of a seminar day of presentations (based on call for papers) of current topics on database technologies and 2-days of series of DBTech workshops including the third of the three new DBTech EXT workshops " Distributed, Replicated, Mobile and Embedded DBs" is to be presented to an audience that will include educators and learners from the academia and industry. The workshop is to be organised and hosted by HAAGA-HELIA University of Applied Sciences, in October 2010. Workshop participants to evaluate the quality of the content and its presentation (cf. WP2). Indicative usage indicators: as in deliverable no. 43, above.	
Reported: • Event dates and nature (International Symposium, instead of Conference) shifted to November 2010 • The workshop was organised and hosted by HAGGA-HELIA University of Applied Sciences in 24-25 November 2010 • Workshop link: http://dbtech.uom.gr/mod/resource/view.php?id=392 • International Symposium organised and hosted by HAAGA-HELIA University of Applied Sciences on 26 November 2010 • Symposium link: http://dbtech.uom.gr/mod/resource/view.php?id=406	

Deliverable number	47
Title	*Workshop-8 (virtual)*
Type of outcome / product / results	Three New Virtual Workshops: Final Versions
Description:	
The final versions of the three new DBTech EXT workshops to become available on the internet in October 2010: (a) *Database Modeling and Semantics*, (b) *Data Access Patterns, including Object-Relational (O-R) Mapping APIs (vs. ODBMS systems)*, and (c) *Distributed, replicated, mobile and embedded databases*.	
Reported: • Due date shifted to November 2010 • DBT themes and Workshop, DBT Lab, VLW status levels (re-)defined (Section 5 in WP6 final report) • Four DBT themes went public on the Internet in November 2010: 1. Data Access Patterns, Object Relational Mapping, status level: Workshop Link: http://dbtech.uom.gr/mod/resource/view.php?id=376 2. Database Modeling and Semantics, status level: Workshop Link: http://dbtech.uom.gr/mod/resource/view.php?id=379 3. Distributed, Replicated, Embedded, and Mobile Databases, status level: Workshop Link: http://dbtech.uom.gr/mod/resource/view.php?id=392 Distributed and Replicated Databases part, status level: DBT Lab Link: http://dbtech.uom.gr/mod/resource/view.php?id=680 4. OLAP and Data Warehousing (OLAP&DW), status level: VLW	

Deliverable number	48
Title	*WP6: Final Report*
Type of outcome / product / results	Final Report
Description:	
The final WP6 (Dissemination) report. To be presented at the general DBTech EXT meeting in Helsinki (October 2010).	
Reported: • Due date shifted to November 2010 • The report was presented at the Helsinki workshop in 24-25 November • The report was updated to reflect the complete 2-year period of project duration in January – February 2011 • The final version of the WP6 report was produced on 20 February 2011	

Appendix A: DBTech EXT Information Dissemination Instances/Events

A) DBTech EXT (inner-circle) names encoding scheme:

Encoded Name	Full Name, and Partner Institution/Organization
AD	Amandine Duffoux, Groupe ISAIP-ESAIP, France
AL	Arvo Lipitsäinen, HAAGA-HELIA University of Applied Sciences, Finland
DAD	Dimitris A. Dervos, ATEI of Thessaloniki, Greece
EK	Euclid Keramopoulos, ATEI of Thessaloniki, Greece
EP	Evangelos Pitsiougkas, University of Macedonia, Greece
FL	Fritz Laux, University of Reutlingen, Germany
GE	Georgios Evangelidis, University of Macedonia, Greece
HV	Hannu Valkama, HAAGA-HELIA University of Applied Sciences, Finland
IND	Ismael Navas-Delgado, University of Málaga, Spain
JA	José F. Aldana-Montes, University of Málaga, Spain
JJFL	Juan J. Farfán-Leiva, University of Málaga, Spain
JR	Jaakko Rantanen, TIETO, Finland
KS	Kerstin Siakas, ATEI of Thessaloniki, Greece
KSi	Kari Silpiö, HAAGA-HELIA University of Applied Sciences, Finland
LA	Lili Aunimo, HAAGA-HELIA University of Applied Sciences, Finland
LK	Leonidas Karamitopoulos, University of Macedonia, Greece
MH	Mimmi Heiniö, HAAGA-HELIA University of Applied Sciences, Finland
MK	Matti Kurki, HAAGA-HELIA University of Applied Sciences, Finland
ML	Martii Laiho, HAAGA-HELIA University of Applied Sciences, Finland
MMRG	María del Mar Roldán-García, University of Málaga, Spain
MS	Mark Stansfield, University of the West of Scotland
OV	Outi Virkki, HAAGA-HELIA University of Applied Sciences, Finland
PR	Paivi Riihela, Helsinki Business College, Finland
TC	Thomas Connolly, University of the West of Scotland
TH	Thomas Hainey, University of the West of Scotland
TL	Tim Lessner, University of Reutlingen, Germany

B) Information Dissemination Instances/Events (ordered by year/month):

When	Partner(s) Involved	Description
01/2009	DBTech EXT	Helsinki “Kick-Off” Workshop and Meetings
01/2009	KS	Discussions with Prof. Dr. Miguel Ángel Sicilia Urbán and Salvador Sanchez' during Scientific visit at Departamento de Ciencias de la Computación, Escuela Técnica Superior de Ingeniería Informática, University of Alcala de Hernares, Spain
02/2009	AD	Presentation of DBTech Ext to Angers technopole - cellule Europe
03/2009	AD	Oracle France are briefed on DBTech Ext, Dominique Van Deth (Director of Oracle Academy France) is especially interested by the project.
04/2009	DAD	Meeting with Prof. J. Barsics, Higher Educational Institution of the Province of Liege, Belgium. Considered the possibility of arranging a DBTech EXT (promotional) event in Liege, Belgium
04/2009	DAD	Meeting with Dr. Lauri Frank, chairman of the Dept. of Computer Science and Information Systems, University of Jyvaskyla, Finland. Dr. Frank becomes interested in DBTech EXT and he is included in the mailing list of the OUP who are regulalry updated on the project relating developments.
04/2009	AD	IBM DB division France are briefed on DBTech Ext
04/2009	KS	Handout of dissemination material to conference participants at Software Quality Management (SQM) and INSPIRE Conferences, Southampton Solent University, Hampshire, UK, Link: http://sqm.lboro.ac.uk/past/2009/venue.html
05/2009	DAD	Meeting with the president of the TEI of Patras, Greece (Prof. S. Kaplanis)
05/2009	DAD	IBM Hellas are briefed on DBTech EXT
05/2009	DAD	Microsoft Hellas are briefed on DBTech EXT
05/2009	KS	Handout of dissemination material to conference participants at the 21st National Conference E.E.E.E. “Decision Making in the Health System”, TEI Peiraeus, Athens, Greece
05/2009	TC,TH. MS	Peripheral: T.M. Connoly, M.H. Stansfield, T. Hainey, “Games-based Learning Advancement for Multisensory Human Computer Interfaces: Techniques and Effective Practices”, Book Chapter in Towards the Development of a Games-based Learning Evaluation Framework

When	Partner(s) Involved	Description
05/2009	DAD	An early version of the KDD VLW is test-run by eighteen (18) ATEI students of the "Special Topics in Database Systems" (elective) course. The VLW test-run was not considered to comprise a VLW offering of deliverable number 24; it was conducted just to receive invaluable feedback on the difficulties encountered by the VLW participants, in view of the first "official" VLW test-run scheduled for the Fall semester of the 2009-2010 academic year.
06/2009	IND, MMRG, JJFL, JA, ML, FL, DAD	DBTech EXT paper presentation at the IADAT Conference, Bilbao, Spain: *DBTechNet: Innovation in Education and Training on Information Management Topics* Link: http://dbtech.uom.gr/mod/resource/view.php?id=610
06/2009	DAD, EK	The DBTech EXT leaflet goes public in both electronic and pdf form in two language versions (EN: 600 pcs, GR: 100 pcs). Links: http://dbtech.uom.gr/mod/resource/view.php?id=620 http://dbtech.uom.gr/mod/resource/view.php?id=622 http://dbtech.uom.gr/mod/resource/view.php?id=647 http://dbtech.uom.gr/mod/resource/view.php?id=648
06/2009	DAD	Meeting with Prof. D. Tseles of TEI Pireaus, Greece
06/2009	DAD	Established first contact with the EU CEDEFOP headquarters, in Thessaloniki, Greece. Initial communication via email, and telephone with Dr. Rocío Lardinois de la Torre, Project Manager - Training the Trainers Network (Ttnet), Unit Enhanced Cooperation in VET and LL, and Ms. Mary Karagiozopoulou of the Public Relations Department. The EU CEDEFOP officers were broefed on DBTechNet, and on the DBTech EXT project.
06/2009	DAD	Communication with Ms. Corinna Frey, CEDEFOP Public Relations Area Communication, Information and Dissemination: fixed the agenda of the VET center representatives visit to CEDEFOP during the days of the Thessaloniki workshop (September 9-11, 2010) Link: http://dbtech.uom.gr/mod/resource/view.php?id=634
07/2009	KS	Handout of dissemination material to 20 participants at EUCert Project Meeting Copenhagen, Denmark
07/2009	IND, MMRG, JJFL, LM, FL, DAD, JA	DBTech IADAT Journal paper: Innovative Unity in the Diversity of Information Management Skills Teaching and Training across Europe Link:http://dbtech.uom.gr/mod/resource/view.php?id=602

When	Partner(s) Involved	Description
08/2009	ML, FL	DBTech EXT Peripheral: M. Laiho and F. Laux, On Row Version Verifying (RVV) Data Access Discipline for avoiding Lost Updates", Links: http://www.dbtechnet.org/papers/RVV_Paper.pdf http://dbtech.uom.gr/mod/resource/view.php?id=711 Topic/research also presented at: http://db2ytr.pbworks.com/w/page/23709251/YTR_2009_05_08
09/2009	DAD, EK	DBTech EXT bookmark. Link: http://dbtech.uom.gr/mod/resource/view.php?id=720
09/2009	DAD, GE, LK, LA, JA, JJFL, KS	DBTech EXT paper presentation at the eRA-4 Conference, Spetses, Greece: *DBTech EXT Virtual Lab Workshop: Business Intelligence*. Link: http://dbtech.uom.gr/mod/resource/view.php?id=604
09/2009	GE, EP, DAD, ML, FL, JA	DBTech EXT paper presentation at the eRA-4 Conference, Spetses, Greece: DBTechNet portal: A Gateway to Education and Training for the European Database Technology Professional. Link: http://dbtech.uom.gr/mod/resource/view.php?id=606
09/2009	DAD	During the eRA-5 conference days (24-26/9/2010), Ms. Kathleen Cass is briefed on the DBTech EXT project by D. Dervos. Ms Cass is the Executive Director of the Committee on Data for Science and Technology (CODATA, www.codata.org).
09/2009	DAD	D. Dervos accepts the invitation to become a member of the Hellenic CODATA Steering Committee. A topic of intereset to DBTech EXT and DBTechNet is the licensing of the educational and training content, and the datasets utilized by the virtual laboratory sessions oferred via the Internet.
09/2009	DAD	During the eRA-5 conference days (24-26/9/2010), Mr. Grzegorz Majewski was briefed in the DBTech EXT project by D. Dervos. Mr. Majewski is a PhD candidate with the University of West Scotland. As a result of this first contact, Mr. Majewski participated in the DBTech EXT Workshop in Malaga, Spain (May 2010), and enrolled as a participant in the KDD VLW
09/2009	DAD, OV, KSi, TH, JA, LA	Thessaloniki Workshop Links: http://dbtech.uom.gr/mod/resource/view.php?id=722 http://dbtech.uom.gr/mod/resource/view.php?id=379 http://dbtech.uom.gr/mod/resource/view.php?id=724 http://dbtech.uom.gr/mod/resource/view.php?id=726

When	Partner(s) Involved	Description
09/2009	KS	Handout of dissemination material to conference participants EuroSPI 2009 Conference, University of Alcala Spain (http://2009.eurospi.net/)
09/2009	KS	Referenced DBTech EXT in her "Training and networking for WB-EU research cooperation in ICT for Learning and eLearning" presentation (18 September 2009 CAPSIS Hotel, 18 Monastiriou Str., 546 29 Thessaloniki, Greece) Links: http://www.wins-ict.eu/workshop.html http://dbtech.uom.gr/mod/resource/view.php?id=646 http://www.ict-web-proms.eu/sites/default/files/Kerstin%20Siakas_ATEI_Thessaloniki.pdf
10/2009	DAD	The DBTech EXT leaflet was handed to participants of the First Meeting of University Libraries of the Balkan States, held at the “St. Kliment Ohridski” Library of the Sofia University, Bulgaria.
10/2009	FL, TL	Peripheral: F. Laux, T. Lessner. In the International Journal On Advances in Telecommunications 2009, vol. 2 (2): “Escrow Serializability and Reconciliation in Mobile Computing using Semantic Properties”. Links: http://www.thinkmind.org http://dbtech.uom.gr/mod/resource/view.php?id=618
10/2009	TH,TC	Peripheral: Thomas Hainey, Thomas Connolly, “Development and Evaluation of a Game to Teach Requirements Collection and Analysis in Software Engineering at Tertiary Education Level”, 3rd European Conference on Games Based Learning, 12-13 October, Graz, Austria Link: http://www.academic-conferences.org/ecgbl/ecgbl2009/ecgbl09-home.htm
11/2009	ML,TL	Peripheral: Fritz Laux, Tim Lessner, ´Transaction Processing in Mobile Computing Using Semantic Properties´, DBKDA, pp.87-94, 2009 First International Conference on Advances in Databases, Knowledge, and Data Applications, 2009 Links: http://ieeexplore.ieee.org http://dbtech.uom.gr/mod/resource/view.php?id=616 http://www.iaria.org/conferences2009/DB09.html

When	Partner(s) Involved	Description
11/2009	ML, LA, MH	Participation with a stand in the 2 day exhibition of VKK09 Conference (Finnish Virtual University Conference, Nov 18-19, 2009) in Dipoli, Espoo, Finland. DBTEch EXT poster (A1) and leaflets, and presented the Virtual Labs on 2 workstations to participants (ca. 15) visiting the stand. Staff on the stand: Martti Laiho and a student 2 days, Mimmi Heiniö 1 day. Links: http://www.virtuaalikorkeakoulupaivat.fi/palvelut/vkk09/ http://dbtech.uom.gr/mod/resource/view.php?id=708 http://dbtech.uom.gr/mod/resource/view.php?id=705 http://dbtech.uom.gr/mod/resource/view.php?id=706
11/2009	GE, EP, DAD	The DBTech portal becomes operational and goes public. Link: http://dbtech.uom.gr
11/2009	DAD	First offering of the KDD VLW; on the Internet, to student audiences from the Thessaloniki ATEI (BSc), and from the University of Macedonia (MSc): ten (10) ATEI, amd eighteen (18) University of Macedonia students participated. The VLW ran from 11/ 2009 to 02/2010. The participants evaluated the VLW offering (webropol). Link: http://dbtech.uom.gr/mod/resource/view.php?id=628
11/2009	KS	Handout of dissemination material to meeting participants Tempus ICT Convergence project meeting Yarmouk University, Jordan
11/2009	FL,ML	Peripheral publication: Fritz Laux, Martti Laiho; SQL Access Patterns for Optimistic Concurrency Control, The First International Conferences on Pervasive Patterns and Applications (PATTERNS 2009), pp. 254-258, November 15-20, 2009 - Athens/Glyfada, Greece Also available via IEEE Explore Link: http://dbtech.uom.gr/mod/resource/view.php?id=614
12/2009	ML, JR	Index Design Lab planning meeting with Tapio Lahdenmäki, Ilmarinen / Matti Ståhl, Business Databases / Mika Wendelius, and Tieto/Jaakko Rantanen
01/2010	DAD	Visited the EUTREK offices in Thessaloniki. Discussed DBTech. Arranged participation in the KDD VLW Link: http://eutrek.com
01/2010	AD	Presentation of DBTech Ext project on groupe esaip website (links to the official website and portal are embedded in the presentations). Links : in english : http://www.esaip.org/en/research-centre/dbtechext-project/ in french : http://www.esaip.org/pole-recherche/projet-dbtechext/

When	Partner(s) Involved	Description
02/2010	ML	Visit to Kela - The Social Insurance Institution of Finland for a student project on data access technologies. Introduced DBTech EXT, with emphasis on the workshops (live and virtual). The DBTech EXT leaflet was given to two (2) ICT professionals: Mr. Vicente Perez and Mr. Markku Vuorinen.
02/2010	DAD	Introduced DBTech EXT and the project activities to Mr. Vasilios Efopoulos, director of Tessera Multimedia. The company will have one of its employees participate in the next offering of the KDD VLW. Link: www.tessera.gr
03/2010	TH,TC	Peripheral: T. Hainey, T.M. Connolly, International Journal of Virtual and Personal Learning Environments, Invited Paper, Vol 1, Issue 1: "Evaluating Games-based Learning"
03/2010	DAD	Introduced DBTech EXT and the project activities to Mr. Theofilos Milonas, Director of CardiSoft The company is to seriously to consider to join-in as an outer-circle partner to DBTech EXT. Link: www.cardisoft.net
03/2010	DAD	D. Dervos accepts the invitation to participate in the committee who elaborate on the framework of operation of the newly established ATEI LIfelong Learning Institute. The committee members (presided by the Prof. Dr. F. Karipides, ATEI Vice-President) are briefed on DBTech and they become highly interested in exploiting the possibilities of collaborating with the partnership in order to utilize the DBTech EXT project deliverables in the LL programs (the ones aiming at attracting participation from the neighboring Balakan countries, in particular).
03/2010	KS	Information, discussions and handout of dissemination material to meeting participants Kemo Project meeting University of Vaasa, Finland
03/2010	KS	Information and handout of dissemination material to Kaj Lindedal and Camilla Mitts at Erasmus collaboration meeting Novia University of Applied Sciences
03/2010	FL	DBTech EXT promotional information material to the participants of the GI Informatiktage in Bonn, Germany Link: http://www.gi.de/informatiktage/informatiktage-2010.html
04/2010	FL	DBTech EXT promotional information material to the participants of the Second International Conference on Advances in Databases, Knowledge, and Data Applications (DBKDA 2010), April 11-16, 2010 - Menuires, The Three Valleys, French Alps, France Link: http://www.iaria.org/conferences2010/DBKDA10.html

When	Partner(s) Involved	Description
04/2010	PR	Introductory text to DBTech EXT project and its' objectives plus a link to more information was send to all VET institutes in Finland (60 institutes/200 receivers) with the database knowledge questionnaire. Links: http://myy.haaga-helia.fi/%7Edbms/dbtechnet/DBTechExtDescr.pdf https://spreadsheets.google.com/viewform?hl=fi&formkey=dFk4TnV3Q3hYZVVqekJteVY1bWM4M3c6MQ DBTechExtDescr.pdf DBTech_EXT_VET_Questionnaire.pdf Cover_Letter_VET_Questionnaire.pdf
04/2010	ML	CC&R VLW test-run to an audience of fifteen (15) students at HAAGA-HELIA University of Applied Sciences
05/2010	JA, ML, FL, AL	Malaga Workshop Link: http://dbtech.uom.gr/mod/resource/view.php?id=376
05/2010	ML, FL	Peripheral publication: Presentation at the Second International Conference on Advances in Databases, Knowledge, and Data Applications held in Menuires, France, April 11-16 2010. The paper received the best paper award at the conference, and it is to be published with the IARIA journal. Full reference: Conference Proceedings pp. 45 – 50, ISBN: 978-1-4244-6081-6 INSPEC Accession Number: 11360647 DOI: 10.1109/DBKDA.2010.25 Link(s): (1) http://www.iaria.org/conferences2010/ProgramDBKDA10.html (2) http://dbtech.uom.gr/mod/resource/view.php?id=610
05/2010	HV	Conference presentation "Evaluation in multinational projects - case DBTech EXT". 9th Congress of Methodology in May 18th-19th 2010, Hämeenlinna Finland Link(s): http://dbtech.uom.gr/mod/resource/view.php?id=643 http://portal.hamk.fi/portal/page/portal/8791D7670A873007E040A8C0C94113CD
05/2010	DAD	Pilot offering: KDD VLW to an audience of nine (9) ATEI students, plus Mr. Grzegorz Majewski: a PhD candidate student from the University of the West of Scotland. The latter enrolled from a distance, via email and Skype® communication with the instructor (DAD)

When	Partner(s) Involved	Description
06/2010	ML, LA, AL	Presentation at the IFIP WG 5.7 SIG workshop in Milan, Italy: DBTech EXT Virtual Laboratory Workshops in Teaching and Experimental Learning Link(s):http://dbtech.uom.gr/mod/resource/view.php?id=612 http://sites.google.com/site/ifip57sigexilim/
06/2010	KS	Information and handout of dissemination material to Kaj Lindedal and Camilla Mitts at Erasmus collaboration meeting Novia University of Applied Sciences
07/2010	AD	Test Run of the Virtual Workshop XML & DB. Audience: 17 participants, 16 students, 1 I.T. professional. In-class sessions, only. Evaluated by DBTech EXT (webropol). Taught as part of a regular course: XML Technologies. Link: http://dbtech.uom.gr/mod/resource/view.php?id=630
07/2010	KS	Information and handout of dissemination material to students and staff participating in invited talk. Invitation by Elli Georgiadou, Middlesex University, UK
07/2010	DAD	KDD VLW web meeting on July 13, 2010. Nine (9) participants, mostly VET trainers from Spain. mms://vod.it.teithe.gr/dlectures/BI_KDD_VLW_2010_07_13_meeting.WMV
09/2010	ML, TL, MK, KSi	DBTech EXT presentation at ERA-5, TEI Piraeus, Greece, 15-18 September 2010: *On the isolation property of ACID transactions* Links: http://era.teipir.gr http://dbtech.uom.gr/mod/resource/view.php?id=608
09/2010	ML,DAD, FL,KSi	Participation in ADBIS 2010. DBTech EXT ADBIS 2010 presentation material made available to all conference participants (106), together with an invitation to participate in the DBTech EXT HE DB Courses Survey Links: ADBIS_2010_Report.pdf ADBIS_Poster.pdf ADBIS_Leaflet.pdf ADBIS_LNCS.pdf http://perun.pmf.uns.ac.rs/adbis2010/download/adbis2010participants.pdf DBTech_EXT_at_ADBIS_2010.pdf DBTech_EXT_Stand_ADBIS2010.jpg DBTech_EXT_ADBIS2010_Invitation.pdf
09/2010	KS	Information and handout of dissemination material to students and staff participating in invited talk. Invitation by Eleni Berki, Tampere University, Finland

When	Partner(s) Involved	Description
09/2010	KS	Information, discussions and handout of dissemination material to meeting participants Diva Project meeting http://www.diva-project.eu/, University of Vaasa, Finland
09/2010	FL	DBTech EXT promotional information material to the participants of Informatik 2010: Service Science - Neue Perspektiven für die Informatik Link: http://www.informatik2010.de/
10/2010	DAD	The Hellenic Ministry of Education and LifeLong Learning launched a public discussion forum via the Internet on the issue of shaping a national policy on LLL type e-courses and e-content. DAD posts a contribution to the discussion forum, reporting on the DBTech EXT acquired experience in designing, organizing, and offering LLL course modules and virtual laboratory workshops over the Internet. Link: http://dbtech.uom.gr/mod/resource/view.php?id=636
10/2010	KS	Handout of dissemination material to conference participants ECQA conference Budapest Hungary http://www.ecqa.org/index.php?id=105
11/2010	AD	Presentation of DBTech Ext through viadeo (http://www.viadeo.com) and linkedIn (http://www.linkedin.com/) to a group of french companies (HCA International, Atos Origin, Amazon, Microsoft, MC2i, Sopra Group, Cap Gemini, Laval Mayenne Technopole) Link(s): http://dbtech.uom.gr/mod/resource/view.php?id=642 http://dbtech.uom.gr/mod/resource/view.php?id=640
11/2010	DAD	KDD VLW offering. The participants evaluated the VLW offering (webropol). Audience: 14 (9 students from Greece, 1 student from Canada, 1 student from India, 1 academic from Sweden, 1 academic from Spain, 1 IT professional from Greece). Link: http://dbtech.uom.gr/mod/resource/view.php?id=632
11/2010	GE	OLAP & DW VLW test-run to an audience of fourteen (14) post-graduate students at the University of Macedonia
11/2010	ML	CC&R VLW test-run to an audience of fifteen (15) students at HAAGA-HELIA University of Applied Sciences
11/2010	DAD	KDD VLW web meeting-1 on 15 November: Adobe Connect Pro (ACP) service, 1 hour mms://vod.it.teithe.gr/dlectures/2010_11_15_KDDVLW_meeting.WMV

When	Partner(s) Involved	Description
11/2010	ML	ML presented the DBTech EXT theme “Data Access Engineering” at the FISMA/ECQA Workshop Day entitled “Competence development as main challenge for IT organizations”, held at the HAAGA-HELIA University of Applied Sciences on November 23, 2010. In addition to ML, the DBTech EXT delegation at the workshop included JA, MMRG, IND, DAD, and KS. Link: http://dbtech.uom.gr/mod/resource/view.php?id=803
12/2010	DAD	KDD VLW web meeting-2 on 8 Dec.: ACP service, 1 hr
12/2010	DAD	KDD VLW web meeting on 13 Dec.: ACP service, 1 hr mms://vod.it.teithe.gr/dlectures/2010_12_13_KDDVLW_meeting.WMV
12/2010	KS	Information and handout of dissemination material Erasmus visit at ATEI of Thessaloniki by Pekka Makkonen from Jyväskylä Univeristy Finland
12/2010	DAD	DAD prepares a short article on DBTech EXT and its deliverables, to be published with the May 2011 edition of the ATEI 'Periskopio' newsletter. Link: http://dbtech.uom.gr/mod/resource/view.php?id=791