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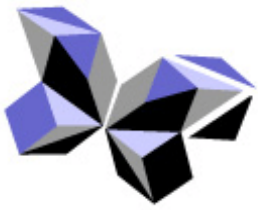

Digital Business Ecosystem

Contract n°507953

Workpackage 30

DBE Transfer and Adoption

Deliverable 30.09

Training Delivery and Content Developed Report

Information Society Technologies

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Executive Summary

This report provides the details of training delivered and content developed during the final phases of the training programme in the Digital Business Ecosystem project. The purpose of the report is to account for the training and two-way knowledge transfer effort of the partners with SMEs towards the achievement of the objectives of the work package. It includes sections by the regional catalysts and other partners associated with this activity. The report also accounts for the training content developed during the course of the final project phases. Some of the live training content can be accessed at:
http://opensoa.blogspot.com/

Regional training and content development have managed has planned. The main concerns that have remained have been the delay in the launch of a simple, stable, usable and standardised architecture. Engagement of the developer and user SMEs have progressed as per plan and have shown that the three regional catalysts have made different actions to match their regional needs.

The regional catalysts have mentioned their future plans towards continuity of their actions. Some have been through the support of the regional agencies, while others have been based on wider initiatives through inter-project links and relationships.

1. Introduction

This is the third and final report providing details of training delivered to SMEs and others. This report also provides the details of the training materials that have been developed within the project to support the knowledge transfer. It concentrates on the training actions delivered at all levels as specified in Deliverable D28.12 during the final phases of the training plan.

2. Partner Reports

London School of Economics

Newsletter

The concept of a newsletter was to create a form of internal communication that would progressively reach a wider and more external audience as the project grew.

It was named the 'DBE Bulletin' in order to get a sense of short factual postings of live information, and was constructed as a simple electronic newsletter with its own circulation list.

As is common, difficulty was encountered in getting participants to provide information, and most contributors provided material that was not in a journalistic style.

However, these problems were overcome by a combination of contacting individuals and pressing for publishable materials, scouring the online and email submissions made for other purposes, and re-writing material in a consistent journalistic style.

During the project the budget for the newsletter was cut and so it was not possible to produce it at the fortnightly rate that was originally envisaged. However, 7 issues were produced and distributed and were well received.

The style of the publication changed gradually reflecting the evolution of the project. Initially it was an internal vehicle for keeping project partners informed of operational matters, including the surfacing of issues. Later it became more of a public-facing editorial describing project progress and achievements.

Intel

Introduction

Intel is in charge of the overall dissemination and the delivery of the knowledge platform that supports the management and delivery of learning material. By

combining these two activities, we are aiming to capture both tacit and explicit knowledge. The tacit knowledge creation will be the outcome produced by the communities of practice. Intel also supported some centralised creation of training material which was effectively used for training actions undertaken by the regions and the dissemination of relevant materials such as that outlined below.

Actions Planned

SME interviews – (material shot at Regional Event ion Helsinki on Jan 17th and currently in post production) with two Spanish, one British and one Finnish SMEs. This collateral will be released and posted on the central website shortly.

Learning Content Developed

Four flash movies have been produced. These are:

1. The DBE and Macro Economics
2. The DBE and Micro Economics - the Benefits of the DBE for SMEs
3. The DBE's Technical Environment
4. The DBE's Evolutionary Environment

Additional content developed includes:

1. Graphical Overview of the DBE
2. The DBE for Software developers
3. Introduction to the DBE for SMEs (Presentation)
4. All material present in www.digital-ecosystem.org

Changes made to the plan and rationale

The learning contents mentioned above were created as dissemination material and became informational/introductory reference points for regions and interested organisations.

The video interviews mentioned above were added to cover a gap identified in training material which would identify real world application cases for the DBE and stimulate engagement by other SMEs.

Our Experiences and Learning

Unstructured hands-on training at code camps, etc. were very successful but proved difficult to capture for re-use. Centrally produced, localisable/reusable training material would have been beneficial. Hence the drive to centrally produce extensive dissemination material as referred above.

TCH

Training Planned

The last deliverable stating training plans was D28.11, which concentrated in phase 2 training. Plans of later phases of DBE training are in D 28.12 that has now been released.

The plans for the last phases of training included continuation of driver and implementer engagement, deepening the training of user SMEs and initiating cross-regional collaboration between SMEs in different regions.

Training Delivered

The first drivers required a great deal of hands-on support in their work of integrating first services to DBE. For that reason a number of codecamps and other workshops were held to support their work. Presentations held in these events have been made available to newcomers to DBE as well as all other training material that has been developed during the project. Thus the training materials available in the final phases of the project have been plentiful. This has led to decrease in need of supported workshops and an increase in the use of electronic training materials. However, the need for one-to-one meetings has been as important as in earlier phases.

Content Development Planned

The only local content development of the last project phases has been updating and renewing the DBE website adjacent to COSS (Center for Open Source Software) website. Content developed in the project and distributed in the DBE website has been provided to SMEs.

Learning Content Developed

As mentioned above, the learning and training content development has concentrated on the regional DBE website. Training activities have been carried out mostly as one-to-one discussions in which the learning content used has come from both the regional and the international website of DBE or from the previous phases. No new specific learning content has been created at this phase.

Changes made to the plan and rationale

No actual changes have been made to plans and implementation.

Our Experiences and Key Learning

In our experience the greatest need for learning and training content was with the first SMEs that were engaged in the DBE. In the following phases the previous SME cases prove to be the best references and sources for learning, being practical and easy to understand for the companies. Also, in the latter phases of the SME engagement there was already an abundance of training content and the challenge was less about creating more than to find the best and most relevant content to each SME case.

ITA

Training Planned, Training Delivered and Changes made to the plan and rationale

In this section we show the original training planned and the actual delivery made. If there is a mismatch, then it is explained in the next section "Changes made to the plan and rationale".
Below, we describe the specific plans for the different agents in the region in order to present a clear analysis of activities.

SW Developers (Drivers and Implementers).

In Phase 1, most of the training efforts were dedicated to the Induction phase and engagement. ITA has a good reputation among the ICT companies in the region, and we have worked in different projects with them, therefore we have good relationships which enable us to have open conversations with them. We had initial one-to-one meetings with 3-4 potential driver companies at the beginning of the project in order to collect real feedback from the beginning. These were followed by one-to-one meetings and several interviews with 8 potential Drivers (Mr. Miguel Vidal, DBE Technical Director attended some of those interviews). We did not want to have workshops or seminars, because we wanted to manage SME reactions as far as possible and ensure that their experience of the DBE was positive.
The result was that we engaged 4 Drivers ready to work together to integrate their applications in the tourist sector. They may be seen in http://www.ita.es/dbe/?ID=184.

In Phase 2 of the project, we have worked in expanding the community in our region. We have realized that it is very important to have the biggest possible community working around the DBE. The bigger the community, the easier to sustain the project. Then, and as we planned, we launched the second call for proposals in order to engage more SW Implementer SMEs.

Implementers Phase I engagement was done in December 2005. 17 proposals were received and 8 proposals were accepted. The engaged Implementer Phase I SMEs may be seen in http://www.ita.es/dbe/?ID=212.

Implementers Phase II engagement was done in March 2006. 13 proposals were received and 12 proposals were accepted. The engaged Implementer Phase II SMEs may be seen in http://www.ita.es/dbe/?ID=225.

By then, we had 24 SW SMEs working with the platform.
They were working in many other sectors besides tourism, such as, e-commerce, taxi float management systems, ERP integration, … (check the cvs accounts of all the companies in "Drivers >> SMEs", "Implementers1 >> SMEs" and "Implementers2 >> SMEs" sections.

Many workshops, seminars and one-to-one meetings were organized in order to recruit SMEs. The one day workshops showed the DBE concepts, where many SW Developer SMEs attended. Some of the workshops were supported by the Regional Government.

The engagement of the SW Developer SMEs was carried out in three phases for the following reasons:

- the feedback provided by the first groups could be tested by the followers.
- the first groups help to make a more robust platform and suggest how to improve the architecture and which new features could make a better platform.
- the last group of SMEs help to check the robustness and usability of the platform.

In phases 3-5 of the project, the regional goals for Developer SMEs have been as follows:

- First of all, we have consolidated the participation of the already engaged SMEs. SW SMEs have continuously asked for experience of the platform with friendly installation procedures and manuals and service examples. We have organized code camps every one-two months. Some code camps were directly organized, managed and given by ITA. Some of the code camps where given directly by the computing team. This code camps have shown how to use the platform in a very fast , hands-on way and with direct and personal support. They have also shown the latest features introduced in the platform so that the SW SMEs have been continuously updated with the last progress made. The code camps and dissemination events may be seen in the ITA web page in the ITA Activities section, in the "Workshops" (http://www.ita.es/dbe/?ID=200) and "Dissemination" (http://www.ita.es/dbe/?ID=213) sub-sections. For example, in November 2006, the technical team came to Zaragoza to take part in a code camp about the DBEStudio and ExE with the last updates (http://www.ita.es/dbe/?ID=253). In order to optimise their time, we planned that the SW SMEs come to the code camp with all the components installed. We offered for them to come the day

before and we explained to them how to install everything or to use some videos we had produced explaining that. After they saw the videos, none of the SMEs came to our ITA facilities, because the videos were good enough so that they didn't need additional support.

- We have also undertaken activities to further increase the community. Indeed, the Government of Aragon has already launched another call tender for new proposals. The call closed on December, 30th 2006 for activities to be executed in 2007 with a funding budget of 157.300 euros (see the complete call tender in http://www.ita.es/dbe/lib_asp/binarios.asp?TABLA=_DESCARGAS&ID=201). We plan to engage 10-12 new SW SMEs which will bring in another at least 2 user SMEs. As has been said, the call closed on December, 30th 2006 and the work of the engaged SMEs will be executed from January 2007 to September 2007.
- We have already created new vertical projects together with the engaged SW SMEs based on the DBE technology and presented them to national competitive funding programs. We created a project called TUR-INTEGRA and we presented to PROFIT, the Spanish national research program. This activity will be executed during 2007 as the call for proposals from the different competitive programs are launched.
- We have participated in enlarging the community with new regions outside the DBE project. Different workshops were organized in Trento, Stuttgart, Ireland, and Extremadura.
- We have tried to enlarge the community with the integration of the DBE platform in other EU projects, such as Envision, Seamless, Legal-IST.
- We have convened a cross-regional workshop in January 2007, where SMEs from the different regions have exchanged their experiences with the DBE.
- We have also participated in a potential integration of the DBE with other open source technologies in order to accelerate its penetration in the market. We organized a collaborative workshop with JBOSS team (http://www.ita.es/dbe/?ID=254) so that, on one hand they explained how they are doing business and get sustainability in the open source world, and on the other hand we studied a first potential integration which we are already working on.

The main change regarding the training plan for SW SMEs is related to the timing in which stable versions of the platform have been available. For example, Drivers only worked with the ExE, and not with the DBE Studio, because at the time they started to work, only a first version of the ExE was available. It has to be taken into account that SMEs have been working with the platform at the same time it was under development. It has also caused that the main charge of work for SMEs has been shifted to the end of the project.

Users

The lessons learned with the Users have been very interesting and the approach to them has changed over the course of phase 1. It was planned to make a

deployment with Users in three different concrete zones of our region in the tourism sector. We even made a visit to 10-12 potential Users in the Benasque Valley (one of the potential zones), and we realized that in order to engage the Users, we should first convince and engage their decision maker in technology issues, namely their SW providers. Then, it has been necessary to make a strategic change, which optimised also the project resources. We identified a better way to reach final user SMEs than the previously planned approach. Every SW Developer (both Drivers and Implementers) would be asked to bring 2 final users to the project and would enable them to use the updated application. One of the criteria for engaging a SW Developer is that the company already has real customers using the application and will encourage them to use the DBE. In this way, resources are optimised since DBE partners do not spend resources in searching for User SMEs and additionally, User SMEs are introduced to the project by the agent they trust more from a technological point of view, namely, their ICT provider. User SMEs also know the application quite well and they have to learn how to use the new modifications introduced by the DBE project.

Users are brought to the project through the Developer SMEs. Once the Developer SMEs have created the adaptor from the DBE to the application that Users are working with, they will install this new SW version in those real users that will use it.
Driver SMEs have already selected the Discoverer SMEs (first User SMEs to be in the project) which will use the DBE services they have created. They are 11 and may be found in http://www.ita.es/dbe/?ID=244. Indeed, they have already signed an agreement to use the DBE technology among them, but they are waiting to have a complete robust release.
The main objective for User SMEs is that they install the services developed by the SW SMEs. In order to do it, User SMEs request to have complete stable SW releases.
The training to Users is provided by their SW provider, and the SW providers teach them how to use the new modules with the DBE integration in one-to-one meetings.

Influencers

We consider that the approach we have made has been very good and we have had positive results. There were two main objectives regarding Influencers: on the one hand, we needed the positive feedback from the policy makers, key influencers and decision makers in the region so that when SMEs request advice about the project to these people, then they will obtain positive feedback. On the other hand, we wanted to have additional funding from the local Government. The former objective has been reached by having personal interviews with the regional department of the Government in charge of IST and other key people from the University and economic decision makers in the region, explaining to them the potential of the project. The second objective has been reached thanks to the access that ITA has to the regional Government, namely, we contacted the regional department of the Government in charge of the IST, then we studied their strategy for 2005-2008 and we integrated the DBE into that strategy and obtained in this way additional funding, The

Government of Aragon launched the call tender for Implementers Phase II with a contribution of 155K euros following the local legislation.
We have also involved the regional Influencers in the dissemination activities in order to have them near the project and make them support it. For example, the General Director for IST in the Aragon region has participated in dissemination activities about the Digital Ecosystems in he "the Camera dei depputi" in Rome on June, 3rd, in Paris on December, 5th and even in a parallel session in the IST2006 held in Helsinki in November,2006.

The objective with the Influencers is to keep them engaged and interested in the project. It will be easy while the SMEs in the region keep their interest in the platform. We encourage them to participate in all the dissemination activities as we have explained in the previous sections, and additionally, they have already planned to keep their support in 2007 by launching a new call tender with 157.300 euros funding, whose call tender has already closed on December 30th, 2006.
Other influencers we have engaged in the project are the other Digital Ecosystem projects. Since Mach 2006, we have had continuous contacts with the SEAMLESS and ENVISION projects, and they have decided to use many of the components of the DBE platform.

Content Development Planned, Learning Content Developed and Changes made to the plan and rationale

The approach to training is closely aligned to the concept of the DBE project, which is characterised by its objective to be an evolving and adaptive self-organising system. A key principle in the learning strategy is that learning needs to be adaptive and should not be fully planned in advance, since a linear prediction would contradict the nature of the DBE project. Training needs, while predictable, are partly emergent and our strategy allows for the training mix to be fine-tuned according to actual needs of the project.

Following that line, the project has been under development and then the training materials produced have been continuously adapting and including those new technical parts. As new features have appeared, the training materials have included them and a "regression testing" of the contents produced have been done, in the sense that it has to be checked that the contents produced for already exiting features are still valid .

Indeed, this is something we have already experienced. Contents of some blocks (like the technical content block) have been produced according to the following process. First, we have defined the expected results to be obtained from a target audience (SW Implementers, for example), then we have produced the contents to help the target audience learn the key information to achieve the results we expected from them. Some of those concrete activities were derived from experience and feedback from some agents of the DBE project which made the contents an evolving and adaptive self-organising system. For example, SW developers have requested to have service examples

in order to better understand the integration process from the technical perspective and the DBE team have provided them.

The content development was already divided into learning blocks in D28.5:.

- DBE Induction.
- SME Engagement (previously DBE Bootstrap strategy and processes).
- Business Potentials and Practices.
- DBE Service Development.
- DBE Regional Policy impact and potential.
- DBE Community tools, processes & development.

The content development has been based on research results.
ITA has participated in all training blocks and has focused its efforts in the DBE Service Development.

In general, all contents produced by ITA may be found in http://www.ita.es/dbe/. All the references and links in this chapter are referred to that web page. In order to make this section not too long, it has been written in an interactive way, namely, it is to briefly explain the key concepts, and then there are links to the pages that include those contents.

The **Induction and the SME Engagement learning block** provides the learning content for the first engagement with different groups of agents, namely software developers, software users and influencers. The learning block begins when the agent (developer/user/influencer) gets the first knowledge about the DBE Project and it ends when the agent decides whether or not to participate in the DBE. The purpose of the Induction learning block is thus not to give a perfect and complete training on the different dimensions of the DBE, but instead provide a basic overview with an adequate amount of relevant information for the target group to make the decision on whether or not the DBE is something to investigate further.

ITA's main contributions to this learning block may be found in "ITA Activities >> Dissemination" section http://www.ita.es/dbe/?ID=213. There may be found events not only to induct and engage the three DBE Agents (SW Developer SMEs, User SMEs and Influencers) but also to induct and engage other regions and (Trento, Stuttgart, Ireland, Extremadura), other EU Projects (Seamless, Legal-IST, Envision) and other Open Source projects (JBOSS).

The “DBE Project” section in the ITA web page is also part of the engagement materials, since it provides a summarized general view of the project and answers to FAQs. Something very interesting is that there is a specific short summary for technical and for not technical people (this is something which has been recently requested). It is intended to be the first contact of the Aragonese regional partners. And it may also be found in the link to the official DBE web site.

For example, we have

- [2005-05-11] Public Presentation Zaragoza Public Presentation Zaragoza which contains the most interesting presentation at that time in all the aspects of the project (technical and business and science). Those presentations were used in the induction phase for politicians and other influencers, potential drivers and potential users. Obviously, not all the presentations were used for all the agents -depending on the target agent, a different presentation was used.
- [2005-05-23] Public Presentation Walqa Public Presentation Walqa. There is a presentation there which was used to engage Phase I Implementer SMEs. It was a good general summary of the project and it was focused in the technical part, which is the part that SW Developer mainly want to know.
- [2006-04-15] Implementers Phase II Recruitment Implementers Phase II is the presentation used to engage SW Developer SMEs of the second round of Implementers. The new technical features and concepts are included.
- [2006-03-28] DE Cluster Technical and key concepts presentations of the platform to other Digital Ecosystem cluster EU projects so that they can integrate the DBE in their projects.
- [2006-06-26] Implementer Phase III SMEs Recruitment Presentation made to get the recruitment of new SMEs to participate in the DBE in the Phase III.
- Please visit the web site to see the other presentations.

The contents produced are mainly presentations of the key concepts of the project. Every Dissemination event includes several presentations. Obviously, the concepts have been made more clear as the platform has grown. The presentations are also modulated taking into account the target audience of the particular event: political, technical, or practical.

But there are also videos, for example, the first video which shows the first business case in the tourism sector, of how the DBE is used to integrate technologies and how it is used, even when there were no DBE Studio Tools,see (http://www.ita.es/dbe/?ID=234 and then click on “Video Demo >> Drivers work”). It was created for the Trento Dissemination workshop, but it has been widely used in other workshops and engagement events. Indeed. This video may be also considered part of the **Business Potentials and Practices**, since it may inspire SMEs in terms of developing their own (new) ideas for the DBE, while showing what the DBE is capable of.

The **DBE Service Development** training block has been the one in which ITA has focused our efforts.

This content block is first directed to the regional catalysts so that they can acquire knowledge about the platform and services, and then they are able to transmit this knowledge to the Developer SMEs in the region. After that, this module is focused only on the Developer SMEs and this content block is started just after the Developer SME has decided to enrol in the project.

This content block is focused on the SW Developer SMEs, both Drivers and Implementers. The knowledge that must be provided to this profile must be aligned with what is expected to be produced by them, so that the limited resources available for SMEs are used in an optimum way.

The planning of the activities expected from SW Developer SMEs (Drivers and Implementers) have been the following: define their business using the DBE Studio tools, then generate the connector of the legacy system of the corresponding applications to the DBE, deploy the connector in the ServENT, install the new version of the applications and the connector in at least two users and provide feedback about the experiences.

Then, the content will train SMEs to reach those objectives and may be structured in two main blocks: DBE Studio and Execution Environment. The EvE components and how they can be integrated in the business cases has yet to be analyzed.

Let's see the contents produced related to this content block in the ITA web page. Since these contents are shared with the rest of regions and they are of high interest then this sections has been done in English and Spanish

- "ITA Activities >> Training" Section (http://www.ita.es/dbe/?ID=249). This section includes 4 videos to show in a very clear way how to install the ExE and the DBEStudio, how to start the ExE and how to develop and deploy a service using the DBE Studio. These videos have been valued very well by SW Developer SMEs and obviate the need for a physical attendance to training and avoids people having to move from one place to another.
- "ITA Activities >> Examples" Section (http://www.ita.es/dbe/?ID=159). SMEs have told us that the best way to learn to exploit the advantages of the platform is to have examples of the higher number of features as possible. The project has created up to now seven examples with a great feedback from the SMEs. For each example, there is an English manual, a Spanish manual, the source code and the Doxigen in order to navigate through the java classes. One of the examples is considered to be the first one and then it is explained more in detailed with a "step by step tutorial" section. These examples have been continuously updated to be always reusable with the last platform releases. It has required a high effort, but it has been highly valued by SMEs, so it was worthwhile.
- "ITA Activities >> Workshops" Section. (http://www.ita.es/dbe/?ID=200). This section includes all the important

technical events made. It includes the code camps whose materials are very good too in order to learn about the platform. Apart from this event there have been many small group meetings and one-to-one meetings to solve doubts and answer key concept questions to SMEs. It also includes the kick off meetings for SMEs.

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- Then, there are three sections dedicated to SMEs: “Drivers”, “ImplementersI”andImplementersII”.

- The Drivers section includes three sub-sections:
    - SMEs. For each SME, there is a brief description of them, the contact person in that company, the web page, and a cvs link. All the work done by each SMEs is included there, both the documents and the code (let’s remember this is an open source project). The documents and code which must be included is described in the work packages of the work plan. This is a very interesting training course which may also be considered part of the Business Potentials and Practices Training Block.
    - Users. This is the list of Discoverers that uses the applications integrated by the Drivers. There is a brief description of each of them, the web page and the contact.
    - Work Done. It includes an explanation and a video of the work done by Drivers and how it is used by the Users.

  The Implementers I and Implementers II sections includes two sub-sections:
    - SMEs. It is like the SMEs section for Drivers.
    - Work Plan. It includes the detailed work plan to follow including the timing, objectives, activities, milestones and results.

The ITA web page also includes contents for the **DBE Community tools, processes & development** Training Block. The contents are included in the “Regional Community” section. The main tool used has been the Blog (http://dbe.ita.es/wordpress/) which is a place where SMEs have shared and are still sharing their experiences. It was also created a Forum (http://www.ita.es/dbe/foro/) with different sections to make questions, but in order to centralize all the feedback and questions directly to the DBE team, we finally recommended the to use the source forge forums of the different projects to ask questions.
We have also created three mailing lists (AragonDrivers@ita.es, ImplementersPhase1@ita.es, ImplementersPhase2@ita.es) in order to facilitate the interaction and communication with the different groups of SMEs.
The “DBE Community” section includes all the links to the different communities built in the project in order to boost the cross-regional interaction.

The ITA web page also includes the last news and the events coming so that the regional community is updated with the last information about the project.

Finally, it may be also possible to access the different source forge projects from the “DBE Components” section.

Our Experiences and Key Learning

The feedback received from the **Developer SMEs** has been positive about the potential of the project, but SMEs have been requesting continuously since the beginning of the project to "touch" the platform to obtain a Guidance Manual, an Installation Manual, the main blocks of the architecture and descriptions of each of them and how they can be used, and an example of "how to adapt a service to the DBE" and "how to create a service in the DBE". Since the platform was under development, this work has been done all along in the project, and finally they have been produced.

In fact, these are the points where we have concentrated our effort. Every time a new release of the different components of the platform were launched, we installed them ourselves and test them before we told the SW SMEs to do it. If there were bugs, then we reported then to the technical team and once they were solved we let the SW SMEs install the components. In this way, we have been able to manage the SMEs expectations.

Another important point of feedback is that, even if we are working in very innovative projects and Developer SMEs would like to engage, they need to have a work plan with a clear timeline of what has to be achieved, since we have to bear in mind that they have other customers and they have to plan their work. The way we have reacted to this request is the following; we have prepared a concrete Work Plan with the Drivers with different work packages and results per work packages.

The level of stability and robustness that the SW SMEs request to the platform is very high. Although they recognize this is a research project, they also tell us that if they are going to install the created services in real end customers, they will only do it if the platform is absolute stable and robust because they can't afford that the platform goes down when the users are in production. Coming back to the meeting we had with JBOSS, they also had this problem when they started up, and it is explained in the Sustainability Deliverable how to overcome it. Therefore, only when SMEs check that the platform is absolutely stable, will they install it in real end Users with a business purpose; until then, they will use the platform as a research project, but it must be taken into account that in order to guarantee a long term sustainability, it is needed to use the platform with business purposes. These topics are described in more detailed in the Sustainability Deliverable (Deliverable 28.12).

The key DBE concepts have attracted the SMEs interest and enrolment in DBE has been strong. Apart from robustness and stability, SMEs still miss some features in the platform in order to use it for business purpose. Then, on one hand, there is a need to have a core team which provides support of the platform and can create those new features. On the other hand, we need to have SMEs which create services based on the DBE technology and create business using it and which are willing to pay a fee for the support and evolution of the platform.

In order to reach that point of sustainability, there are recommendations in the sustainability deliverable (Deliverable 28.12).

Regarding User SMEs, we have already indicated the lessons learned in the previous section, since they made us change our approach for them. Users are more impatient than SW Developers and they want concrete answers to their business needs. Then, our new approach of not going directly to them but through their SW providers fits very well, because we work with the SW providers of those companies directly who know very well their customer business needs and have a continuous update.

Politicians need to be very clear about the activities that the project will ask to SW Developer SMEs, so that they can present to them a structured plan for the project. In addition, it is also important to know the "Indicators" that the project will affect and help them to reach their objectives in their strategic plan, so it is important to know their strategic plans and integrate the project there. Obtaining their support decreases the uncertainty of the project success in the region. The objective with the Government sector has been reached, and indeed the results of the continues support though additional funding even for 2007 and the participation of Mr. Fernando Beltran (the General Director of the IST Department) in some dissemination events show that fact.

UCE

Training Planned

The Phase 1 training plan was formulated by UCE to align to the SME recruitment strategy presented in D28.1 and to support the following actions:

- Push the early adoption of the DBE concepts in the region.
- Selection of 5-10 Driver SMEs and enable active engagement in the DBE project.
- Integrate influencing regional organisations and funded projects with the DBE project and ensure continual support and backing to the DBE intervention in the West Midlands region.
- Create attractive DBE services for the selected 'opportunity spaces' to invite 10-20 Discoverer SMEs through the Driver SMEs to use these services. Explore jointly the potential benefits of these services to the SMEs and derive the opportunities for regional development.
- Support the continual interaction and knowledge transfer to the SMEs and regional organisations.

The delivery of Phase 1 training had been planned mainly through one-to-one interactions on a monthly basis, holding three workshops and two seminars . The focus has been on the following learning blocks identified in D28.1:

- DBE vision
- Engagement models
- Strategic benefits of participation
- DBE technical architecture
- Services development
- Open source business models
- Web services and
- Service oriented architectures

Usage of Moodle virtual learning environment hosted by UCE on a test basis and later the Moodle e-learning environment hosted by Intel was proposed.

The UCE training delivery plan for Phase 2 for the period of months 18-36 was formed and presented in D28.11.

Actions planned for phase 2 of the learning delivery included:

- Development of DBE specific learning material based on internal documentation and extraction from public domain documents
- Create regional case studies and customize materials for each opportunity space such as tourism and manufacturing to explore business potentials
- Development of business presentations focusing on the business drivers for adoption
- Usage of multiple dissemination modes such as web logs, web contents, targeted publications and promotion events

As part of the Phase 3-5 training delivery, UCE had proposed to continue the training plan as proposed in Phase 2 but to spend more training time and effort with the SME Implementers. At the same time spending efforts towards developing and demonstrating some attractor services including killer application services. The possibility of making a composite service delivery through EMNET was expected to remain the key focus. UCE proposed to focus on SME workshops, demo events and exploration of Inter-regional collaborations.

As further development of the DBE architecture was being delayed, UCE had to decide to manage the engagement process through the development of a 'Search and Discovery' (S&D) service. This was an alternative to the composite service development planned with EMNET. The S&D service would be developed using the capabilities of Business Modelling Language 1.0 (BML 1.0). BML 1.0 would support the codification of skill sets, capabilities and knowledge within SMEs facilitating a search that is more meaningful and fit for purpose. The search feature would be the basis for linking web designers and users of web design service – connecting supply and demand. To support this process, UCE planned to use a public relationship (PR) approach and create specific material for distribution through multiple channels.

A similar approach was planned to support the development of business opportunities for the Jewellery Quarters located in Birmingham. The initiative is being managed by Openscape, one of the Driver SMEs engaged in the DBE project. The set of services that were explored for integration included S&D and supply chain management to manage work-flow beyond the boundaries of each of the SMEs

Inter-regional collaborations were being explored in these phases. Particular interests were being shown by the regions in India. A code camp possibility for creating awareness and interest for participation in the future opportunities in the area of Digital Ecosystems was being considered.

UCE has continually explored the opportunities for collaboration with International, EU, National and Regional projects. A special workshop led by another EU project in the area of IST – LegalIST was organised as a way to create awareness of Virtual Enterprises (VE) and towards managing relationships amongst VEs.

As an exit strategy from the DBE project, UCE is exploring possibilities for future engagements. The four strands under consideration are:

- Centre for Business Software – To support regional software developers to compete and collaborate in the highly competent and complex software development areas
- Anubis WM – Increase the take-up of ICT through micro-financing support
- InfoWeb – Codification of regional knowledge and skill sets using formal and structured languages
- OPAALS – Participation in another FP VI project as a partner

Training Delivered

UCE Business School has managed the Phase 1 training delivery through building direct relationships with the SMEs and also through the Regional Intermediaries, i.e. Regional Catalyst Associates. Being a Higher Educational Institution in the area of Business Studies the role in building relationships with SMEs has been different compared to the other two regional catalysts.

The primary focus during this phase has been to evaluate the ICT sector in the West Midlands through multiple contact points, share the DBE vision, explain the technology initiatives and the business opportunities the project could offer. This has led to the exploration of the business model of each individual SMEs who have shown interest in the project and to mapping their skill sets and software application offerings to the objectives of DBE in the region.

Multiple one-to-one meetings, four workshops and three seminars to transfer knowledge in the region supported the training delivery during Phase 1. This has been done through developing and using appropriate learning content and also reusing content available in the public domain. These are in the forms of Web Articles, Journal Articles, News Publications, White Papers and Public Presentations.

One-to one meetings played a major role in the training delivery. This mode was found to be very helpful to customise the discussions and to focus on the needs of the individual recipients, their strategic objectives, and to create a match with their capabilities and resources. Also these events provided an opportunity for UCE to gather information about the SMEs and the Regional Intermediaries in order to manage the selection process of the Driver SMEs.

The discussion process adopted during for these one-to-one meetings is provided below:
1. DBE vision and objectives
2. SME business model, products, services and skill sets
3. Technology watch – Web services and SOA
4. Business opportunities
5. Open source business models
6. Migration of legacy services through a wrap
7. SOA services development
8. Engagement options and roadmap

The seminars and workshops have supported the wider communication of DBE vision and objectives, to form and enlarge the community of software developers who are interested in the emerging service oriented architectures and to be actively involved in forthcoming events. These events have also led to the identification of local experts from both the industry and research perspectives.
Seminars and workshops were organised from the time UCE was ready with the DBE Message and Communication. Two early events for different regional stakeholders were held in March 2004 and were organised in collaboration with ICentrum and West Midlands IT Association (WMITA). Events for the Regional Catalysts Associates were held in August 2004 and along with SMEs

in February 2005. These were in collaboration with Business Link and Pronovus. Exclusive Driver SME events were held in October 2004, March 2005 and in the beginning of May 2005. The Media Cluster Manager at Advantage West Midlands (AWM) has showed keen interest in the DBE project and has expressed interests in following up with the developments. Expert speakers both from the project partnership and from the collaborating organisations were involved in delivering the DBE message.

Listing of the seminars and workshops that have taken place in England during Phase 1

Event	Audience	Results
Icentrum technology centre	SMEs with interest in project	Recruitment of SMEs to consider roles.
Moor Lane,UCE.	SMEs and agencies in region	Appreciation for SMEs of possible roles SMEs could play
Ramada Jarvis Hotel Solihull	SME drivers	Proposals from SME drivers
Coventry-Business Link; Mustard.com; WMITA	Regional support organisations	Guidance on next steps.

The focus groups for training were: SME Drivers, SME Implementers and the Regional Catalyst Associates. As the nature of the players varied in terms of areas of interest, skill sets, role in the region, and nature of establishment we had to design different trainings programmes using different delivery methods. In brief the training programme delivered during Phase 2 included:

- DBE aspects
    - ExE, DBEStudio, BML, Business Models, Service Development (UCE developed services), etc.
- Technological Principles/Ideas/Philosophies
    - Service Oriented Architectures (SOAs), “Software as a Service”, Peer to Peer Networks, Semantic Descriptions, Ontologies, Open Source/Standards, Model Driven Architectures (MDA),…
- “One to One’s”
- 10 Workshops, 2 “CodeCamps” & Programming Sessions
    - 1 or 2 Days
    - “One to Few”
    - Involving partners: Intel, Soluta, LSE, UBham, IBM
- 4 Open day sessions for interested Implementer SMEs
- Reuse of the Materials
    - Weblogs ->Documentation ->Public Domain ->Online Training Material (Date Service, Date GUI Service, Migrating Web Services to DBE) ->Cheat Sheets -> Flash Demos
    - “One to Many” and “Many to Many”
    - Transfer of partners reports and deliverables

The training program for each focus group during Phase 2 comprised of the following competency areas and activities:

1. DBE Architecture – Execution Environment the features of FADA & ServENT and its implementation requirements.

The SME Drivers were required to implement the DBE architecture by following the approach similar to that used in the implementation of the DBE architecture at UCE. This will help them to host their services and to test the aspects of finding distributed services. UCE now hosts a dedicated DBE node that allows the hosting of services developed at UCE and also as an initial node that can be used by the SME Drivers to implement their services. This node has been actively used for all purposes of training in the region. In order to get the Driver SMEs started with their tasks, we planned to use the web log (http://opensoa.blogspot.com) documents where the were two example applications which required the installation of servENT and FADA on the SME's computers. These two example services demonstrated what a real world service might be like and, more significantly, how to create and implement it in the DBE. The web address of the node implemented by UCE is: http://193.60.142.10:2002/

The delivery methods adopted primarily involved one-to-one and code camps.

2. Development Environment – Eclipse, DBE Studio – BML 1.0, SDL & Wrapper development. The training included a step-by-step approach to creating DBE services. The example services created by the DBE project partners and the UCE were mainly used to demonstrate how the DBE services can be created. The key examples used were: Bluetooth, Date Service and Camera Service. The UCE team also developed a guide to migrating Web Services to DBE. This was very helpful as most of the SMEs were able to relate to the concepts and appreciate the simplicity in migration from other standards. Further there has been an on going discussion related to the client UI. Different approaches have been discussed and proposed including Flash, Java Swing, etc.

The DBE project had evaluated the different options and found Open Laszlo to be a good option to develop the client UI. UCE has focused on this UI development and has developed an example and a tutorial to demonstrate the superior capabilities of Open Laszlo and its integration requirements into DBE.

The DBE Studio was evaluated in great detail, along with the Driver SMEs, using SWOT analysis also shown in the picture below. The following points summarize this analysis:

- Gap between DBE Studio and ExE (code generation and deployment – CIM ->PIM -> PSM->Code)
- Defining BML models is UML based and it is not intuitive
- There is no clear advantage modelling services with BML
- Require more information related to SBVR – More change creates more work
- Versioning and stability have been concerns
- The DBE Architecture is very interesting: Eclipse IDE, easy possibility of migration of services from other technologies.
- Syntactic and Semantic description of services

3. Business Aspects – New business models, business processes for manufacturing and tourism opportunity spaces and commercial benefits for an MDA approach. It is imperative to understand that there is no single dominant effect or cost advantage that will provide a long-term sustainable competitive advantage to a business. The choices of operating business model are based on certain elements that are dynamic in nature (Alt and Zimmermann, 2001). Business model transformation requires reconfiguration of value chains, business processes, organization structure and value offerings (Lee, 2001).

Three broad business models are adopted by software developer firms. These are: Open Source Software Model; Commercial Software Model and Hybrid Software Model. Each of these models has many sub-types which are based on the different influencing factors. Most of the software developers have traditionally adopted the commercial software model. In recent times due to the influence of open source initiatives both from governments and large firms the trend is shifting towards adoption of the hybrid software model. In the hybrid software model, software that has a higher intellectual involvement is offered under a commercial agreement while that with lesser intellectual involvement is offered under an open source agreement. The aim of the training in this area was to evaluate the influence of DBE on these three broad business models, their sub-types and the development of new business models as some of the existing business models are already undergoing a change.

The DBE project provides a good opportunity for understanding the nature and the business dynamics of a business ecosystem based on Internet-based technologies. This is likely to provide a platform for extending this understanding to other business ecosystems that are based on other considerations than technology, for example political, economic, social and industrial requirements.

Since the regional focus for software service development was on Manufacturing and Tourism sectors, the UCE team was involved in exploring the generic business process within these sectors. The UCE team was additionally responsible for the development of M1 business models and helped in playing a vital role in the training of BML 1.0 to the Driver SMEs. Also alternative MDA based approaches were explored using UML based toolsets such as CodeGenie (Ref: www.domainsolutions.co.uk). This business modeling opportunity provided insights into the service composition needs in order to serve the requirements of different business models.

4. Publication for Engagement – UCE aligned its call for engagement of implementer SMEs with the two other regional catalysts. The first step was to facilitate the awareness of the DBE project and to create interest for engagement through open days. Two such open days were held within the region by publishing the details about DBE in the web sites of regional associates. The open days were organized into two sessions one in the morning and one in the afternoon to provide flexibility to the attendees. The sessions were organized into presentations about DBE, business potentials, service development & integration, regional requirements, demonstration of sample services, a brief hands on and Q&A for clarifications. In all eight new SMEs

were introduced during the open days. Most of these new SMEs showed interest in the long term objectives of the DBE project while showing concern about the research nature of the project, its commercial viability and also the support for funding.

Some of these SMEs voiced concerns on the supply and demand side of the DBE services and our plan for engagement. This was from the view that most of the Software Developer SMEs focus on large firms for business opportunities rather than SMEs as they do not see them as prospects for business opportunities. This matches with the research views as the majority of the SMEs have the lowest ICT adoption levels making them least attractive for selling software services.

All the SMEs UCE have met so far indicated that engagement through a public tender call is not the best approach for them as they do not follow this route for attracting new business opportunities. Also they do not have sufficient resources to follow this approach. UCE addressed this issue by offering any help that is required to prepare and submit the proposal including the technical writing of the proposal. However, the issue of tendering was also seen to be complex as the nature of SMEs to be attracted included early adopters of advanced technology developments.

However, the publication of the official call for engagement was done on October 2005 as planned in Computing. The call was closed on December 5th, 2005. In total nineteen SMEs were interested and requested additional information to participate. Out of them only three SMEs actually submitted a proposal before the deadline and three SMEs requested for additional time to submit their proposal. One SME requested for a withdrawal of their proposal citing the research nature of the project. The UCE team was constantly engaged with the SMEs in preparation and submission of their proposals. During this activity, potential services were identified to map to the regional opportunity spaces and to exploit the capabilities of the DBE architecture. The proposals included a composite service delivery model where the software services will be delivered through an ISP – EMNET – to 50 SME Users. The service delivery model to be developed through the DBE is shown in Figure 1 below. The UCE team is keen to explore this composite service delivery model and to further enlarge its service possibilities. This is discussed in the later sections of this report.

5. Regional Awareness From the role of a player in the Higher Education Industry, UCE has managed to create an awareness of the DBE project through its relationships with the regional stakeholders, intermediaries and funded projects in the ICT area. This has been mainly through one-to-one meetings using the presentations, flash movies, blogs (opensoa.blogspot.com) and demonstrations developed within the project. We have also commenced the demonstrations of service consumptions using the Open Laszlo client interface. The Date Service and the Image Service demonstrations have been found useful. Some of the regional intermediaries such as iCentrum, Open Source organization (OpenAdvantage) and regional IT associations have supported the regional engagement. Also iCentrum will soon become a test hub for DBE

services as they are currently in the process of implementing the DBE architecture.

UCE has also been involved in the consultation process in the finalization of the regional ICT strategy. West Midlands is taking key steps to increase e-adoption and to foster e-business growth .
(Ref: http://www.advantagewm.co.uk/downloads/regional-ict-strategy---digital-west-midlands.pdf).

This provides an opportunity to further exploit the DBE technologies for economic development and growth. A demonstration of the BML capabilities using the semantic search capabilities and the details of the tree maps on BML package usage interested the regional development agency,AWM. AWM is keen to use this knowledge to perform a profile description of different opportunity spaces.

UCE has also started focusing on providing information about the DBE and the Services Architecture to organizations involved in business support such as Lawyers, Accountants, Consultants, etc. Lawyers are particularly interesting from the view point of their involvement in Open Source law and legal developments. Some of them such as Mills & Reeve have been interested in the DBE and have been keen to explore developments in this area. Also from the social science perspectives we see them as key players interacting with the SMEs and are in a position to influence their actions.

6. Inter-project Cooperation – The UCE team has been in contact with other EU and regional projects. Among the EU projects there has been significant interest for knowledge sharing with ECOLEAD (http://virtual.vtt.fi/virtual/ecolead/). The areas of interest have been in Business Modelling, Semantics and Ontologies. The UCE team is keen to enhance such collaborations and explore opportunities to new domains and usage areas. Within UK, UCE is currently exploring opportunities with other regional establishments and projects. In the area of Virtual Enterprise Networking a presentation is being arranged with VEN International CLG part of Yorkshire Forward.

As part of Phase 3-5 training delivery, UCE expanded its actions to manage the specific outcomes of the DBE project. The outcomes being – awareness, regional engagement and business opportunity creation. The initiatives included workshops, code-camps, one-to-one discussions, usage of blogs and public relations (PR) activities. As the focus became more specific based on the Search and Discovery (S&D) feature, the target groups were contacted using intermediaries and business contacts where different delivery approaches mentioned above were used. Appendix 1 shows a PR direct mailer developed. Appendix 3 presents the list of actions delivered by UCE.

There was a considerable delay in the availability of the DBE technical architecture and this to a large extent created a hiatus in the development efforts of the Driver and Implementer SMEs. However, our actions' focusing on specific services, target groups, inter-project collaborations, regional catalyst associations, regional development agencies and business intermediaries have

been influential in creating a strong position for the DBE project in the region and also has fostered creating successful international links. A significant opportunity that has emerged is the possibility of regional collaboration with an Indian region. The exit plans made by UCE also have been well received by the regional development agencies. Key initiatives under discussions include:

- Centre for Business Software
- Anubis WM
- Infoweb

DBE training programme in India

As part of the inter-regional collaboration within the DBE project, UCE invited all its Driver and Implementer SMEs for a workshop in Helsinki, Finland in mid-Jan 2007. The SMEs found the event very useful and were able to discuss their next steps as part of a discussion group chaired by Dr. Victor Bayon, UCE. The points discussed have been summarised below. This is useful to formulate our sustainability strategies from the perspective of the DBE technology architecture.

- Functionality – The basic functionalities such as identity, security, etc. are still missing
  Standards – Some the toolsets made available through DBE are still not accepted standards. There are possibilities of integrating some of the current technologies and frameworks such as SOAP, WSDL, OWL/RDF (W3C), etc.
- The future of FADA – Will be useful to explore the developments in the area of P2P implementations and research such as Dynamic Hashtables (DHTs)
- Business Modelling Language (BML) – Current directions in the industry suggests that the communities around OWL/RDF/EMF are growing. BML still remains to be exclusive to DBE
- SERVENT – Standardised application containers are being released in the open source community using standards such as - JSR 168, etc.
- Web Technologies – The technologies are evolving and the developments include – Microformats, Google Base/Open Search, RSS the "unix" pipe of the Web

- openLaszlo – Alternatives that are better such as GWT (OpenSource) are emerging, less resource intensive.
- DBE Installation – Lots to recompile and tinker between versions (new servENT, etc)
- Constraints on training production – The issues identified here are:
    - No description of what does what and why?
    - When to use studio, when not to?
    - Dependencies on the code and versions - Recompiling services for each new version
- Lack of testing – Lack of debugging tools and facilities when a service is deployed, the process of service development is not efficient
- Business models - How to make money? What are provisions for transitioning from "Products" to "Service" and how to collect the money for composite services?

Content Development Planned and Learning Content Developed

Comments on Business Modelling Language

Work done using BML

BML models for Manufacturing have been developed. More recently BML models for EMNET have been developed. For EMNET models were developed to encode their consultancy process as well as models for a number of EMNET's current projects. The exercise of modelling EMNET processes was to also involve EMNET staff in the modelling process so that they could, at a later stage, assist their customers in developing BML models.

Usefulness of BML

BML Metamodels can be extremely useful to the User/Employee of an organisation and the more comprehensive the model the more useful it becomes. In particular the models can be of benefit in the following ways:

- The potential to improve user/customer relationships
- Staff become happier because they have a better understanding of the organisation and the way it operates across different departments
- Helps staff identify the correct procedures for a particular problem
- Can improve communication between departments
- May identify how a variety of different communication methods can be used,
    - email
    - Picture
    - Voice
    - Meetings
    - etc.

As a result of modelling aspects of the EMNET portfolio, EMNET staff have developed a better understanding of the processes used within the company and of the BML modelling process.

The BML modelling process coupled with further help with EMNET staff enabled EMNET to move forward towards developing BML models for their customers by helping their customers to complete the Document Template as defined in D15.

Critical review of BML

The BML modelling process requires a degree of knowledge about BML and the business domain. Domain staffs have the necessary business domain knowledge although it is not always the case that one individual has all the knowledge that is required and it may be necessary to use more than one domain expert. Unfortunately, many of the domain experts do not have the necessary expertise of building process models in general and particularly lack skills in BML.

In order to build substantial models in BML it is necessary to have a detailed awareness of BML v1.0 Metamodel. When the domain experts do not have the necessary BML skills it leads to a considerable overhead in building the model since the knowledge has to be elicited from the domain expert and then translated into BML by a business analyst. A further major problem is the BML editor and DBE Studio which lack robustness and ease of use. If the BML modelling process could be simplified, the software support was more stable, and the whole process easier to use then more domain experts would be encouraged to use it. However, the Document Template defined in D15 proved a useful tool to allow the domain users to get involved with the design process.

BML can be used with an individual business irrespective of the size of the business. The BML model(s) developed can help the business create a more detailed understanding of the business processes, procedures and information flows that exist within the organisation. It will also show how these interact with one another. An organisation that has a better understanding of the way the business is operating has the potential for:

- Generating less errors within the business
    - Improving customer relationships
- Improve the retention of staff
    - Staff will have a better understanding of the structured processes used within the organisation.

Improve inter-departmental communication

The benefit of developing BML metamodels, whether they are comprehensive models or simplified models, of the company processes is to increase the ‘findability’ of a business that could provide a desired service and hence improve company sales.

Advantages for the Customer

Any organisational improvement made as a result of the BML modelling process may be reflected on customers. In particular the following potential advantages may be become apparent:

- Less errors happening within the organisation
- Speeded up information flow with the organisation resulting in faster responses to customers
- Easier communication between customer and organisation
- Improved customer satisfaction

Disadvantages with using BML

There are a number of potential disadvantages when using BML for modelling a sector and/or a business organisation. The main disadvantages are:

1) User knowledge of the process used-a lack of knowledge impacts upon the quality of the model developed
2) The need for training in the use of BML
3) How the resulting BML model(s) are implemented
4) Costs involved
   a) Cost of user time
   b) Cost of training
   c) Cost of implementing the model(s)

Recommendations for overcoming the disadvantages

In order to overcome the disadvantages raised above the following is proposed:

1) Develop a wide picture of the knowledge held within the organisation by:
   a) Identifying the key knowledge holders
   b) Gather as much knowledge as possible by interviewing the relevant knowledge holders
2) Build a training package (on-line) and also use face to face training sessions
3) This will be dependent upon which processes/procedures/information flows are to be implemented/improved.
4) Costs involved can be minimised by:
   a) Identifying relevant people who hold appropriate knowledge in order to minimise the duration of interviews
   b) Considering alternative elicitation processes
   c) Referring to the advantages in order to determine what should be implemented.

Comments on Ontologies

Work done on ontologies

A prototype ontology for micro nano-technology has been developed using the Protégé/OWL software. This work involved using the MNT website for a source of data for companies working in the field of micro nano-technology. From the structure of the information recorded on each company it was possible to create a hierarchy of classes/subclasses which formed the basis of the ontology see Fig 1.

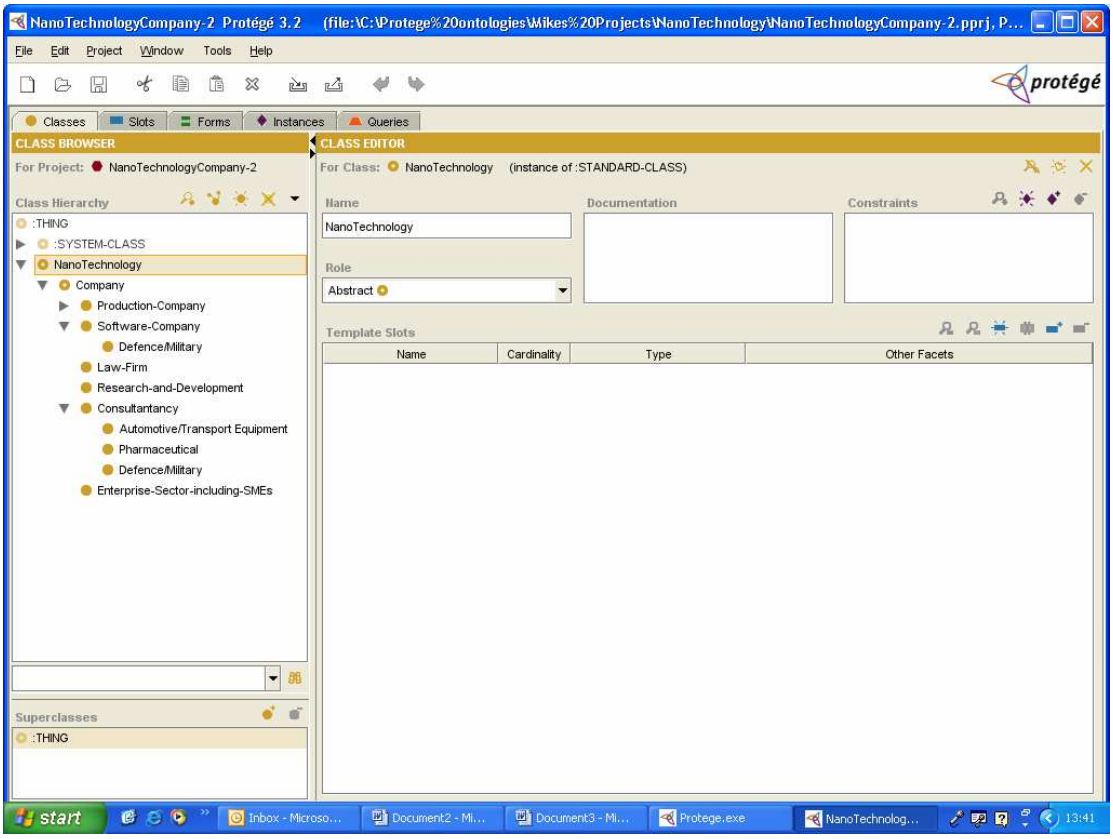

Fig 1 Hierarchy for the micro nano-technology SMEs.

In addition the structure of the information also identified slots within the classes see Fig 2, and the data recorded for each company was used to fill in the slots see Fig 3.

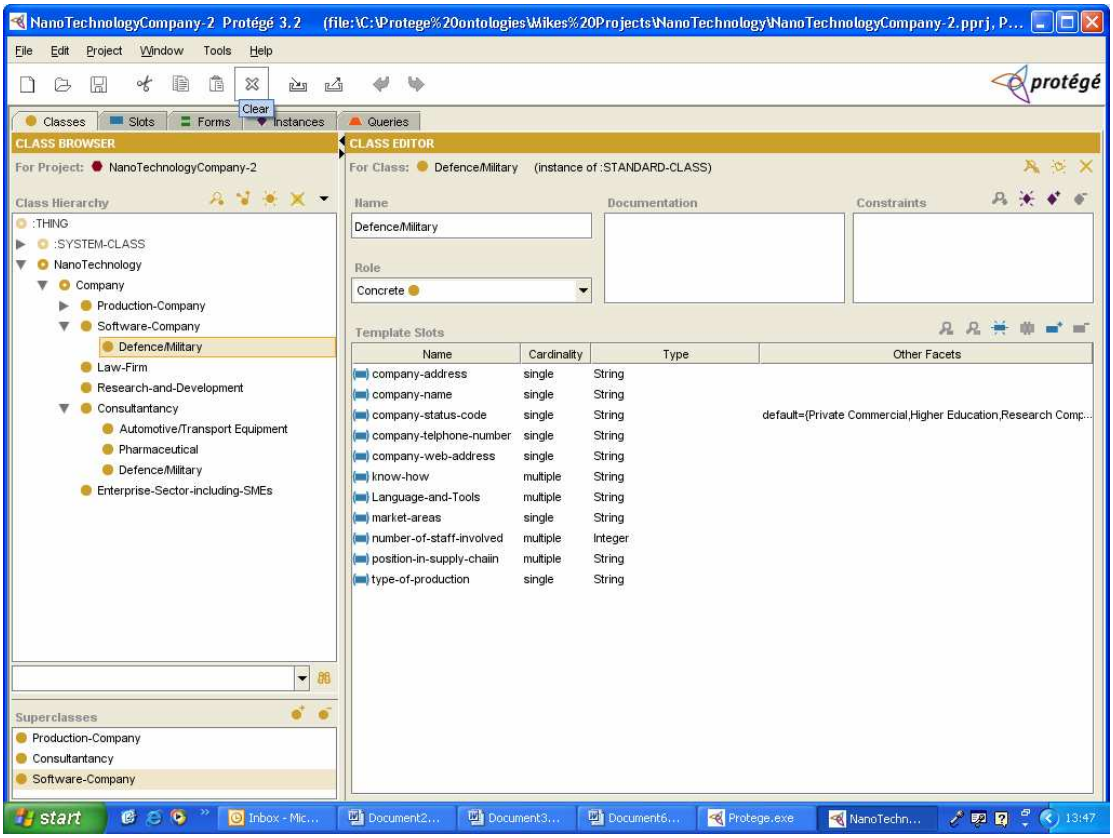

Fig 2 Example of the slots used for the DefenceMilitary subclass of SoftwareCompany

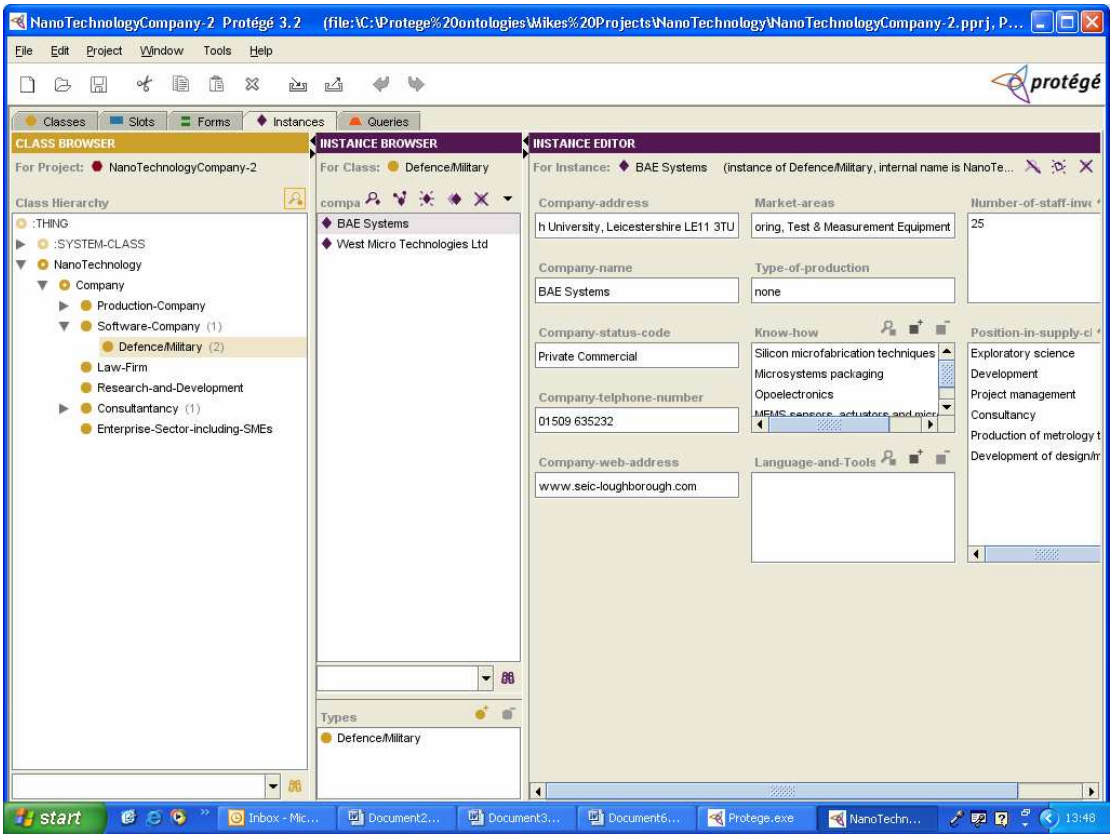

Fig 3 Example showing an instance of the DefenceMilitary subclass

Once the ontology had been developed it was possible to pose questions to the ontology and as a result a list of certain companies fulfilling the requirements of the question posed would be returned. An example of a question that can be posed to the ontology is: “List all the companies who have knowledge of micro-fabrication within the automotive or transport equipment area”.

Fig 4 shows this question converted to a query within Protégé/OWL, while Fig 5 shows the result that is produced by searching the ontology for companies that fulfil the requirements of the query posed.

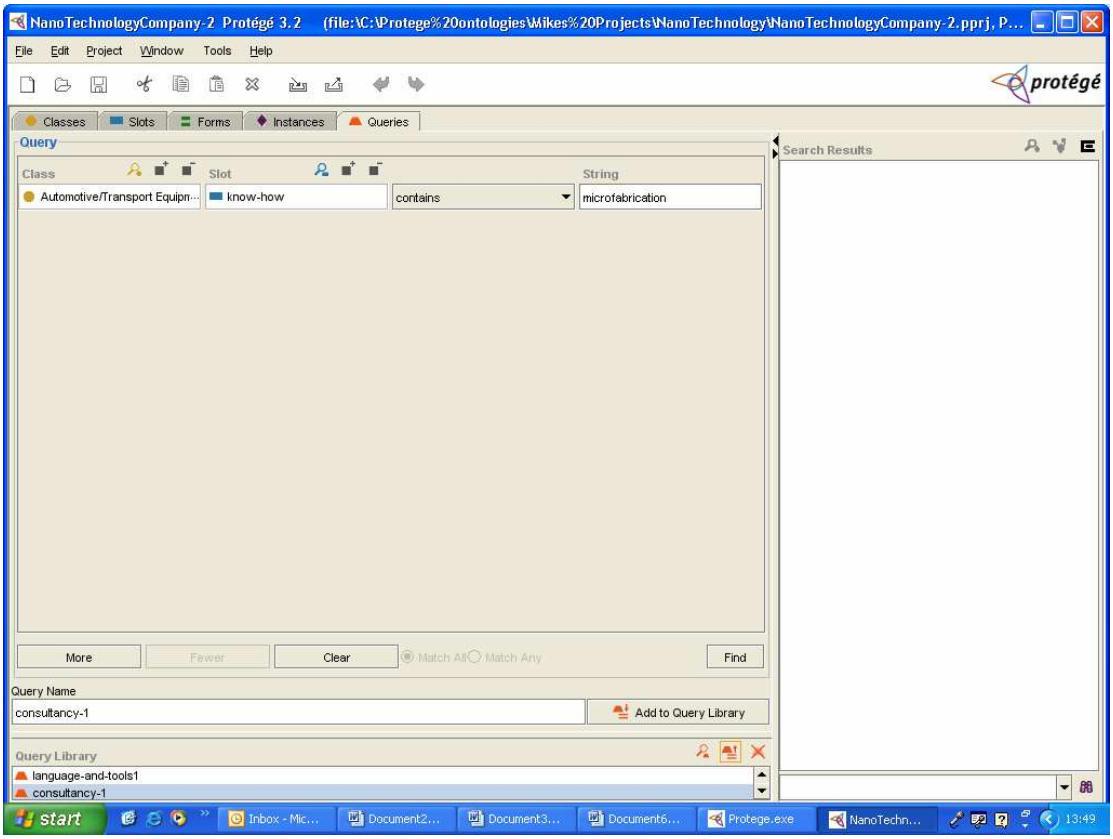

Fig 4 Protégé/OWL query for the above question

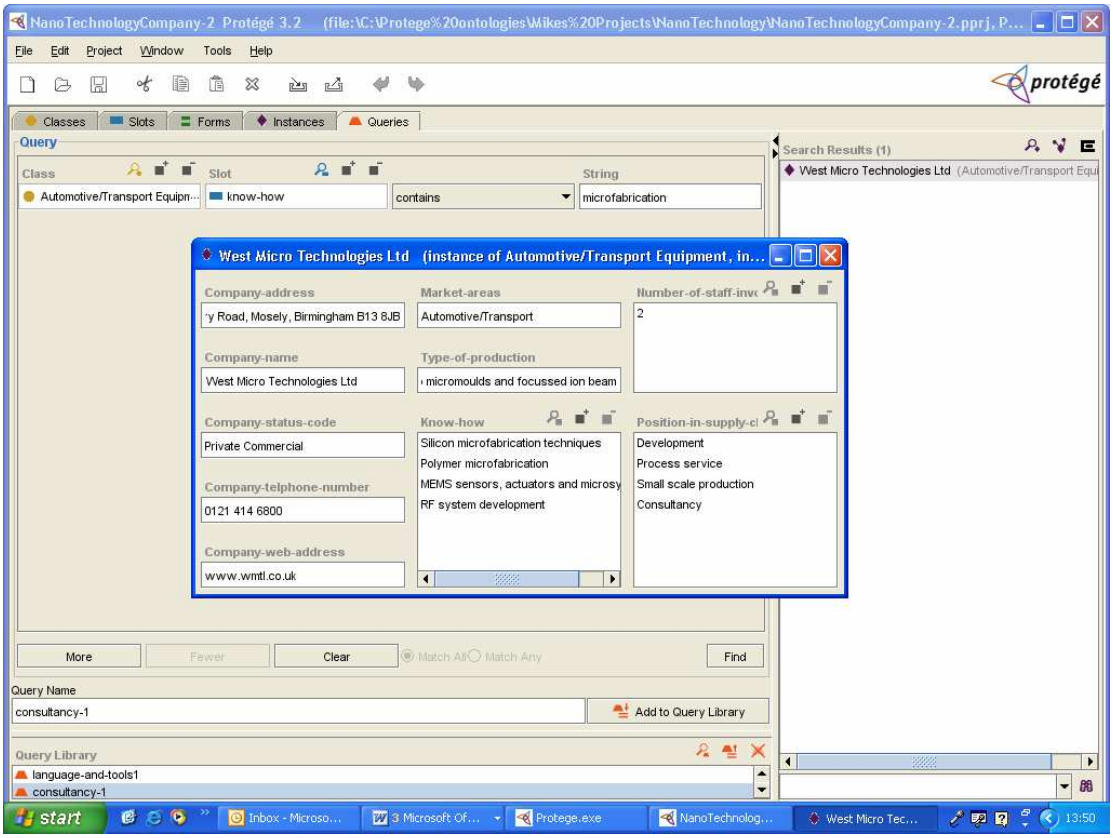

Fig 5 Results of running the above query

Posing a different question is likely to produce a different result as shown in Fig 6 when the following question is posed: “List all of the companies that work in the defence or military domain and have knowledge of micro-fabrication”. The result of running the query shows more than one company is returned i.e. West Micro Technologies Ltd., and BAE Systems.

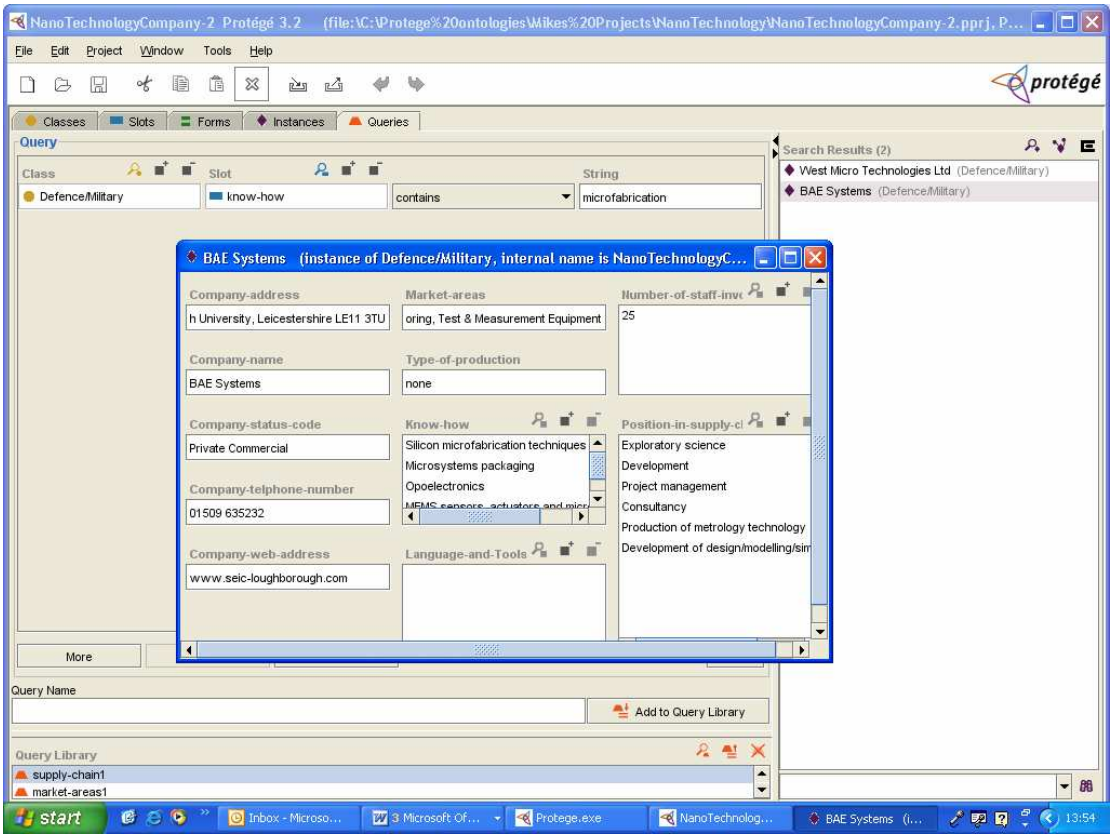

Fig 6 Shows a result of a query where more than one company is returned

It is possible to construct more complex queries where more classes and slots are required to be matched. It is also possible to combine the lines of requirements through the use of a Boolean ‘and’ or ‘or’ function. Fig 7a shows the results of a search for the following question: “Identify a company which has knowledge of microfabrication and also works in the defence market”. The ‘and’ function is denoted by the match all button being selected i.e. both lines of the query must be satisfied.

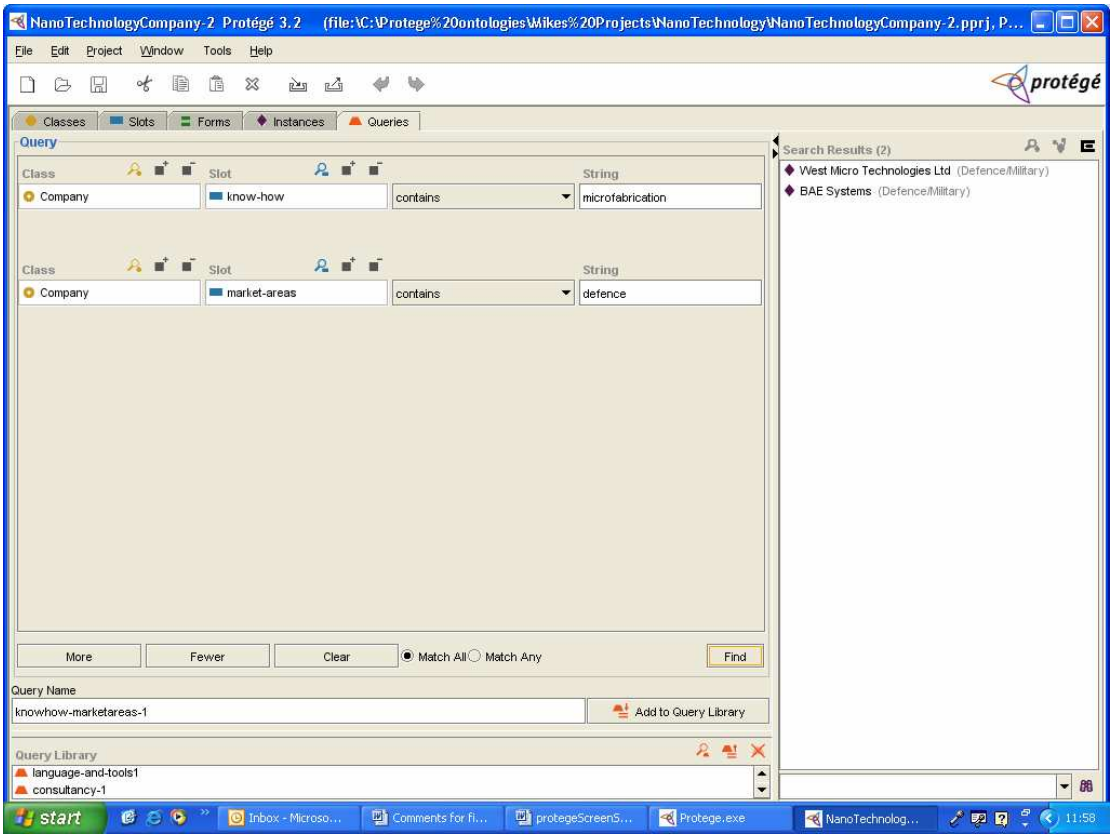

Fig 7a The use of a complex query using the 'and' function

The results of running the same query, but combining the criteria using the 'or' function, are show in Fig 7b. This shows that West Micro Technologies Ltd also work in the Automotive/Transport sector as well as the Defence sector.

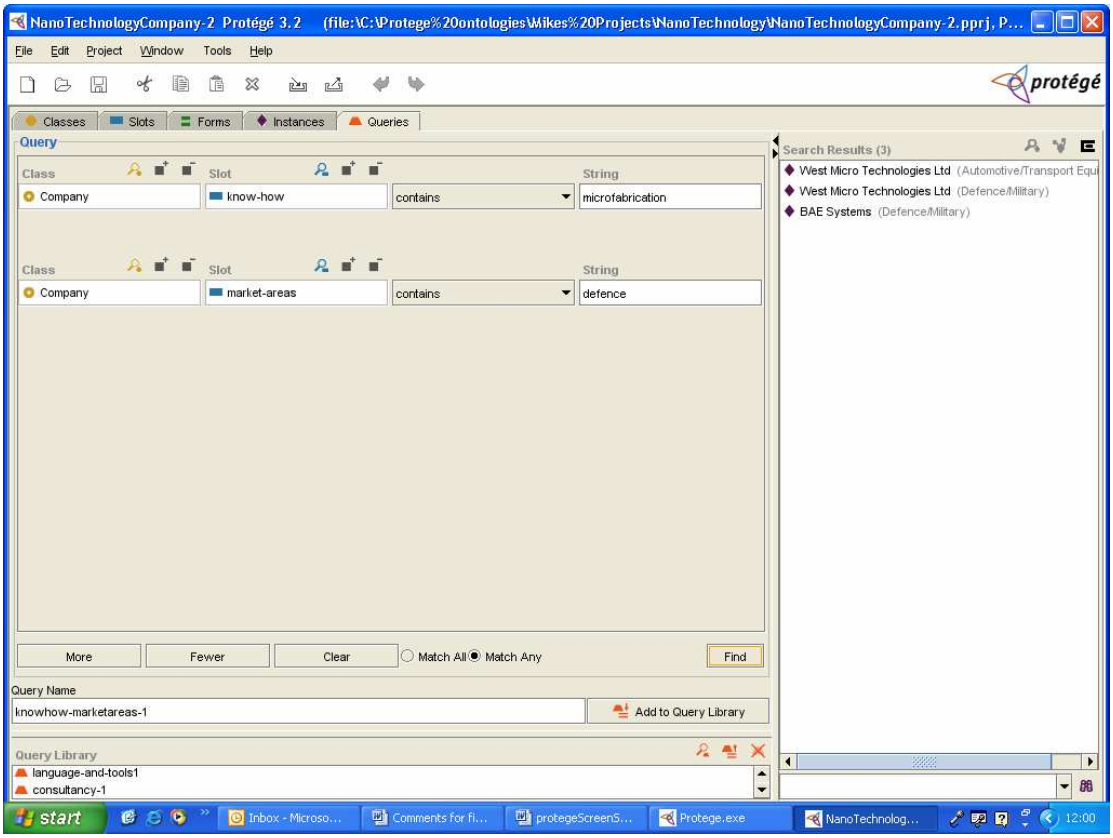

Fig 7b The use of a complex query using the 'or' function

Usefulness of Protégé/Owl tool

The Protégé/OWL tool is easy to learn, has a comprehensive set of support material, and enabled the rapid and easy creation of ontology for nano-technology companies. The final ontology can be exported in various formats including HTML, CLIPS (so that the ontology can be run as a knowledge based system), etc.

Critical review of ontology work

Although the construction of the ontology was easy and relatively fast, the actual design of the ontology is much more problematical. There are many designs which could be developed. The final design will depend upon what types of question the users need the ontology to answer. The more types of questions that can be specified the better the design of the ontology will be. Overall, the results of Protégé/OWL ontologies look to be much easier to develop than ontologies based upon BML models while being just as comprehensive.

DBE in a box concept revisited.

(Please note that the concept discussed on this section is based on visual materials rather than real hardware or software implementation).

During the previous deliverable [WP 30, B28], the idea of “DBE in a Box” was discussed and the concept was introduced to some of the SMES. The main concept behind DBE in a Box was to create a visual concept whereby a DBE node could be very easily deployed in a SME premises quickly with no hassles of installing software and minimum configuration.

The current method is to find a suitable internet provider which supports the hosting of Java applications and to deploy the node (manually) there. Another possibility is to deploy the node within the business premises using a broadband connection. However this option requires the configuration of the networking infrastructure (firewalls, routers, NATs and so on) and the installation and configuration of the DBE servENT and FADA.

With the advent of affordable networking home/office equipment, there are many start ups that are working on the integration of commodity-parts routers with specialised firmware/software that integrates different types of services to provided different forms of added value.

Two examples of these type of approach are for example Fon.es and Meraki.com. Fon is bundling Linux friendly routers with specific firmware which aim to create a worldwide WIFI shared network that can be accessed for free by all FON members.

Meraki customises routers to create residential “mesh” networks, whereby a node is part of the local community of nodes automatically, creating new potential applications for sharing based on physical proximity. Also, other projects such as the One Laptop Per Child (OLPC, laptop.org) are implementing mesh networking by default with their laptop initiative so that different laptops can ad-hoc aggregate themselves into a peer to peer network.

With Fon, Meraki and OLPC the intention is clear: out of the box networking/access/mesh networking functionality for networking awareness of other nodes. The same principle could potentially benefit DBE adoption and reduced the complexity for non software SMES.

The message to SMEs with the DBE in a Box concept was to “Brand” the idea and to help SMEs to visualise and imagine what possibilities can be opened when thinking of DBE also as a hardware, more tangible, platform not only as a software system. Figure 8 shows a FON router with the DBE logo embedded. This is a retouched image from the original image. The original image from the FON router can be found on the FON website.

Fig 8 DBE in a box

Mixing with the OpenSource community: Lug event

Annually, different enthusiasts of open source software such as developers, users or simply different sorts of people curious about OpenSource get together in an event organised by LUG Radio Live (or the Linux User Group Radio Live event) in the UK. Full with presentations and heated discussions about everything to do with OpenSource, it is also a moment to celebrate the spirit of the community.

During the 2 day event the DBE had a stand on the main exhibition area where we had the opportunity to explain to the different visitors the concept behind the DBE, some of the technical details and also the philosophies behind the Digital Ecosystem and DBE concepts. A presentation was given during the event where the DBE was introduced.

DBE Presentation

Calendar Demo with Semantics

While simple in concept, organising a meeting among a group of people is never a straightforward task and after perhaps many phone calls, emails and so on, it is possible that a group of people agree on a time and a place.

While there are several initiatives that try to bridge the gap among different calendaring platforms and formats, he reality is that it is difficult to interoperate among different calendaring systems that live inside corporate networks and desktop personal devices.

The Calendar Demo with Semantics was based on an early demonstrator of integration among a Customer Relationship Management system (CRM, SugarCRM) and a simple calendaring demo (OpenLaszlo Calendar) discussed on Del 30.6 Training Content Report.

On this case, we extended the demo to incorporate search capabilities with BML using a simple model that would allow us to assign simple attributes to the different calendar service.

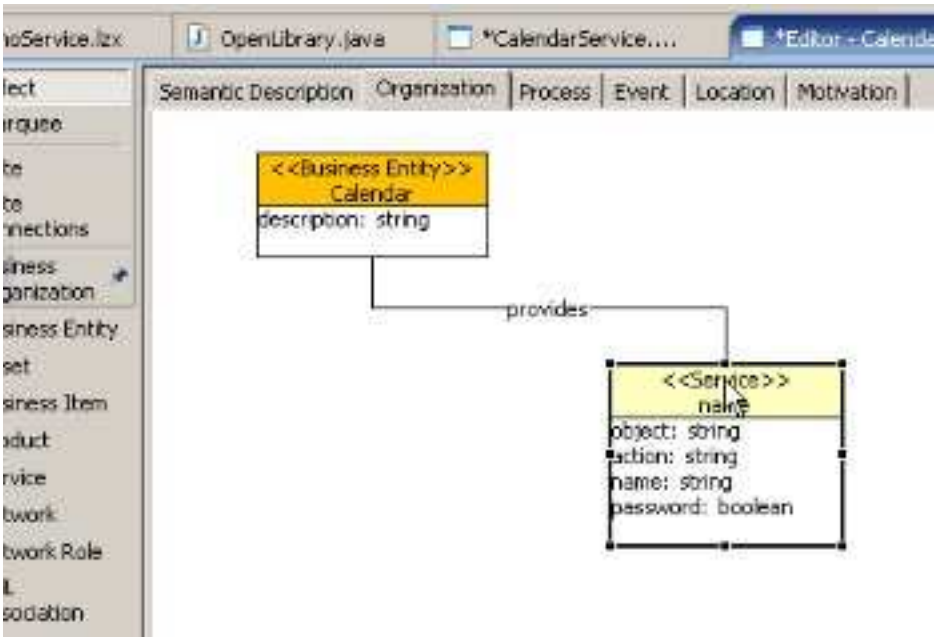

Fig 9 Basic BML Model

Figure 9 illustrates the basic BML model with basic attributes in the “Service” BML class such as “object”, “action” or “name”

Figure 10 below shows an example search once the services are deployed. From a theoretical perspective, each person could have a service deployed on the P2P network that allows other people (or machines) to find and aggregate calendars (considering that proper identity and security are taken care of).

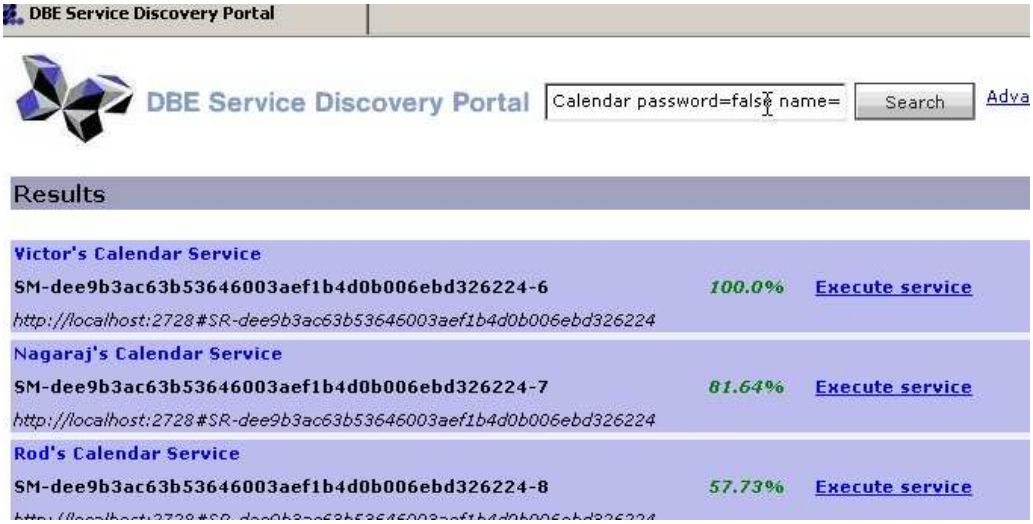

Fig 10 BML Search

From this point, the service simply pointed to an URI that took care of executing the extraction of SugarCRM calendar data and displayed it on OpenLaszlo. Figure 11 below shows the result of this execution.

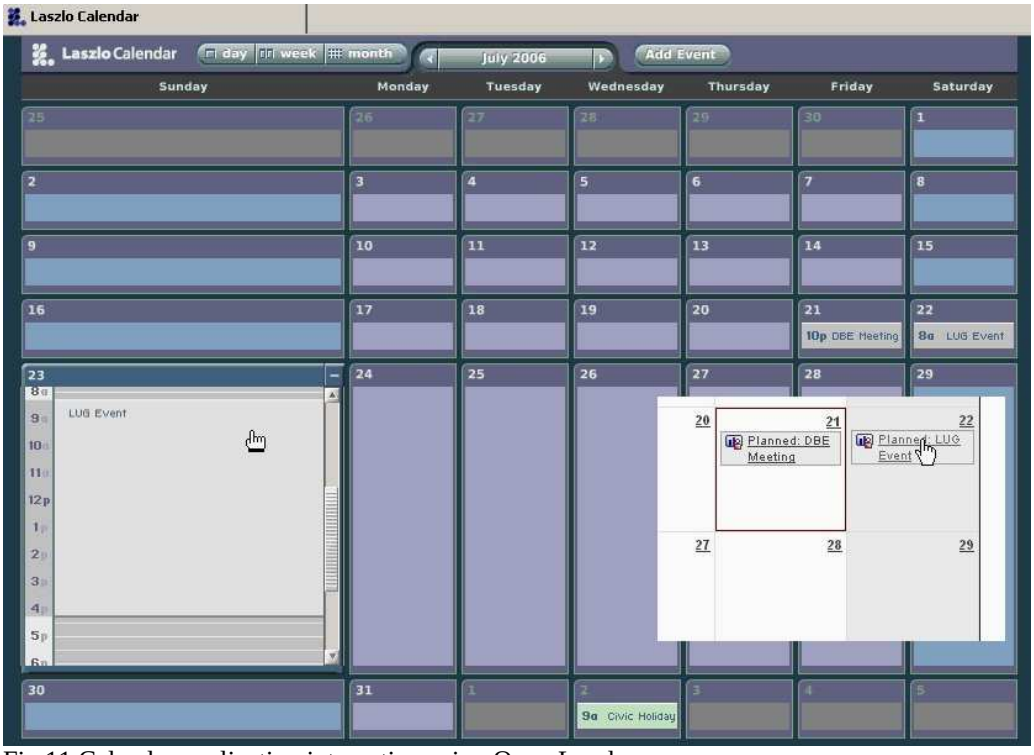

Fig 11 Calendar application integration using Open Laszlo

GoogleMaps-DBE Mashup

Within Web applications and the current technological trends, a popular concept is the so called “Mashup” whereby a web application will collect data from different sources and create a new type of service using the 3rd party data, or enhanced service with a different type of user interface.

It is important to note that this is not a new concept. For example, search engines have been doing this for years. However with the current context and web development trends, as more and more applications move towards being offered as a software service, new mashup applications will be developed.

The DBE platform is potentially an idea platform for such mashups that can be decentralised and on-demand. From this perspective, the example was to provide a scenario where the DBE would be a best of breed solution compared to centralised aggregation approaches.

In our mashup, the idea was that different restaurants would run a DBE Node, of implementing a Menu software service that could be queried getMenuOfTheDay() and the menu of the day (i.e. specials, etc) could be obtained. In a DBE context, different restaurants could be ad-hoc aggregated on demand and the results could be displayed on a map application using Google Maps.

A potential workflow for this scenario was:
- Search on SemanticRegistry for **BusinessTypes** "**Restaurants**"
in **Location** "**Nottingham**"
with **Country** "**UK**"
that **implement** the service **getMenuOfTheDay()**

Upon execution, the Service Manifest ID (SMID) of restaurants that comply with our search requirements will be retrieve and then the execution of the service could take place, aggregating the data from the different restaurants.

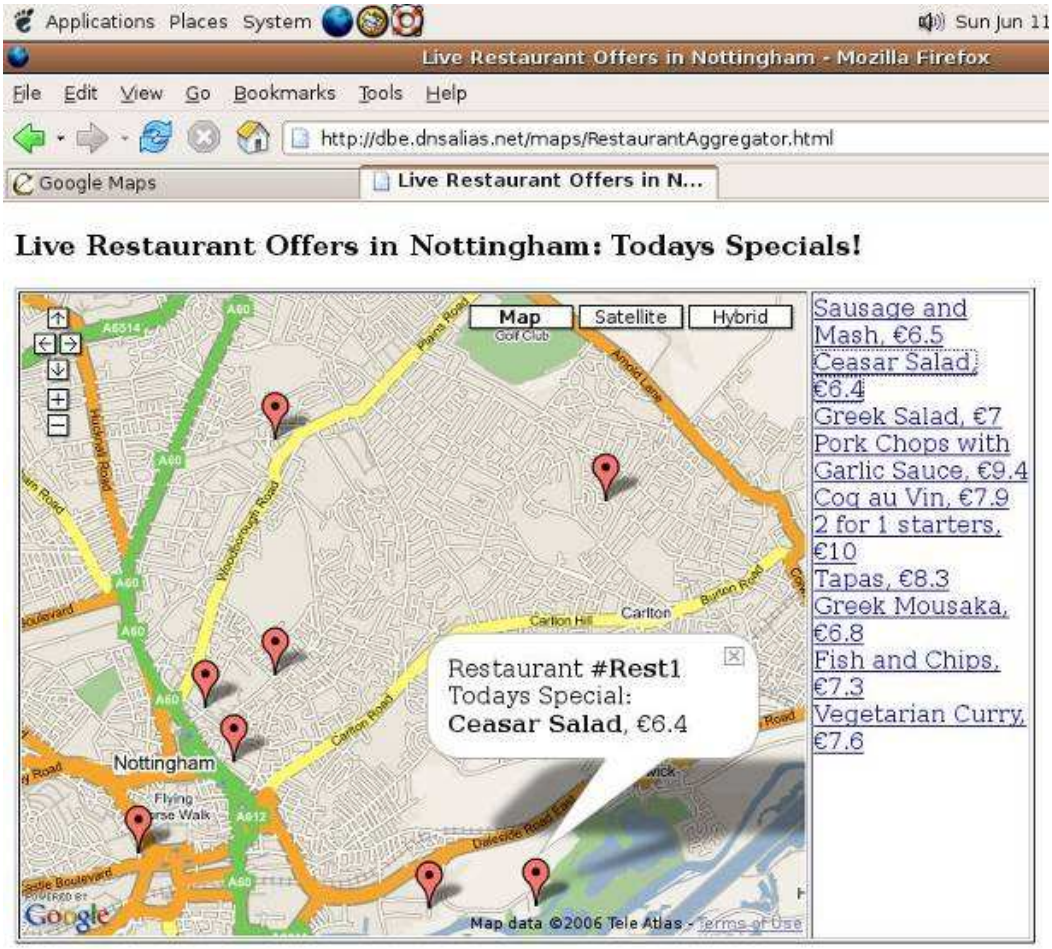

Fig 12 Integration with Google Maps

Figure 12 shows the Restaurant aggregation concept, with the different restaurants in Nottingham aggregated according to special orders of the day (that were on the DBE and implemented the corresponding BML models and service interfaces)

DBE Studio Workflow

The DBEStudio presented the difficulty to the newcomer of understanding what is the workflow of developing a service with semantics for the DBE. Discussing with SMES, they suggested we produce a poster/leaflet where such workflow could be visualised. A first version was produced and discussed with the SMES.

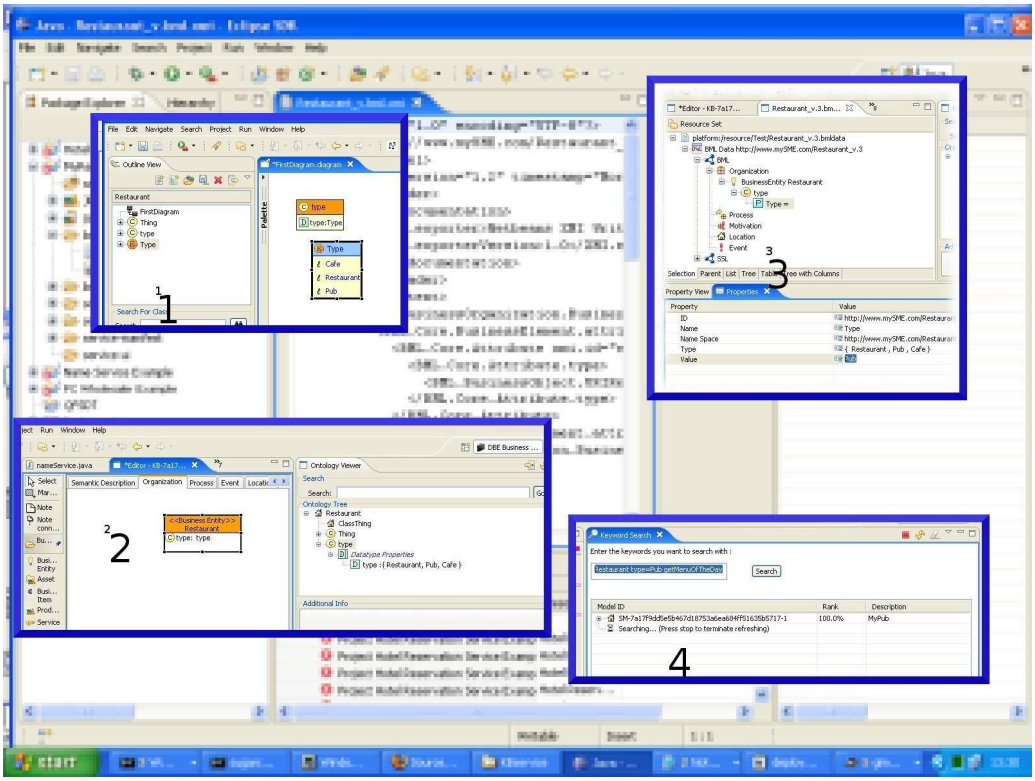

Fig 13 DBE Workflow

Figure 13 shows some of the stages (4 shown) of BML. The four stages that a developer/modeller should go through were: Ontology Development/BML Model/BML Data and Service Search that was used with some SMEs to discuss the workflow. However, eventually the workflow was extended and turned into a DBE Studio tutorial.

BML4Networking

Importing OWL Ontologies to DBEStudio

One of the interesting features of the DBE Studio is the possibility of importing OWL-Lite/OWL-DL ontologies into BML Models. The purpose of this tutorial was to show how this can be achieved using the tools and see how the DBE toolsets are connected to existing and emerging technologies such as the W3C OWL Semantic Web.

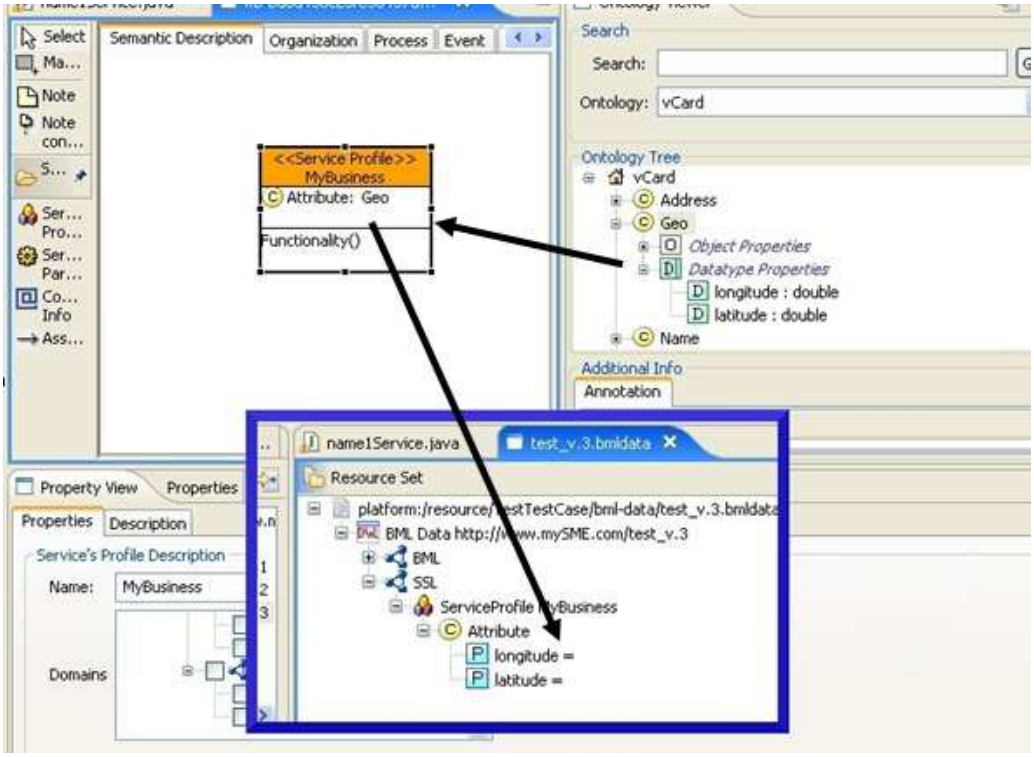

Fig 14 Importing ontologies to DBE Studio

Figure 14 above illustrates the results of importing an ontology (vCard.owl) on the DBEStudio Ontology Viewer, BML Editor and BML Data Editor.

Creating your own DBE Semantic Search Engine

The DBE architecture is based on the idea of a non-centralised architecture with different types of topologies. For this reason, it was important to show to SMEs that as part of the DBE network they could become service nodes and/or service aggregators/search engines for specific type of services. Rather than providing value just via software services, SMES could add value to the DBE network by implementing their own specialised search services.

As the DBE Application Programme Interface (API) is available, it is possible to extend it and create services that search for other services in a simple and effective way. Figure 15 below illustrates how a user could use the DBE Portal to search for services.

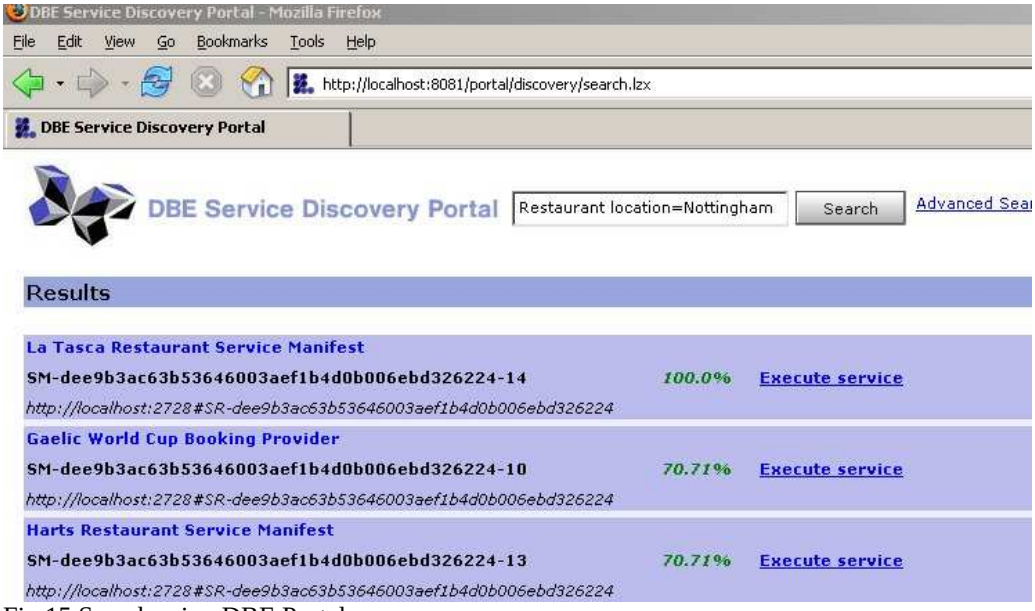

Fig 15 Search using DBE Portal

One of the main classes used for keyword based service searches is the ServiceSearcher(), used by the DBEPortal. With a series of simple imports (and adding the corresponding libraries to our project, we could easily create a method that mimics the service search on the DBE Portal minus the User Interface.

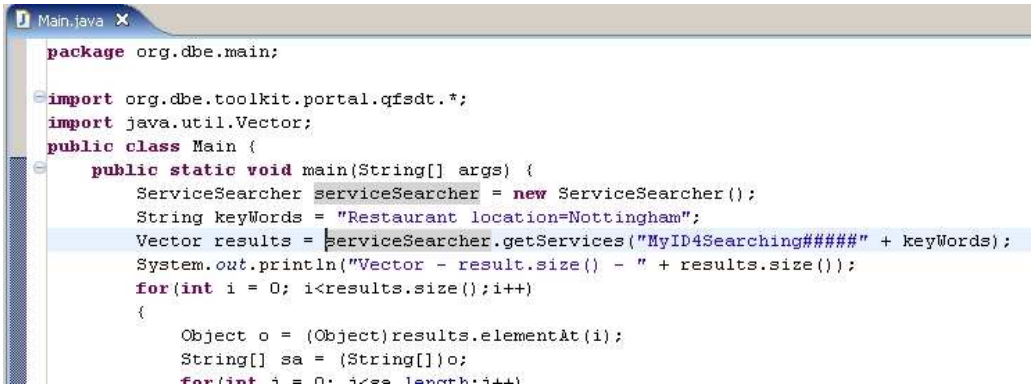

Fig 16 Search

The example was completed by illustrating the search that was performed on the “GoogleMaps-DBE Mashup” example.

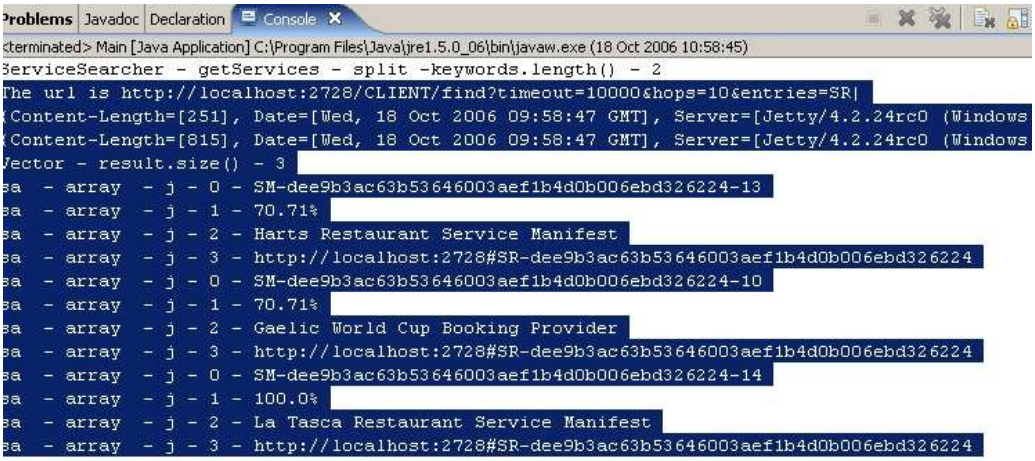

Fig 17 Search Console

DBE Recommender Visualisations

As part of some of the research undertaken around the concept of service recommendations and BML visualisation, some data and simulations were available. From these data and using readily available open source frameworks we created some visualisations (using Prefuse) and data mining applications based on Collaborative Filtering (CF) toolkits (Taste).

The idea behind these visualisations was to show SMEs how the DBE could help associate business by their business profiles, etc, and aggregate into useful company service compositions all done with simple CF algorithms that could be implemented as an alternative recommendation and service aggregation.

Figure 18 below shows how a potential clustering of SMEs based on their service consumption patterns might look.


Fig 18 Service consumption patterns

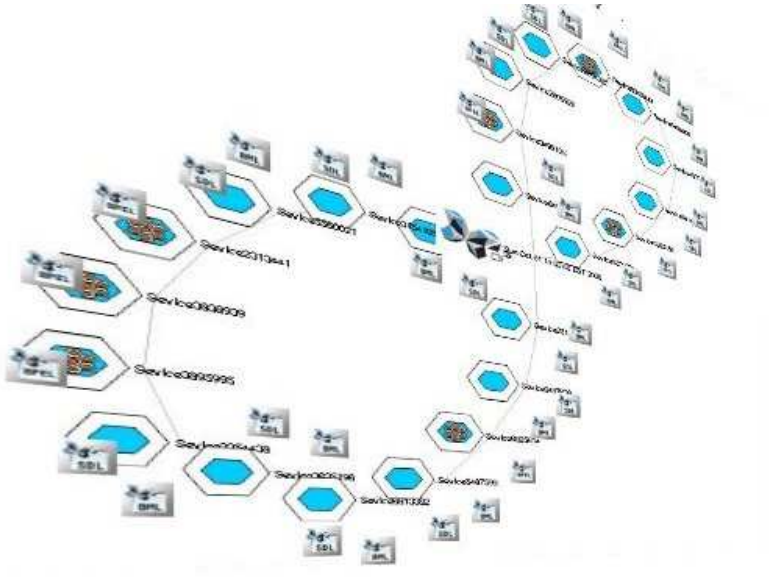

Fig 19 Services used and recommended

With the SME in the middle, figure 19 above can be viewed as 2 clusters of services: first “ring” of currently used services (bottom) whereas the top part or second “ring” could represent recommended services that could be use to replace existing ones.

The main idea to take away from this presentation was to think of DBE as a network of things.

Tag Labelling Web 2.0 style

The concept of Web 2.0 has gained huge popularity among the proponents of the new ideas for web based applications. Regardless of its merits, it is undeniable that there has been a large number of web based services that have been designed explicitly or implicitly following some of the concepts outlined on the “Web 2.0” manifesto.

Although mainly used for content, one of the emergent technologies that is being used to connect content with aggregators and websites and allow a higher level of search & discovery capabilities than pure content mining are the so called “Tags”, where users add simple metadata information to pieces of contents for later retrieval and content syndication.

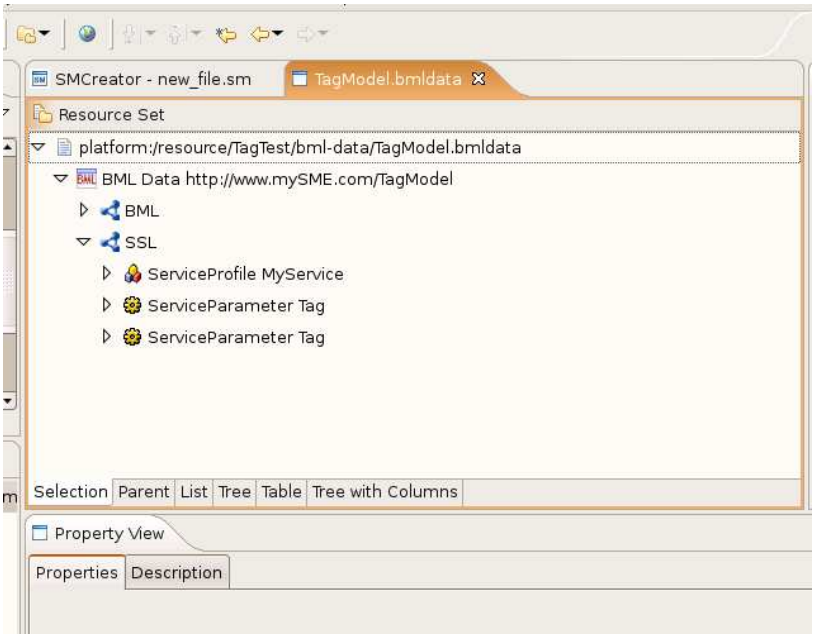

Fig 20 Using concepts from web 2.0

This presentation illustrated to SMEs how the DBE Studio and the BML framework could be use to "tag" services, following the same ideas that are used within the Web 2.0 principles.

Also, the presentation was designed to introduce the concept that within the DBE a simple model could go a long way, in the sense that SMEs that were not interested in modelling could just reuse this approach.

BML/Ontology Usage

Portal Deployment: Adding Data

With one of the latest releases of the servENT (Swallow), the DBE portal became integrated as part of the distribution. The inclusion of the DBE Portal meant that the default installed node could act as search point within the DBE via the web based interface.

During the installation process, the installer was required to fill a very short 4 entries questionnaire with information related to the company. Once this questionnaire is completed, a Service Manifest is created and deployed on the SR host and the SME would then become "findable" within the DBE.

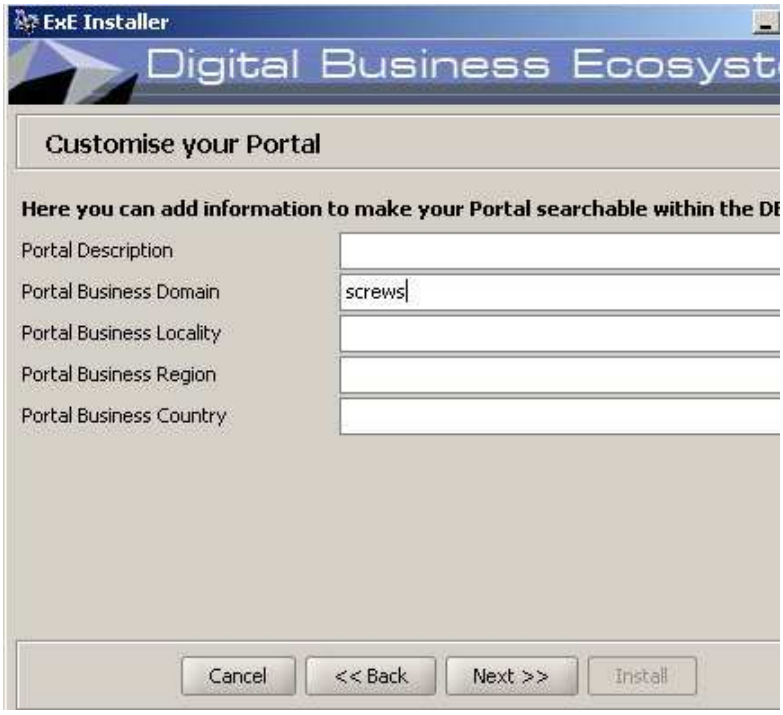

Fig 21 The use of a complex query using the 'and' function

Figure 21 above illustrates the user entering data on the form. This short questionnaire (backed up by a BML model) was not designed to support service search, but to support some form of "Yellow Page" type of SME search.

The data entered was, before publishing, transformed into BML Data model, aggregated into a SM and then published onto the SemanticRegistry. The endpoint of the service execution, was the portal itself (the SM pointed to a URI that was the portal).

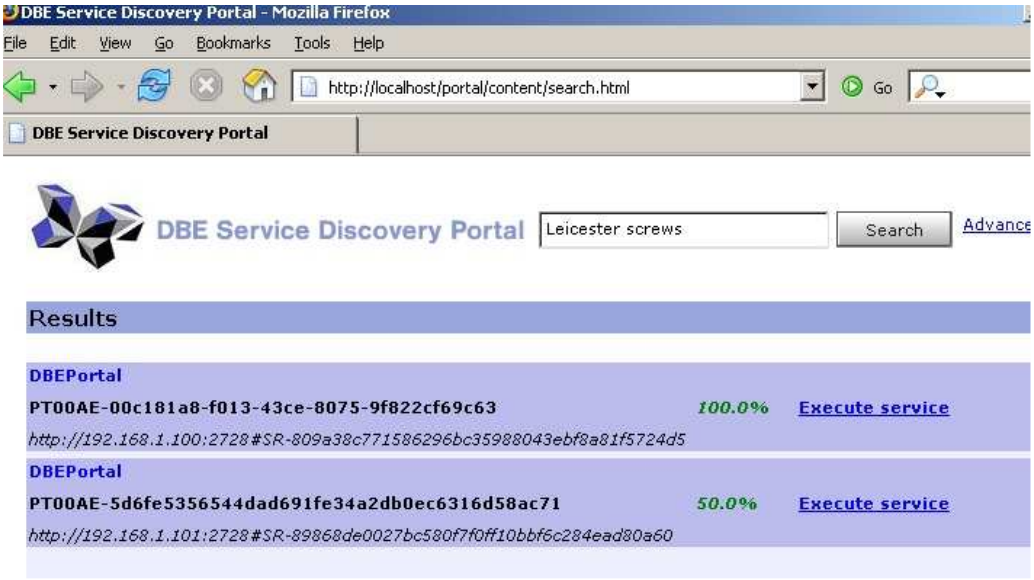

Fig 22 Services in different nodes

Portal services aggregation happened automatically as long as other SR/DBE nodes were present on the network. Figure 22 above illustrates two DBE portal services deployed on different nodes.

Importing OWL Ontologies into DBEStudio

One of the features of DBEStudio is the capability to reuse OWL-Lite and OWL-DL W3C conformant ontologies. The idea behind this presentation was to show how in the DBE Studio some of the existing classes/concepts from existing ontologies could be quickly reused within the BML framework.

Figure 23 below illustrates some of the contents of the presentation, where detailed step by step processes of how to import a vCard ontology were given.

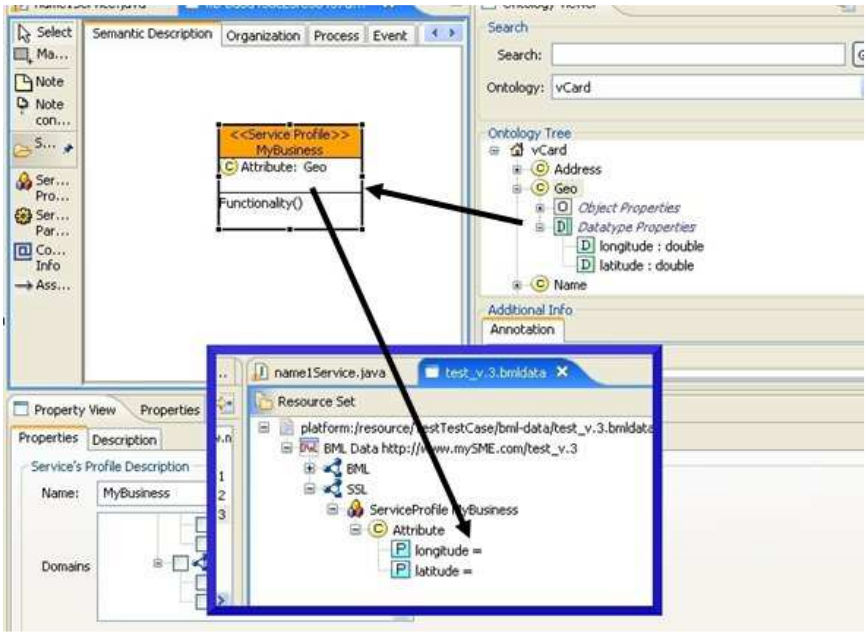

Fig 23 Importing OWL Ontologies

DBEStudio "HelloWorld" Service Tutorial

This tutorial introduced the popular and stereo typical development of the most basic application such as printing out "Hello World" on the screen.

On our case we described step by step, how to create a DBE Project and from there model the service interface, adapters and clients generation, service implementation, publishing and service execution.

Fig 24 DBE Steps

The tutorial also dealt with many aspects of working with the Eclipse platform, such as adding libraries to a project, creating runtime configuration, file management on Eclipse projects, workspace settings and other Eclipse details necessary to use DBE Studio.

Figure 24 above illustrates some of the presentation slides of the steps necessary to successfully create, deploy and execute the service.

Working with FADA/servENT

The previous tutorial dealt with introducing the concepts behind the full initial cycle of developing a service. While the previous sessions introduced the main concepts behind DBE Studio, SME feedback indicated also that there was a need to come back to the basics of service development using only servENT, where services without the semantics part could run, for instance, on intranets or on fixed locations that didn't need search and discovery facilities and without introducing the complexities of the DBE Studio.

For this reason, 3 more tutorials/examples were developed to satisfy this need. The first one "Quick Service Prototyping", showed SMEs how a service could be quickly developed/deployed and also debugged using Eclipse and some simple shell scripts to deploy the service.

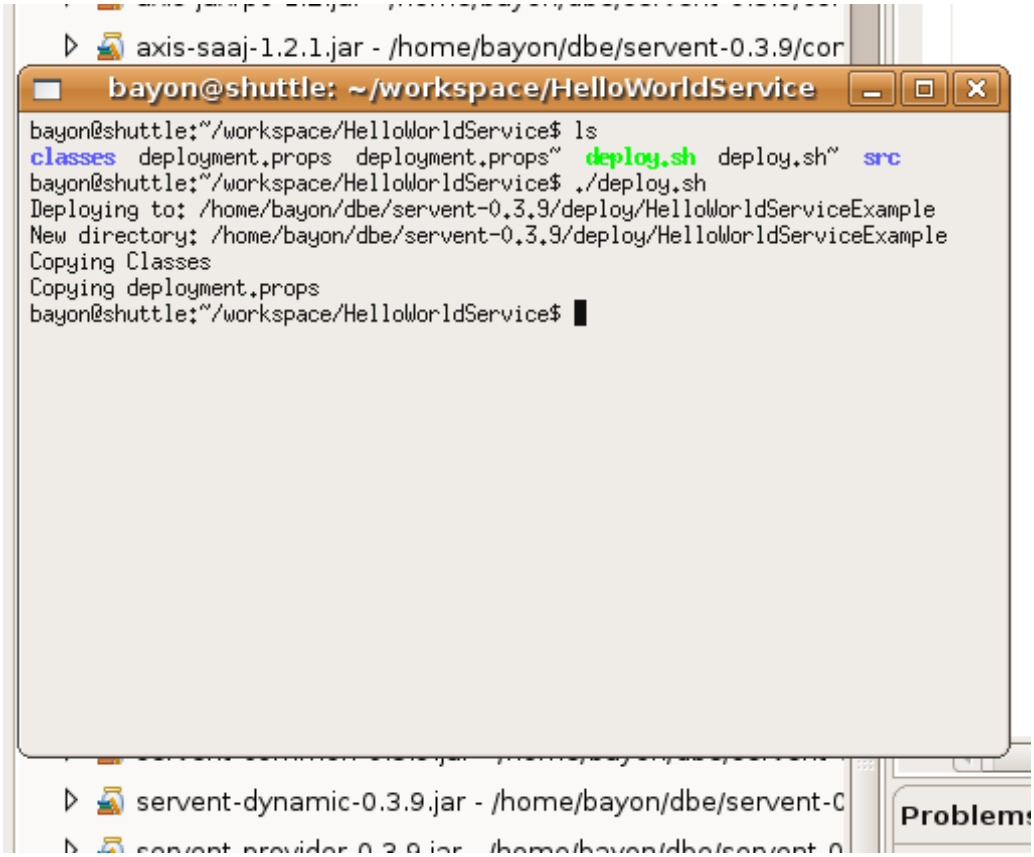

Fig 25 Service deployment using shell script

Figure 25 above illustrates the deployment of a service via a shell script (servENT restart required for re-deployment to work)

The FADA/Servent next tutorial dealt with searching for services using FADA. As on this case we didn't have any service semantics, the search was focused on looking for the FADA Entries of services deployed on the DBE.

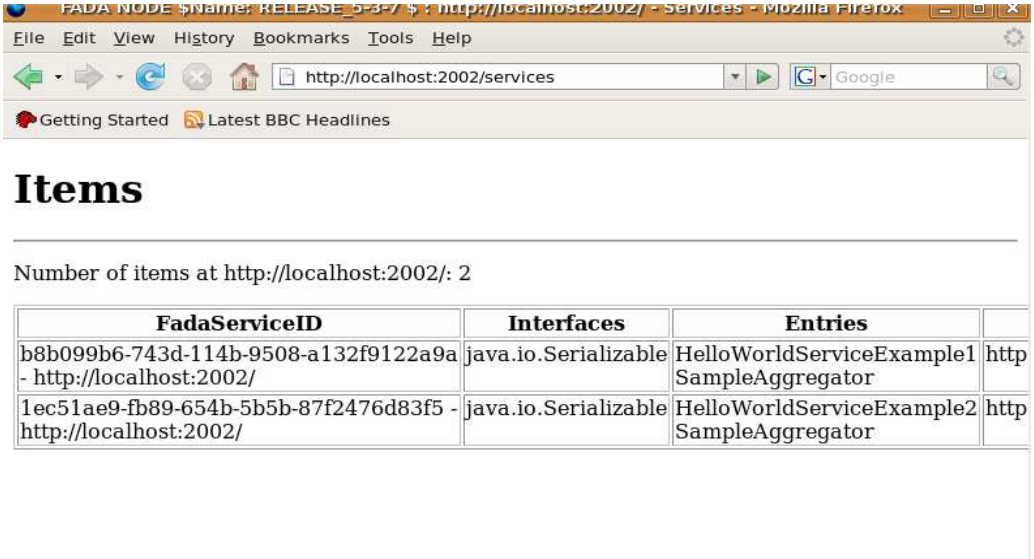

Fig 26 FADA

Figure 26 above illustrates the Entries displayed on the FADA node regarding services deployed on that Node. The tutorial showed how to do service search on those Entries on the P2P network.

The last FADA/servENT tutorial dealt with one of the SME requests of easy usage of DBE services from different platforms. Following the REST approach and the functionality provided by the InformationHandler framework in servENT, it was possible to directly call a deployed service endpoint directly using, for example, the REST technique. The tutorial focused on this aspect of middleware integration between the DBE and other technologies.

Fig 27 Hello World

Figure 27 above illustrates calling a HelloWorld type of service directly on the Information Handler of the service by simply typing the endpoint on a web browser. This approach of interacting with DBE Services was very welcomed by SMEs.

Changes made to the plan and rationale

The changes made to the plan have been based on the delays on launch of the technology architecture, the availability of certain functionalities and also based on the work of UCE done in the area of Business Modelling Language (BML). Also the SMEs in the region have been hesitant in investing time, money and effort in research oriented projects. They tend to view research projects as risky to some extent as most of the time the projects do not provide a path to commercialisation.

Our Experiences and Key Learning

On the delivery of training, the SMEs have felt that the code camps were more effective as the SME drivers were able to do hands on integration of their services. The Blogs have also helped in sharing interesting information around the community. Apart from providing learning content, UCE has used the blogs for signposting the readers to interesting content on the web in the area of SOAs and pod casts on related areas. The Blog has also been useful in discussing some of the emerging technologies in the area of service orientation, application containers, semantics, Web 2.0, etc.

The readiness of the DBE platform and some of its capabilities have remained a concern. Some of the areas where the regional SMEs have particularly made strong views have been related to:

- Non availability of security and identity frameworks
- Reliability and availability of the DBE elements
- Capability for service composition
- Difficulties with BML and Ontologies
- Automated service development and deployment capabilities

The engagement of SMEs was planned to be in a structured process involving four categories. These were Drivers, Implementers, Discoverers and Users. This was based on the Open Source Community Development model and market diffusion model for disruptive technologies. Our experience in the Midlands region in the UK indicates that the formation of communities is based around organisations that have established strong relationships, trust and leadership within those communities. Our early endeavours for engaging with SMEs were partially successful till the time we identified and engaged the right business intermediary. Our process for search on such an intermediary included organisations such as accounting and consulting firms; funded projects; large firms; regional associations, incubators, etc. EMNET a regional ISP providing Internet and IT services for large group of SMEs. EMNET became our ideal intermediary to help us create the level of engagement that was required in the DBE project. Additionally EMNET has been a big motivator for us to apply for the follow-on development opportunities such as CBS. However, EMNET has also voiced the same concerns, mentioned earlier, regarding the DBE technical architecture. Hence, we were keen on avoiding such pitfalls and were required to choose simple services and services around BML.

3. Conclusion

Training delivery and content production has worked within the practical limitations of software availability and SME business needs to produce a wide range of interesting new developments. These suggest that further research and development may well resolve some of the teething problems encountered in this project. Partners have plans in place to continue their work and to help new regions to access the ecosystem. Welfare gains for SMEs and consumers are expected. We quote here the final section of our paper to the International Small Business and Enterprise Conference (ISBE, 2006):

A comparison of the experiences of regional catalysts in three European regions trying to achieve simultaneous breakthroughs in SME software development has drawn the following conclusions.

Regions possess development capital that can be accessed most effectively by catalysts that have prior and continuous relationships with SMEs and public agencies.

DBE capable SMEs are in short supply, but a viable number when approached in a customized way can form mutually beneficial contracts with the catalysts.

Catalysts do need to adapt their interests and methods to accommodate and assimilate SME needs and requirements.

Extra-project initiatives may be essential to project success e.g. access to additional funding; relating the focal project to other projects; acting outside one's basic role as catalyst by becoming a service provider to some SMEs for free.

The English system, as exemplified by the West Midlands region, contains a wide range of loosely connected institutions and relationships which need to be 'read' carefully and learned by the catalyst in order to gain entry. Agencies showed high levels of flexibility in their response to the project by going out of their way to attend events, explain policy fit, and to make contacts with key players.

There is a perception amongst the catalysts in this project that specialist agencies such as technology institutes are better connected than generalists such as a Business Schools; that size of catalyst unit may be crucial, and that ours was initially too small and did not have requisite knowledge and skills; and that concerted regional action on newly emerged projects is more established in some regions than others. Some regions elsewhere in Europe appear able to provide additional funding and cohesive, rapid policy and decision- making in ways that impact more immediately on SMEs than seems to be the case in England.

The challenge for UK regions such as the West Midlands might then be to find ways of developing our collective response model so as to compete and collaborate better with our European partners. We would advocate the discussion of appropriate new organizational practices, relationships or forms to achieve this desirable result. These will become easier as tangible and practical DBE services become available to SMEs, and so offer a way for them to evaluate the net welfare benefit of participation.

As new regions join the DBE we propose to continue our shared study of regional policies so that we can learn more about effective methods of engagement of SMEs.

Some of the key questions that we have now are:

1. How might we assist regional economic development through DBE applications in sectors on specific issues?

2. What strategies for regional collaboration might we join and what forms of regional organization can help sustainable development?

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4. Appendices

Appendix 1 – PR Mailer

An exciting project offers web-based SMEs a fast route to new business.

SMEs working in Web Design and Web Marketing are being invited to register now for a place on a pilot project that will open up significant new business opportunities for them.

The DBE (Digital Business Ecosystems) project aims to develop the next generation of Internet search engines. This will provide a very efficient system for purchasers of specialised services to find suitable providers quickly and easily. Companies operating in web design or web marketing are now being invited to help test the new technology.

The DBE project is based at UCE Business School in Birmingham and the pilot programme will operate in conjunction with EMNET, a computer services provider based in Nottingham.

Pilot project participants will have the opportunity to develop various routes to new business;

- Web design and marketing suppliers will have the opportunity to win business directly from clients who are also participating in the project. This aspect of the project is supported by European funding.

- Companies will be supported in developing a detailed profile of their areas of activity, specialist skills and current clients. These will provide better quality data to existing web search engines increasing the possibility of being found by potential customers.

- The profiles will also be used within the project to

generate business opportunities with 'client' project partners.

- As digital business ecosystems develop, pilot participants' use of the internet as a shop window will be much stronger than it would be otherwise.

The new system also opens up the possibility of utilising widely distributed specialist web skills in a way that is much more efficient than has previously been possible. Contracts requiring resources that are beyond the capabilities of individual companies will now be possible as temporary project teams can be assembled quickly and efficiently even when contributors are based in different areas.

The project is part of an 14m€ investment by the European Union to encourage economic development via improved computer technology. Project partners include IBM, Sun Microsystems, Intel, London School of Economics, Imperial College London and several other university teams across the EU.

Tim Miller, CEO of EMNET commented, "*The DBE software offers a huge leap forward in the efficiency of the Internet as a tool for purchasers to locate exactly the right supplier of specialised services. The pilot project already has around 100 contracts available to SMEs who choose to take part in it so there is the added attraction of winning real business immediately. It is particularly exciting that SMEs in this region have the opportunity to get involved right at the start of something that will become so important in their future business development and could help get them on the supplier lists of global players.*"

Companies who wish to express an interest in the project should contact UCE on 0121 331 6239.

Appendix 2 – Training content index

This is more or less the technical DBE training content available on this weblog. While not a perfect structure (pretty much all the materials overlap more or less), it is structured in terms of technical areas such as servENT/DBEStudio, presentations, videos and demos.

ServENT/Fada/WebServices

- What Time is IT? Date GUI Service
  - http://opensoa.blogspot.com/2005_08_01_opensoa_archive.html
- What Time is IT? Date Service
  - http://opensoa.blogspot.com/2005_08_01_opensoa_archive.html
- From WebService to DBE Service
  - http://opensoa.blogspot.com/2005_09_01_opensoa_archive.html
- Service Aggregation
  - http://opensoa.blogspot.com/2006/12/service-aggregation-in-fadaservent.html
- Quick Service Prototyping
  - http://opensoa.blogspot.com/2006/12/quick-service-prototyping.html
- DBE Service Execution: Give it a REST
  - http://opensoa.blogspot.com/2006/12/dbe-service-execution-give-it-rest.html
- Service as a Webpage: Information Handlers in servENT
  - http://opensoa.blogspot.com/2007/01/service-as-webpage-information.html

DBEStudio/Portal

- Importing OWL Ontologies to DBEStudio
  - http://opensoa.blogspot.com/2006/10/importing-owl-ontologies-to-dbestudio.html
- Create your Own (DBE) Semantic Search Engine
  - http://opensoa.blogspot.com/2006/10/creating-your-own-dbe-semantic-search.html
- Tagging/Labeling Software Services “Web 2.0” Style
  - http://opensoa.blogspot.com/2006/11/tagginglabeling-software-services-web.html
- DBEPortal Service in servENT
  - http://opensoa.blogspot.com/2006/11/dbeportal-service-in-servent.html
- DBEStudio Tutorial
  - http://opensoa.blogspot.com/2006/11/dbestudio-tutorial-ver-022swallow-ver.html
- BML and Bio/NanoTech Scenario
  - http://opensoa.blogspot.com/2006/11/bml-and-bionanotech-scenario.html

Presentations

- BML presentation

    - http://opensoa.blogspot.com/2006/03/bml-presentation.html
- BML TreeMaps
    - http://opensoa.blogspot.com/2006/05/bml-treemaps.html
- DBE at LUG Radio Live 2006
    - http://opensoa.blogspot.com/2006/07/dbe-at-lug-radio-live-2006.html
- Creating a Development Work-Flow Poster
    - http://opensoa.blogspot.com/2006/09/creating-dev-workflow-poster-pre-alpha.html
- BML For Business Networking
    - http://opensoa.blogspot.com/2006/09/bml-for-business-networking.html
- DBE Recommender
    - http://opensoa.blogspot.com/2006/10/dbe-recommender-visualisations.html

Videos/Demos

- DBE (ExE) P2P WebCam Demo
    - http://opensoa.blogspot.com/2006/04/dbe-exe-p2p-webcam-demo.html
- DBE (ExE) DateService with OpenLaszlo Interface
    - http://opensoa.blogspot.com/2006/04/dbe-exe-dateservice-with-openlaszlo.html
- WebCamera Semantic Search: A Trivial Example
    - http://opensoa.blogspot.com/2006/05/webcamera-semantic-search-trivial.html
- SugarCRM + DBE + OpenLaszlo
    - http://opensoa.blogspot.com/2006/05/sugarcrm-dbe-openlaszlo.html
- Calendar Demo with Semantics
    - http://opensoa.blogspot.com/2006/08/calendar-demo-with-semantics.html

Appendix 3 – Summary of Regional Actions

ITA – Aragon, Spain

- One-to-one meetings: more than 100.
- Meeting in small groups (a media of 3-4): 50.
- Code camps, training classes and regional workshops: 18 (Attendees from 10 to 70).
- Dissemination events to engage other agents (other EU projects, other European regions, other OS initiatives): 20 (Attendees from 15 to 30).

- email and telephone support thourgh the foros and mailing lists (AragonDrivers@ita.es, ImplementersPhase1@ita.es and ImplementersPhase2@ita.es) have been very high.

- Drivers SMEs (first SW developers): 4.
- Discoverers SMEs (first Users): 11.
- Implementers (follower SW developers): 21
- User SMEs ((follower Users): the number is not yet finalised, but around 60 (It depends on the final stability of the platform).

UCE – Midlands, UK

- One-to-one meetings: 100+.
- Meeting in small groups (a media of 3-4): 20.
- Code camps, training classes and regional workshops: 6
- Dissemination events to engage other agents (other EU projects, other European regions, other OS initiatives): 8

- Email and telephone support to SMEs have been very high.

- Total SMEs contacted: 100+
- Drivers SMEs (first SW developers): 4.
- Discoverers SMEs (first Users): 5.
- Implementers (follower SW developers): 7 (includes 3 driver SMEs)
- User SMEs (follower Users): about 70 (still being counted)

TCH – Tampere, Finland

- One-to-one meetings: 100+
- Meeting in small groups (a media of 3-4): 25
- Code camps, training classes and regional workshops: 5
- Dissemination events to engage other agents (other EU projects, other European regions, other OS initiatives): 12

- Email and telephone support to SMEs have been very high, 1000+ emails and 100+ phone calls

- Total SMEs contacted: 100+
- Drivers SMEs (first SW developers): 4 accepted, 3 started and 2 finished the integration.
- Discoverers SMEs (first Users): 2.
- Implementers (follower SW developers): 8 (includes 2 driver SMEs), 6 finished
- User SMEs (follower Users): about 100, number is not yet concrete, will actualise during the spring 2007