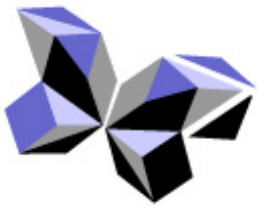

Digital Business Ecosystem

Contract n° 507953

Workpackage 34: Exploitation & Sustainability

Deliverable D34.5.3: Sustainability Plan

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1. Introduction

The DBE sustainability plan has been created in WP 34 as a process beginning from D 34.1 Business Plan. The starting document was an outline of the DBE sustainability in the form of a business plan. Following that, there have been two versions of the sustainability Plan, deliverables D34.5.1 and D34.5.2. The first sustainability plan D34.5.1 was rejected in the review in January 2006. The deliverable was not requested to be written again, however, and the improvements were made in the next deliverable D34.5.2, which was completely re-written in collaboration of all project partners involved in the work package. This deliverable is the final sustainability plan, D34.5.3. Its purpose is to identify the potential scenarios of DBE sustainability and provide information on the strategic decisions that need to be made in order to sustain the work done in the project.

The DBE sustainability is a very complicated and multi-faceted issue, as has been noted several times before. In order to achieve results that are both desirable and possible to obtain, the sustainability plan can not be a single document but a series of activities concentrating in specific sustainability issues. This document describes the whole of sustainability, provides insight to different perspectives of sustainability and finally includes specific regional sustainability plans that are to be implemented by the regional catalysts. Also, other documents that touch the sustainability issue are referred as much as possible so that the reader of this sustainability plan can get an overview of the sustainability as a whole and can go further into the specific sustainability area if interested.

Finally, sustainability means different things to different aspects and to different players. It is natural to look for overall self-sustainability as if the DBE were a self-contained business, but this simple case is unrealistic. Instead we have to look for, and explain in this plan, a more complex set of elements that together will ensure the continuation of DBE.

1.1 Sustainability Plan creation process

The Previous Sustainability plan was created largely with the participation of DBE partners that have an interest in the matter. The DBE public web site carried open forums on sustainability and governance, and some valuable postings were made to these. However, the postings were relatively few, and the most difficult part was to try invite SMEs to contribute to the sustainability discussion. DBE sustainability is more dependent on SMEs than SMEs are on DBE sustainability, which made the SME participation quite scarce.

At a Business Domain meeting in November 2006 it was decided to instigate a more formal proactive process. The 'Delphi' technique was employed in which a set of carefully designed open questions were put to a wide range of stakeholders, and in particular to experts in the field. The results of this study provided a formal basis for the conclusions reached. More detailed information on the Delphi survey is contained in an appendix.

In addition, the software developer SMEs were invited to participate in a special cross-regional workshop in Helsinki, Finland in January 2007. The SMEs were encouraged to take part in the sustainability discussion and to provide their perspective to the whole picture of sustainability. There were 19 SMEs present and their contribution to sustainability issues was remarkable. The SME perspectives

will be presented in the dedicated sub-chapter 2.2.2.

The collaboration has been taken further by placing this deliverable in the public domain during its development using the google docs & spreadsheets application and providing all interested stakeholders the opportunity to participate directly in the creation of the sustainability plan.

1.2 Relationship of sustainability and governance

In section 2 D34.5.2, some basic parameters for understanding the difference between sustainability and governance were set out. For the purposes of discussion, the DBE was presented as a complex resource system from which value can be extracted in the form of resource units. The definitions of governance and sustainability used were as follows:

Sustainability refers to the requirements necessary to permit a resource system to produce resource units over the long term. Determining *who* should be responsible for ensuring these requirements are met and decisions regarding *how* use of the resource system will be organised are issues of governance. (D34.5.2, p.7)

The relationship between governance and sustainability is not straightforward to understand. A resource system can exist in a sustainable state without governance. This is particularly true of some forms of natural resources such as a water supply or area of common land that are not used excessively. However, as a concept or set of actions governance is inherently reflexive and cannot exist meaningfully without an associated resource system to oversee. Although not necessary in all cases, appropriate governance arrangements can work in conjunction with the requirements and characteristics of a resource system in order to support long term sustainability. Conversely, inappropriate governance structures can lead to stagnation or even destruction of a resource system. With respect to sustainability, every resource system has its own characteristics and context specific requirements. As such, governance arrangements should also reflect the specific characteristics of a system and the context in which it operates. However, whilst sustainability can be measured and analysed using quantitative tools such as game theory or revenue models, governance requires a different approach since it involves normative questions such as, ‘what is the *right* way to organise or govern?’ Inevitably, these kinds of questions are controversial and arriving at a consensus based on common understanding of what is required can in itself form an integral aspect of the work involved in generating constructive governance conditions.

Table 1 below describes key differences and similarities between governance and sustainability

Sustainability	**Governance**
Sustainability refers to the requirements necessary to permit a resource system to produce resource units over the long term.	Determining *who* should be responsible for ensuring sustainability requirements are met and decisions regarding *how* use and maintenance of the resource system will be organised.
A resource system can exist in a sustainable state without governance	Governance cannot exist independently of a resource system; it is an inherently reflexive concept
Sustainability requirements are determined by the context and characteristics of a resource system	Governance arrangements should reflect the specific contexts and characteristics identified as being fundamental to sustainability
Not dependent on cohesion of stakeholder interests but reliant on stakeholder engagement	Needs to account for diverse stakeholders interests yet generate conditions for engagement and cohesion
Requirements gathering and planning using socio-economic tools based on tangible measures	Emerging in conjunction with infrastructure arriving at a consensually agreed upon template, model or general approach
Financial modelling required to analyse engagement of existing and new stakeholder groups	Coordination between stakeholder groups required in order to ensure transparency, inclusion and balance of interests
Focus on short term, mid-term and long term actions designed around maintaining technology and key relationships	Consensus building around common values, seeking out new associations and alliances to strengthen key components
Formation of organisations, or alliances with influential bodies to further long term interests	Ensuring actions remain consistent with common values in order generate trust and credibility

Table 1. Differences and similarities between governance and sustainability

In the context of the DBE, further complication is added by the process of high innovation that the DBE project has engaged in and the infrastructural nature of the

DBE itself. The ambitious process of innovation undertaken has brought with it the challenge of securing results. For sustainability planning and requirements to be successfully carried out, a 'real-life' example of exactly what value or resource unit will be extracted from the system is desirable. Different users have derived different benefits from using or engaging with the DBE infrastructure, such as benefits associated with social networking. However, given the development aim of the project, the core resource unit should be a 'tangible business benefit to SMEs'. A clear business case of the DBE producing this kind of benefit for an SME or network of SMES would provide a useful basis for carrying out sustainability planning and analysis.

As a complex infrastructure, there are a range of different contexts and stakeholders who can radically shape the nature of DBE sustainability. Understanding the infrastructure 'as a whole', as an e-business environment for SMEs, requires analysis based on stakeholder perspectives. However, whilst a multi-stakeholder approach is extremely useful for capturing the viewpoints of groups and individuals engaged with the DBE it cannot capture 'non-human' aspects of the ecosystem such as the regulatory environment or the significance of associations between technological components.

For this reason, as well as building a multi-stakeholder analysis of sustainability, the model of 'sustainability layers' has been used during the process of setting out a sustainability roadmap. In addition, a separate strand of research on governance has been carried out in which dimensions of DBE governance were identified along with the need to recognise the delicate balance between informal governance arrangements that emerge from the ground up and formally inscribed governance arrangements imposed from the top down (for further details, see internal report M32.5).

Open, multi-stakeholder consultation on sustainability

This section describes how the question of open consultation and multi-stakeholder analysis concerning sustainability were pursued by the project. Following the DBE 2nd annual review, the DBE reviewers requested that an open consultation and multi-stakeholder analysis should be undertaken with respect to issues concerning sustainability. They made the following stipulation:

> An open and inclusive consultation process is required to address other aspects of sustainability, governance and codes of conduct: this needs to elicit contributions from social science, business, political bodies, regions and other stakeholders of the Innovation Ecosystems Initiative (p.50, Report of the DBE 2nd annual review).

The reviewers made it clear in the 2nd annual review report that a separation between sustainability and governance should be maintained. Therefore, a related but separate strand of work on governance was undertaken as part of WP32 and is documented in Appendix C of Deliverable 32.7.

In an attempt to begin an open consultation process 2 discussion threads were started on the DBE website public discussion forum in February 2005. A thread entitled 'who we are' was put in place as a means to make individual project participants visible to the public domain http://www.digital-ecosystem.org/Forums/WhoWeAre. A second thread entitled 'DBE Sustainability' was also started that aimed to open out

internal meetings and discussions regarding sustainability, providing an open forum for agenda setting http://www.digital-ecosystem.org/Forums/dbesustainability. The overall aim of both threads was to allow innovation ecosystem stakeholders to identify themselves using the 'who we are thread' and then take part in open discussions taking place on the sustainability thread. Although the introduction of these threads was supported by project-wide e-mails and through discussion at domain meetings, it was clear from the lack of responses received that starting and open dialogue at this time would prove difficult.
Therefore, a supplementary approach to consultation and data gathering for the stakeholder analysis was required. It was decided that the individual sustainability strategies for each region should be developed and reported on in this and previous sustainability deliverables. These reports provided insight into SME opinions on sustainability, as did fieldwork conducted with SMEs as part of WP32 DBE Regulatory Feedback. In addition, consultation on sustainability was carried out with computing domain partners. This consultation was motivated by the following recommendations from the DBE reviewers.

"The responsibility for the code sustainability should be placed with the Computing strand, paying attention to the findings of the social science group within DBE Science. (DBE 2nd Annual Review Report, Recommendation 4, p. 47)"

"the long-term survival of an open source project is based on the existence of a core developers community, that can only be formed by a nucleus from the original software developers" (DBE 2nd Annual Review Report , p. 43)
In order to assist the developers in formulating an agenda for their own sustainability discussion, a series of questions were compiled and e-mailed to each computing partner. The focus of these questions was on obtaining computing partners' opinions of how sustainability - in the sense of an actively maintained and developing code base - could be achieved. From this survey, a discussion paper was written and circulated among the developers. This paper formed the focus of discussion at a computing domain meeting where sustainability issues were discussed. Some fundamental decisions were taken at this meeting, for example it was agreed that all contributions to the coding effort should be voluntarily made. It was also agreed that an organisational structure for the developer group should be put in place that could exist independently of the project structure. To this end, it was decided that 2 leadership roles were needed: a synchroniser for the execution environment; and a synchroniser for the development environment. These decisions were documented as meeting notes that were circulated among developers. As a result of this, a nominations process by which a developer was nominated to each synchronise role respectively for a trial period of 2 months.

Discussion
Overall, the consultation process showed that the sustainability requirements of each stakeholder group were extremely diverse. The contexts and priorities facing each group called for distinct solutions to suit each case. The consultation showed that DBE stakeholder groups have explored a range of diverse organisational forms and funding structures. Sustainability has to be aligned with individual stakeholder strategic objectives and a single organisational rationale encompassing all stakeholders would be unlikely to support the pursuit of all strategic aims. The importance of granting each group a level of autonomy so that they can self-organise according to their own objectives seems to be an important finding from the stakeholder consultation. Clearly some level of coordination between stakeholder group needs to be put in place, but the nature of this coordination will have to be

distinctive, facilitating stakeholders' capacity to act according to their own sustainability requirements but also, where required, as a community.

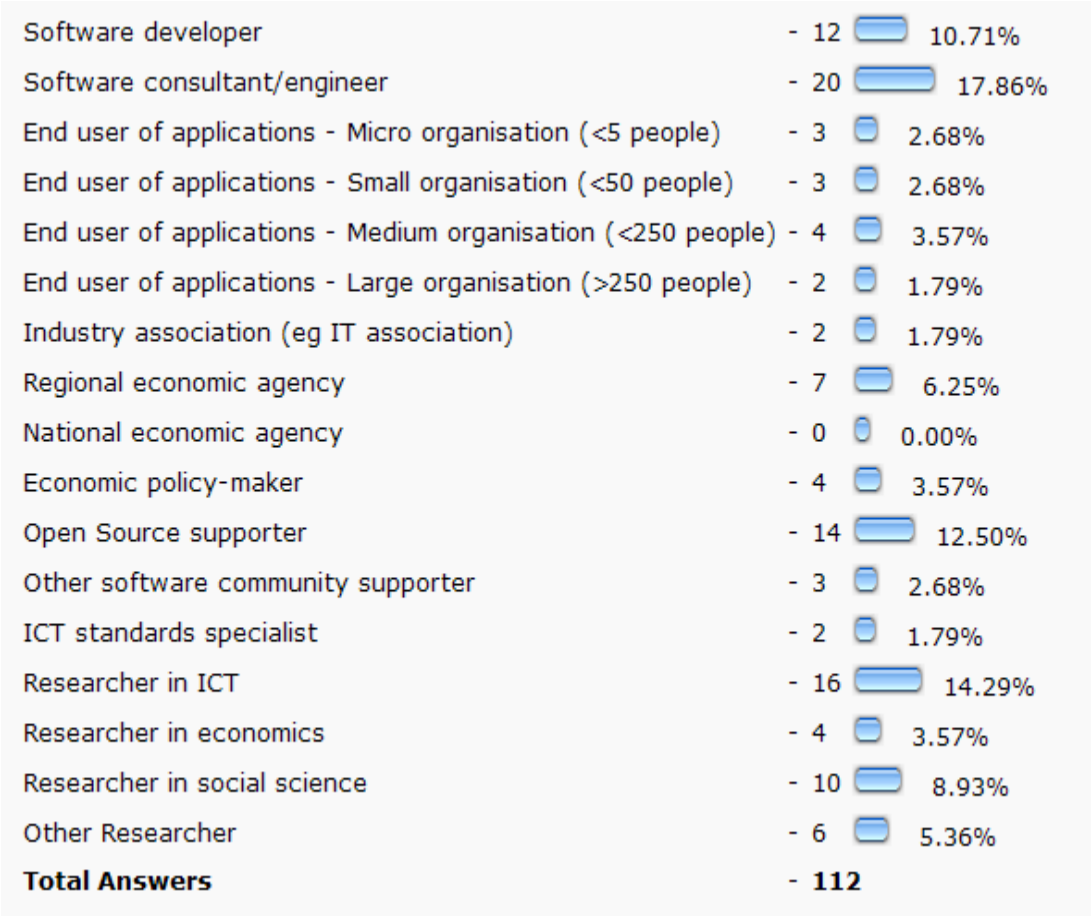
2. Different perspectives to Sustainability

In this chapter sustainability is given different perspectives. The objective of the chapter is to provide a basis to the actual sustainability plan presented later in the deliverable.

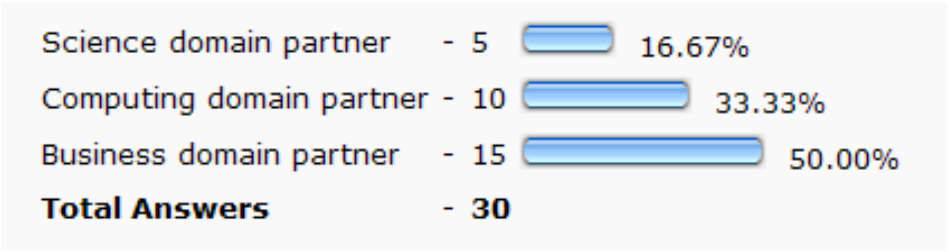
2.1 Delphi survey results

In the very end of the project there was carried out a Delphi-survey to find out the DBE stakeholder plans and ideas about the future of DBE. This had been tried out earlier on an online forum, but the response there was rather passive and the representation of different kinds of stakeholders was not adequate. Also, there was need for clarifying stakeholder positions and conflicting views on sustainability and governance. This chapter is based on the aggregated results from the first round of Delphi survey. The whole survey will be reported in Deliverable 34.6 "Delphi Report" by Censis, who conducted it.

The Delphi methodology is an established method of iterative questions with visible but anonym answers. It is used for gaining consensus or for clarifying differences. In DBE case it was implemented through an online questionnaire, where 260 individuals were invited personally.
A total of 64 people answered to the first questionnaire with mostly rich answers. The profiles of the answers were the following:



Picture 1. Profile of the Delphi respondents



Picture 2. Project profile of the Delphi respondents.

The above charts show that different DBE viewpoints are very well represented in the answers. The different DBE domains were dominated by business domain, but those answers include also the SMEs. A short analysis of the answers is presented next:

Question 1: What would long-term success look like, what are the key requirements for achieving success, and how long will it take for such success to be achieved?

- Many said critical mass of vibrant independent but interlinked local communities
- Frequent mention of trust, adoption, and integration by developers and standards bodies
- Support of policy and legal environments, SME organisations, and regional

policy makers
- Useful models, services, components, demonstrations
- Equalisation effect in developing regions
- Timescales: three groups – (but the 'what' differs)
    - 2–3 years
    - 5-10 years
    - 10-20 years

Do you believe that the Digital Ecosystem concept fulfills the need for a different approach to ICT use and deployment? Will it succeed or fail? Can you say why?

- Most believe that F/OSS and digital ecosystems will succeed…
- ….but many stress that DBE needs more development to be successful
- Further development should be in practical implementation and tailoring to specific SME needs
- Some think DBE may be overtaken
- F/OSS will be taken up by younger generation

How do you see the relative importance of DBE in the more developed and less developed countries, both European and non-European?

- Strong opinion that less developed countries have more to gain as part of wider ICT adoption and 'leapfrogging'
- Strong view that less developed areas may adopt more quickly and effectively
- Some firmly hold opposite view that it is more applicable it European SMEs and no difference between more and less developed
- Sense that the motives for adoption will be different 'business change' v 'ICT adoption'

How could the DBE technical assets and infrastructure (eg. source code, user support, model creation) be maintained in terms of resources and organisation?

- Common theme of mixture of public funds, individual volunteers, and donations of time and resources from major companies and universities
- Some are convinced that the Open Source community can maintain it
- Some mentioned licensing and commercial models, in particular a model where the core technology is centrally licensed and supported commercially while an open source version is free
- Some recognise the need for a light legal entity to defend the code but most want governance to emerge bottom up from a community

What types of organisation or people would be motivated and likely to give technical or human resources to support DBE maintenance and development?

- Many mention the open source and s/w developer communities
- Many mention regional administrations and economic actors
- Some mention R&D establishments and large companies

How important is it to have a roadmap for DBE development, and if it is important then how should one be created, and on what should it focus?

- Many feel that creating a roadmap is very important, citing credibility and coordination as current needs
- Most of those express some concerns about adopting a top-down approach while others call for a hierarchical and prescriptive approach, especially for the continuing research
- Some feel it is useful but too early
- Some are against a roadmap, believing that there are other priorities

To what extent do you think the DBE community needs structuring in order to survive? Will structure be a pre-requisite for progress, or can structure be left to emerge from practice?

- About half of respondents are against structuring of any sort
- Half favour a structure but almost universally want a very light framework with specific responsibilities
- Some think structure is only needed at the beginning and some only at a later stage

What existing models, or elements of models, for a self-sustaining community that you have experience of, do you recommend that DBE should adopt, and how should it go about adopting them?

- Many respondents made only general comments
- Open Source communities is the general principle frequently cited
- Several respondents favoured a DBE non-profit foundation
- In terms of specific examples, Debian, Jboss and Apache got multiple mentions

Does the DBE need an organisation to be a legal 'owner', and if so, then what type of new or existing legal entity would be best to perform this task and what would be its roles and responsibilities?

- Respondents were almost evenly split
- Those definitely wanting an organisation want it to be lightweight and to have limited remit and not to be the 'owner' so much as the servant of the community
- Several see a legal owner as necessary
- Those wanting an entity mostly talked of non-profit and foundations rather than commercial

What actions do you or your organisation plan to take, now or in the future, which are connected to or relevant to DBE?

- Almost all have tentative plans of some sort, and only a few have no plans at all
- Further research and regional projects and project proposals was popular
- Promotion of DBE was mentioned several times
- Two responses concerned sustaining functions

- Several plan to use DBE in software solutions

The second round of Delphi survey and the results of the whole process will be reported in Deliverable 34.6.

2.2 Regional perspective to sustainability

The regional sustainability of the DBE takes place in two levels. First is the regional catalyst level and second is the SME level.

2.2.1 Regional Catalysts

There must be an actor that will take the responsibility and "ownership" of the DBE initiatives in the region. As was seen in the pilot regions, such actor can be a regional development agency, university actor or technological institute. There are, however certain core processes that can be identified for regional catalysts: (Del 31.5)

The SME Engagement process (now renamed as SME- process) aims at integrating different types of SMEs into DBE as users and developers. There are several levels of engagement, starting from being aware of DBE enabled business opportunities and ending to executing all business transactions within DBE. From the SME point of view the aim of the process is to fulfil the SME business needs when engaging with DBE and match DBE with the business requirements of the SME.

The Policy Integration process (PI) aims at linking DBE with the different policies of regions. The linked policies may include technology and innovation policies, general economic policy, employment policy, structural policies etc. The local communities of policy making utilising DBE and contributing to it also evolve in time and there are several instruments that can be used in order to catalyse this two-way evolution. Policy integration takes place not only at regional level but also at national and EU levels.

Finally, the **Cross Regional Networking process** (CRN) aims at creating networks of local ecosystems, where the different actors and species in DBE can seamlessly interact and learn from each other. In the evolution of DBE, at first only local and closed ecosystems emerge. Cross regional networks must be created and encouraged first in the European context but after achieving the critical mass they may rapidly expand to other areas of the globe as well. CRN supports and enhances the possibilities of E and PI processes.

2.2.2 SMEs

The second perspective to regional sustainability looks at the DBE sustainability from SME community viewpoint. DBE really comes to life only when SMEs take the platform as part of their business activities. We need to consider SMEs in two basic types: software developers and end users.

All SMEs are focused on the profitability and security of their business, and in the case of smaller ones we may add to that the personal interests of their owners in terms of what they want the business to do. Their size means that they have severely limited resources, and they often have many other potential development opportunities requiring investment. Thus to them DBE is just one opportunity. There is also a tendency to see DBE as a 'product' and so to ask questions that would be

relevant for a product but are in reality questions that should be asked of end-user applications.

End user SMEs cannot be expected to care about DBE sustainability, other than where they have an investment in DBE technology that they wish to protect. Even then, they have the option of using other methods if DBE is too demanding, or its future seems too insecure. It is this 'protection' motivation that is the key for SMEs, both in starting to use DBE and in continuing their use and in recommending it to colleagues. This protection motivation actually creates a market for software developers and associated specialists. If there are sufficient users or potential users then providers of software and services can make a business out of providing those needs. An example of this is the Jboss company in which the service element is the main product as the base technology is open source.

Software developers that have a 'product' are a type of SME that is much more willing to invest in DBE as they can realise the benefits of their investment in future sales of their product. While their resources remain limited, the personal enthusiasm of the owners for innovation or for Open Source can cause them to drive the company towards DBE usage and invest a modest amount in actions that help sustainability.

There was an interregional SME workshop held in January in Helsinki, Finland. In the workshop the SMEs from all pilot regions presented their cases to the other SMEs. They were also divided into small groups to discuss about the DBE sustainability under three topics that were:

- **Group 1:** Cross-regional collaboration & sustainability of the evolving regional network

- **Group 2:** Joint OS technology development & Sustainability of the DBE Infrastructure development

- **Group 3:** Further development of sector specific application scenarios – user engagement

Group 1 approached sustainability from the regional collaboration perspective. The following insights were made in the discussion:

- For SMEs the business comes first. Interregional collaboration as such is interesting only if it provides new business possibilities.

- SMEs would benefit from interregional collaboration best if other regions would provide new ideas and references of business to SMEs in other regions

    - SMEs that have integrated services in DBE all have local clients and they can help other SMEs, possibly from other regions, to launch services in other services to their customers

    - DBE is supposed to provide services interregionally but in real life you need references and local presence to sell services to end-users

- The setting is different in all regions in Europe – business cases are not compatible between regions, it is difficult because of the differences in legislation etc.

- Tourism is a sector where interregional collaboration might be easiest to carry out

    - Great need for application integration

    - However, for example small hotels are resistant to technology

- Connecting small, disconnected businesses to DBE is a big challenge and very relevant

- The fact that DBE is based on open source is an issue for some companies and an asset to others

- For the sustainability of interregional collaboration between SMEs in different region the following suggestions are made:

    - Applications of all regions need to be listed and described somewhere better than they are now

    - There should be created two forums dedicated for interregional collaboration

    1. A generic forum for idea exchange

    2. A Specific forum for sharing focused ideas and proposals

Group 2 looked at DBE sustainability from SME perspective to technical issues. The following things were noted in the discussion:

- SMEs using DBE in their business already are very keen on knowing the next steps of the DBE infrastructure development as there are still dome basic functionalities missing (identity/security/file transfer/.....)

- Standards and DBE position towards them raised interest

    - SOAP WSDL?

    - OWL/RDF (W3C)

- There was still insecurities regarding the roadmap of different DBE technologies

    - Where FADA is going to (DHTs)

    - Where is BML is going (OWL/RDF/EMF/sBML)

    - Where is ServENT going (i.e JSR 168, etc)?

- Alternative possibilities to gain the DBE benefits such as openLaszlo versus GWT (OpenSource) and AJAX framework for P2P applications.

- The easiness to install and configure familiar from PHP and .NET was quite high on the SME wish list

- A very pragmatic insight that was noted in other groups as well was that first of all DBE is a pipeline ad there is not need to do business logic

    - You can have the business logic, but the pipeline must work well before that

- There is a lack of debugging facilities when a service is deployed (stop, breakpoints, etc). Service development is thus not efficient

- SMEs were also interested on how to become a member of the Dev Group?

- Business models raised interest, especially transition from "Selling products" to "Service" and how is it possible to collect money from composite services.

Group 3 concentrated their efforts to further development of sector specific application scenarios and user engagement. The following were the main points from the discussion:

- Views to technical / non-technical requirements & sustainability

    - Technical complexity should be reduced

    - Infrastructure readiness needs to be increased

    - Physical identity is important

    - DBE Technology maturity is still young

    - DBE Technical support is an issue to the SMEs

    - Security is very important as has been stated in many places for quite many times.

    - There needs to be a critical mass of developers offering services

As a conclusion from the SME discussions and ideas towards DBE sustainability the feedback was positive but pragmatic. SMEs have their own business to think first and if DBE can help in that with reasonable amount of additional work, they are interested. SMEs are very interested in the future development of the platform and possibilities to take different roles in the development groups. Interregional collaboration is seen as a possibility to take services to other regions with the help of local SMEs that have done DBE integration.

SMEs are aware of the advantages of DBE, but they would like to know more of the development plans of the DBE components especially relating to trust, identity and security issues. They are also aware on the options of other technologies that can be used to get the same advantages.

2.3 Social sciences perspective to sustainability

Social science has the potential to offer some valuable insights into how to approach the issue of sustainability and DBE. The analysis of DBE as a good offers a potentially interesting perspective on DBE sustainability. However, this is only one approach and there are a number of other ways of conceptualising DBE that might be equally helpful. As well as thinking of DBE as a good, DBE could also be thought of as a 'version of society' and analysed in terms of the socio-cultural and political standpoints. The question of what makes a sustainable society elicits a different set of issues to an analysis that uses theories of public and private goods and might be an interesting approach to consider in future stages of sustainability planning. However, both of these approaches are effectively based upon finding a plausible *metaphor* to describe DBE. The polymorphic character of DBE and its potential to mean different things, in different contexts, to different people, at different points in time, suggests that only a stakeholder perspective will yield constructive results. Trying to talk about 'the whole infrastructure' without stating a standpoint or interests may simply obscure more than it reveals. On the other hand, DBE usage and participation by the diverse stakeholders need to be at least complementary enough to guard the character of the DBE as a shared resource system.

2.4 Technology perspective to sustainability

As an emerging technology, further technological development will largely depend on public funding sources aimed at achieving the economic benefits of DBE. Progress in this direction has already been demonstrated by the further FP6 projects forming the Digital Ecosystems cluster, although the discontinuation of the Digital Ecosystems research area in FP7 call 1 will to some extent send a 'stop' signal to all researchers in this field.

In order to achieve the benefits of other public sector initiatives, DBE technology needs to be aligned with and networked to the wider Digital Ecosystems and associated movements such as Free and Open Source Software. The DBE and DE projects that are running need also to align themselves with national and regional economic players who are able to undertake some limited development in order to apply DBE to achieve their own ends.

A key issue put forward by technology partners is whether by taking elements of DBE in isolation users will fail to realise the value of the whole. Using elements in isolation is probably inevitable given the immaturity of the DBE and given the nature of SME end users, who will normally be focused on fixing short-term problems and meeting short-term needs, rather than embracing changes to their overall business model. However, it is fundamental to the DBE concept that the technology is developed on all fronts rather than one aspect achieving use and economic sustainability while other aspects are neglected and become unusable. Thus, for the vision of the technology, a continuing 'completeness' is central to sustainability which is unlikely to be achieved without public sector support.

3. Framework of sustainability planning

3.1 Layers of sustainability

From the very beginning DBE has been seen as a multidimensional and multilayered concept[1]. This multidimensionality has been reflected in the design, management and operations of DBE project. Thus, it is quite natural and self-evident to think and assume that also the sustainability of DBE consists of several interconnected dimensions and layers.

In the open sustainability planning meeting of DBE project consortium[2] a three-layer model of DBE sustainability was sketched by domain leaders Paolo Dini and Elmar Husmann based on the round-table discussion. These layers where

1. Infrastructure
2. Applications
3. Continued integration of Evolutionary Environment.

In the discussion that took place in this open meeting some aspects of these layers were identified. As discussed in the meeting, at the infrastructure layer the key issues of DBE sustainability include maintenance, stability and further development of the technological infrastructure

At application layer, DBE sustainability has to deal with topics such as enlargement to new regions and development and adoption of sector- specific vocabularies and semantics. It also deals with the integration of SME applications and services with the DBE.

Continued integration of Evolutionary Environment deals with implementation of distributed optimization, local optimization, application integration and aggregation and synchronization with emerging standards. All of these are cornerstones of the DBE vision but so far have not reached the stage of implementation in real cases.

The preliminary model will be further elaborated and developed during the open sustainability planning process. As the first step of this process and for the purposes of this report and next steps of sustainability planning, the following additions and light conceptual modifications are proposed to the original model:

[1] Nachira 2002
[2] Minutes of DBE Sustainability meeting

DBE Layer	*Key sustainability issues*
Infrastructure	Maintenance of the code base
	Stability of the code base
	Further development of the code base
Application	Attractive service population
	Interoperability of services
	Availability of services
	Enlargement to new regions
	Legal compliance and trust
Innovation	Exploitation of future research results
	Contribution to standards setting
	Standards compliancy
	Application integration

Table 2. Layers of DBE sustainability

We propose that within the three-layer model the third layer could be called as ”Innovation” layer. That would reflect the fact that the development of the Evolutionary Environment is not the only area of innovation that should be considered in the context of DBE. We assume that there are several other areas of innovation to be considered and that the two-way connection to standardization processes in an important aspect of sustainable innovation as well.

This framework will be applied in the regional context in chapter 4.3 on long term regional sustainability plans. The chapter 5 is about the sustainability of the DBE as a whole in which this framework will be utilised also. As the Delphi process revealed, all stakeholders have their own sustainability plans and it is the combined implementation of these plans from which the sustainability of DBE is eventually formed.

4. Regional sustainability plans

This chapter describes the current situation and future sustainability plans in the original regional catalyst regions. The regional sustainability can be gained in any other region as well but the pilot regions are used here as case examples, because they have started at the same time the DBE engagement and they are currently in the same situation regarding DBE.

4.1 Status quo

The DBE community in the regions consists of the following players

1. Regional catalysts
2. Software developer SMEs
3. DBE Users - customers of SW developers
4. Regional policy makers
5. Regional and national financers
6. Other stakeholders

The regional catalysts have acted as catalysts in between the European-wide DBE community and other regional community members. There role has been to initiate, support and push forward the DBE community in their own region. They have had EC financing and contribution of other DBE project partners in this work.

Software developer SMEs have been called for and chosen by the regional catalysts. Their role has initially been the testing of DBE platform, but the final objective of their participation has been adding business value to their current business. Software developers have been joining the community in different waves and as the group has grown, collaboration prospects between the SMEs both within the region and inter-regionally have emerged. From SW developer perspective the value of DBE increases as other software services are added to the DBE.

First DBE users are the customers of SW developers that use DBE. In time the users may also come to DBE independently and use the BML tools to find the appropriate software services to match their business needs.

The regional policy makers have had different roles in different regions. In Tampere region they have played quite small role as the SMEs don't have strong ties to political programmes. In Spain, however, the political influence has been crucial in the persuasion of software developers to take DBE as part of their business. The policy maker role is very important and it should be utilised as much as possible in the region, because it lowers the hurdle of regional SME takeoff considerably.

The regional and national financers have central role in the DBE sustainability. Even though DBE needs to be good enough platform in order to survive in the market, financial aid is needed to support the development of regional communities.

Other stakeholders include universities, development agencies and other organisations that have interests towards DBE. These can have different roles and their importance varies on different occasions.

- To continue the development and dissemination of DBE under various forms of EU, national, and in particular regional public funding.

- To focus on regions as the key actors that have the broad economic development perspective, the access to funding sources, and the ability to provide and maintain ICT infrastructures.

- To grow the number of regional initiatives and implementations until the global user base constitutes a commercial market for DBE-based products and services.

As stated in the introduction, achieving sustainability for DBE is not a case of achieving simple self-sufficiency of one organism. Instead it is a complex interaction of many types of actors and their motivations.

Sustainability of certain technical work is already assured by additional EU funding that has been secured. Sustainability of some assets and knowledge is assured by the ownership, protection, and publication by project partners. Sustainability of applications will potentially come from software developers protecting their existing investment. Short-term development and expansion of the user base will come from an increasing number of regions seeking the economic benefits of DBE while long-term economic sustainability will come from the user numbers that such involvement will create.

While all these types of elements are important, the most important in the short to medium term is to involve more regions. Regions have shown themselves as willing actors that have both the overall economic/ICT viewpoint, and the resources, to be motivated and to make a major contribution to progress. Regions are also an identifiable target and relatively easy to communicate with.

At the same time, encouraging ever closer links with the FOSS communities is essential, both to draw on the huge pool of knowledge and resource, but also to maintain the credibility of DBE as a FOSS initiative.

4.2 Short term regional sustainability plan

4.2.1 Objectives for year 2007

The three pilot regions each have their own plans for the sustainability of DBE in the region. These plans are presented in the deliverable 28.12 from the training sustainability perspective. In this chapter the region al sustainability plans are put together to create a unified short term sustainability plan for the regions. Other regions than the pilot ones can also utilise the regional sustainability plans as it fits to the regional setting.

The objectives for the first year after the DBE project can be divided under five topics:
1. Supporting SME service integration
2. Building up the regional communities
3. Training resource coordination

4. Cross-regional SME collaboration
5. Financing

Supporting SME service integration

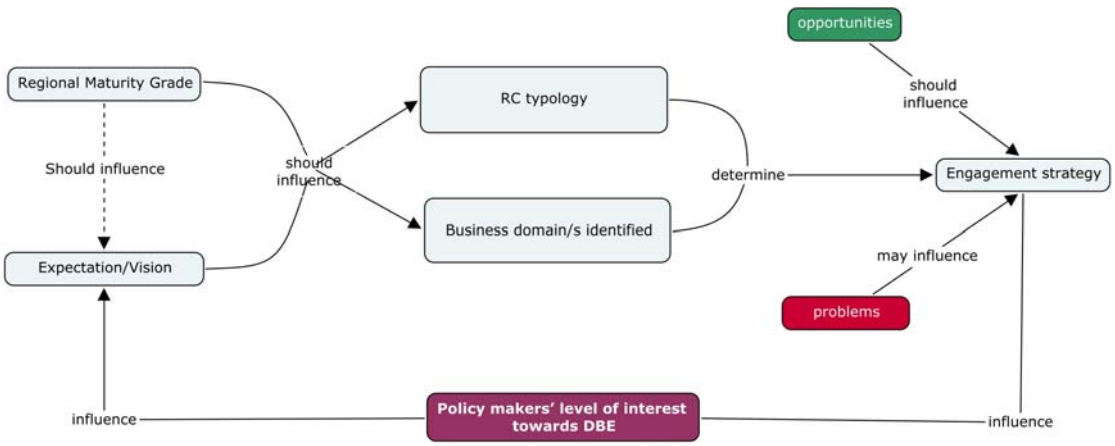
DBE platform became stable very late in the initial project time. Furthermore, there are still a couple of pending issues that hinder the business use of the DBE such as security and trust. Because of this the SME interest towards utilising DBE is just raising. This interest requires active nurturing and training activities from the regional catalysts. In short term there are no other actors that can take the responsibility of SME engagement than the initial regional catalysts.

Also, there are around 30 developer SMEs that have experience on integrating services in DBE and it is very important to sustain and conduct their efforts and interests towards DBE by supporting their services and possibly integration of new services by these seasoned driver and implementer SMEs. The SMEs have to be kept up to date on development plans and roadmap of the DBE platform in order to retain their trust to the DBE.

Building up the regional communities

All regions have concentrated their efforts into one business area that is most appealing in the region. There are different paths that the regional communities have been built from. In Tampere the Centre for Open Source Software (COSS) has provided the shoulders for DBE community. In Spain the status of ITA, JBOSS collaboration and close proximity of SUN and Tech Ideas has been enough to create acceptance in the SMEs. In UK the SMEs have been provided tailored expert services from the UCE personnel. These services will be commercialised in the future and that gives credibility for the UK SMEs. Building communities is difficult if not impossible – communities are born if the ecosystem favours it and the required elements are in place. However, following the previously described paths the regional catalysts have helped the building up of regional communities. This work takes a long time and it needs to be continued in 2007.

The following picture from D31.6 describes the regional uptake of DBE.



Picture 3. DBE regional uptake (D31.6, Censis 2007)

The picture shows how there are a number of factors that influence the regional uptake. These differences make it impossible to formulate a single engagement

strategy to regions. Instead, the strategy must be built for each region respecting the regional setting, typology of different actors and other possible factors.

There are case examples of three business domains (from each pilot region) that can be utilised to widen the service provision in all regions. Regional communities in these new business areas are much easier and faster to build as the mechanisms are already established.

DBE community building can be approached by emphasizing business, technology or social element of the DBE. Finland went business first, UCE was very strong in the DBE technology and ITA combined the technology and social (or political) acceptance. From the ITA example it was clearly demonstrated that gaining political acceptance to DBE makes the community build-up much easier. This was combined with synergy effects between the DBE and a strategic ICT development programmes on the regional level. This shows that DBE political acceptance might be specifically effective when a good coherence with other policy programmes can be reached on a regional level.

Comparison of the social network analysis conducted by CENSIS in the regions also revealed that ITA had activated a group of SMEs for the DBE that showed the strongest community characteristics and linkages already prior to the DBE initiative. In that sense, the focus on existing communities might be particularly promising. These are very important issues to acknowledge while continuing the regional community building.

Ideally, as is happening in Aragon, the regional government will take the role EC had in the DBE project and provide financing for the initiation phase of the community. This will help new services to be built and creation of the critical mass of services to the community.

The key stakeholders in the regional DBE community in addition to software develop SMEs are the users of the DBE services. These will come to the community through the SW developers as they need to build a customer relationship with at least one of them to use DBE at this stage of development. In the long term future Users may come to DBE independently, but as things are, they need to be encouraged by the SW developer SMEs. Regional catalysts role is to support this engagement by providing applicable materials and other training support. The robustness and stability of the DBE platform is even more important to the users than to the developers.

The community dynamics can also be supported by helping composite services build up. These kinds of services are under development in Central England and to some extent also in Tampere. This kind of services can attract large numbers of users to DBE and thus provide the required critical mass and trustworthiness for the regional community.

Training resource coordination

Training sustainability was discussed in deliverable 28.12, but the training resource coordination is an essential objective in regional sustainability and thus it is referred here as well.

There has been abundance of training materials created in the project at both regional

and project level. The regional catalysts need to be the intermediates of the training materials in the short term at least and thus they need to create regional training material repositories. This can be either virtual consisting of links to relevant materials in the internet or established regional websites. Again, ITA has done a grat work in creating a regional website that serves the SMEs well in the future as well. UCE has created excellent walkthroughs of service integration and TCH has provided SME-created training content from the beginning of the SME engagement. In addition to all existing materials there were video training materials created in the last stages of the project. ITA has planned to create step-by-step walkthroughs for service integration. This will be done in Spanish, but other regions can localise these if the needs and resources can be found.

In November 2006 there was a quite stable release of DBE made. This established a base for training resources that during the project were created to the current needs. These changes in the "what is trained" is the main reason for the training resource coordination need for the regional catalysts. This role can and most probably will be taken by other, possibly commercial, actors, but in the short term the role needs to be carried out by the regional catalysts.

The training resources consist of electronic materials and training personnel. Due to ending of the project the human resources for training needs to be found somewhere. The need for individual training is smaller than during the project time because the DBE platform is much more stable and ready than in the first SME engagement phases. Also, as mentioned earlier, there is a lot of very good quality electronic training materials that can tackle most of the common obstacles and questions raised in the first phases of DBE familiarisation by SMEs. Technical support can be provided by using different means; mailing lists for groups of SMEs, blogs that describe specific issues and official sourceforge pages for detailed information.

Cross-regional SME collaboration

Cross-regional collaboration was initiated in January 2007 in a workshop arranged in Helsinki, Finland. The outcomes of the event were not immediate, but the SME interaction was positive and encourages continuing collaboration. The fact that initial DBE regions have worked in different business domains results in having different kinds of services and communities in each region but there are many similarities as well. SME collaboration can happen in actual services level or in general business level. Services level collaboration could be an SME helping SME from another region to provide their DBE services in its home region. DBE requires still quite a lot of local presence to build up trust and implement the services and thus local partners are a necessity at this stage. In general business level SMEs may exchange best practices or build collaborative initiatives in other areas than DBE services.

Short term objectives for cross-regional SME collaboration is to provide enough information about the SMEs for other SMEs to go forward with possible collaboration ideas. Also follow-up cross-regional events may be arranged if there is enough interest for those. In the short term the regional DBE communities and global DBE community are expected to be separate self-evolving communities.

Financing

Financing is a difficult, but essential issue regarding the short term and long term objectives of regional sustainability. The direct EC funding ceased in the end of

January 2007. There are a number of ongoing EC projects that touch the issue of regional sustainability of DBE and these projects will be utilised as a source of financing if possible. There are also different regional development projects going on in the regions including elements that help in the regional sustainability of DBE. The key financing source, however, should be the regional policymakers or other regional / national financers. In order to gain momentum in the short term, there is still need for seed financing and that must be found. DBE is not yet robust enough to survive in the market environment.

4.2.2 Activities planned for year 2007

Tampere

In Tampere the regional catalyst activities will be continued by Technology Centre Hermia (TCH). the company is participating a 6th framework SSA Peardrop. The idea of Peardrop is to disseminate the DBE initiative by creating simple toolkits that explain the different aspects of DBE in layman's terms. TCH is in charge of the technology toolkits in the project and as a whole Peardrop sit in well for TCH's regional sustainability plan as the most crucial sustainability issue is to engage Finnish policy makers to DBE and they are the exact target group of the Peardrop project. TCH is also participating in the Onessi initiative for the FP7.

Regional level project activities are firmly tied to the activities of COSS. TCH and COSS are in charge of a national open source business programme for the Finnish industry. Verso Open Source Business Programme is targeted at software providers and companies that are deploying - now or potentially - open source software in their products and services. The user organisations are expected to represent various key industries such as mechanical engineering, telecom and media. Verso Open Source Business Programme is funded by TEKES, the Finnish Funding Agency for Technology and Innovation, as part of the Verso technology programme.

OPERET is an ESF funded training project that arranges training and consulting for companies willing to develop their business with open source -solutions. The arranged training events are based on the needs and requests of the SMEs.

The sustainability of DBE in Finland requires also raising the interest of national financers. There have been negotiations with the most potential and suitable financer, TEKES, to gain "authorization" for DBE service integration that would make the funding process from TEKES easier and better. TEKES is particularly interested in financing groups of SMEs.

TCH is committed to maintaining the nominal status of Regional catalyst for at least two years after the DBE project has ended. During this time financing the activities and possibly the organisation to take over these activities will be sought.

Aragon

Aragon has had a successful workshop with representatives from JBOSS that is a very good case example of making business in a sustainable way in an open source community. The case example of JBOSS is included in the Appendix 1

The first concern of Aragon is to consolidate the participation of the already engaged SMEs. Efforts to maintain the interest and momentum of the existing SME community are made throughout 2007 by creating vertical projects with the SMEs. These projects, such as already ongoing TUR-INTEGRA are presented to the national competitive funding programs to get additional funding.

Based on the stable release of DBE in November 2006 ITA starts to produce long-term training materials with top quality. They plan to create manuals for the different materials (installation manuals, services including the code, user guides) and also videos to show the step by step walkthroughs. There are plans to create videos for ExE installation, DBEStudio Installation, how to start the ExE, how to create a service with the DBEStudio and how to deploy it in the ExE. SMEs in Aragon have showed great interest to using instruction videos and ITA has had very good feedback from video tutorials already made.

Enlargening the SME community will be made with the support of the Government of Aragon. They have launched a new call tender for new proposals that closed on December, 30th 2006 for activities to be executed in 2007 with a funding budget of 157.300 euros. Through this call 10-12 new SW SMEs which will bring again at least 2 user SMEs each of them will be engaged to DBE. The work of the engaged SMEs will be executed from January 2007 to September 2007.

Participation in the cross-regional SME workshop in January 2007 was one major activity in supporting the interregional collaboration between the SMEs.

Technical support to Aragon SMEs will be continued on different ways. There are dedicated mailing lists to different kinds of engaged SMEs (AragonDrivers@ita.es, ImplementersPhase1@ita.es, ImplementersPhase2@ita.es). There is also a regional blog (http://dbe.ita.es/wordpress/) on which articles regarding upcoming technical and other important issues will be posted by ITA. Also the official sourceforge pages are naturally available for the SMEs.

Users of the DBE services integrated by Aragon SMEs will be supported and encouraged to install the services developed by the SW SMEs. In order to do it, User SMEs request to have complete stable software releases, however

ITA will keep the Aragon influencers engaged and interested in the project. It will be easy while the SMEs in the region keep their interest in the platform. Influencers are invited to all dissemination activities and as they have already planned to keep their support in 2007 by launching a new call tender with 157.300 euros funding, it will be their interest as well.

ITA has continuous contact and collaboration with other Digital Ecosystem projects. Since Mach 2006 they have had continuous contacts with the SEAMLESS and ENVISION projects, and they have decided to use many of the components of the DBE platform. Also Peardrop project has expressed its interest in benchmarking ITA activities.

West-Midlands

For West-Midlands securing the funding from their regional development agency and seeking further support from major companies and IT agencies is the first and most important activity in 2007.

UCE has also opened up conversations with several potential future partners outside their own region with future follow-up projects in mind. They have assessed the opportunities for collaboration with other international, EU, national and regional projects. UCE will organise workshops in 2007 to explore these initiatives further.

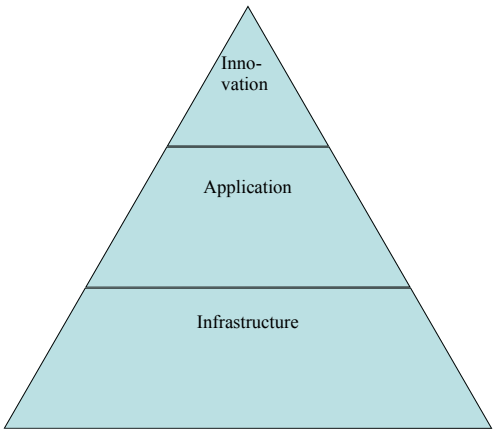
India has become an area that might prove to follow the path of European pilot regions. UCE has been active in this sector and there is a possibility of arranging a code camp there to raising awareness and interest amongst Indian businesses to participate in Digital Business Ecosystem activities.

As an exit strategy from the DBE project UCE will explore the possibilities for future engagements on different strands:

- Centre for business software
  - Supporting regional software developers to compete and collaborate in highly competitive and complex software development areas
- Anubis WM
  - Increasing the take-up of ICT through micro-financing support
- InfoWeb
  - Codification of regional knowledge and skill sets using formal and structured languages.

4.3 Long term regional sustainability plan

The regional DBE communities are here studied with the sustainability layers framework. The layers are hierarchical so that the lower layers must be fulfilled before higher layers can be striven for.



Picture 4. DBE sustainability layers

4.3.1 Infrastructure

The computing domain partners are responsible for the infrastructure sustainability related issues of the DBE project. Because of that, infrastructure issues of sustainability are observed here from outsider perspective. Currently SMEs and regions are not involved in infrastructure issues, but in the long term they have to.

SME trust to the future maintenance of the DBE projects' code base is the first sustainability issue that needs to be solved. At the moment the SMEs are aware that

there are committed partners that will take care of the code base for the time being. However, this has not been expressed to the SME community clearly and transparently – who are committed, for how long and who are the actual persons that have the responsibility to take care of this matter. As long as EC provided the funding to the code base maintenance, it was clear to the SMEs but in the long run this is a key sustainability issue that not only needs to be taken care of, but from the SME point of view needs to be expressed in open and communicative way.

Stability of the code base deals with the same issue. During the project funding the stability of the code was not very convincing. Now that the research project has ended, SMEs need to have trust in the code base stability. In November 2006 there was a code release that was considerably stable. From SME perspective major changes in the platform need to be tested well before releasing. Following open source ideology, there needs to be a way to release often, but it should be on a different forum than the releases made for the SME community utilisation. This dual model of releasing has been discussed within the DBE consortium.

Equally important than the maintenance and stability of the code base is the trust in further development of the DBE infrastructure. This requires considerably more resources than the mere maintenance, but is crucial in ensuring the competitiveness of the platform. In the long run the SME community needs to be deeply involved with the development of the platform. It will take time, however, to find the SMEs and individuals in them to have the drive to participate in the infrastructure development. As mentioned earlier, SMEs' main interest is their own business.

Adequate support to the P2P network is also a key infrastructure sustainability issue. There needs to be at leas one stabile fada node in each region, preferably more, to provide trustworthy availability for the services.

4.3.2 Application

The SME community is built to the application layer. It is there that the service population is created and relationships and integration between different services and the DBE infrastructure is created. For the community to evolve it is important that services in the regional communities are related to each other.

The DBE is based on services interoperability. Currently the interoperability needs to be taken care of in the service integration phase, however. Before the infrastructure can guarantee the interoperability, which will take some time, it is important to pursue the interoperability in all applicable service integrations. This requires active participation of regional catalysts in the planning and integration of new services to the regional community.

Another crucial application layer issue is availability of services. Integrated services need to be well presented and documented for both users and other developers to investigate. Also, the services have to be linked to online fada nodes to be available at all times. BML is very important tool for this, but currently it is secondary to the stabile functioning of the services between SMEs and their customers.

The enlargement of the DBE to new regions besides the pilot ones has been happening adjacent to the EC-funded DBE project. There have been different levels of activity in regions, some are going to take off and begin SME engagement. The

task is in some ways more challenging than in the pilot regions because there is not the EC project financial and training support available. On the other hand, there is a lot of training materials and very good cases created in the pilot regions and the DBE infrastructure is much more ready for SMEs to integrate services to it. Another related issue is the enlargement of the initial regional DBE communities to new business domains.

Legal compliance and trust are issues that need to be solved in order to the DBE community to evolve. Pilot regions faced problems with both of these issues already during the project time. Regional legislation and the open source related to the agreements between actors need to be carefully addressed before the SME engagement in order to avoid problems and delays in populating the community.

4.3.3 Innovation

Innovation layer goes further from the core interest areas of the SMEs. For the whole of DBE these issues are very important and need to be considered also in regional level, however. There are a number of ongoing DBE related research initiatives. The exploitation of results from them is very important both to the research projects and to SME community. Even though SMEs are not keen to participating in research activities, the long term success of DBE requires research results. There are still many open issues in DBE that were addressed in the project but could not be answered in the three-year timeframe.

Standards are a key to ratifying new technologies. It is essential to contribute in standards discussion and participate in setting new standards. DBE has already had discussions with the free software foundation and other actors that can be helpful in this matter.

In the infrastructure development it is very important to follow the standards development and ensure the compliancy of DBE to the chosen standards. As mentioned above, these issues are not in the hands of the regional SME communities, but in the long term they need to participate in the discussion

4.3.4 Long term sustainability conclusions

Following the training strategy deliverable 28.1 the responsibility for the regional communities is transferred to the SME community. The role of regional catalysts will change towards a facilitator rather than the engine they have been during the DBE project. As interregional SME collaboration takes off the regional communities will start merging into the international community of SMEs. Likewise the scope of activities SMEs are responsible for will include DBE infrastructure development as the communities and platform mature.

Regional take up of DBE requires a strategic plan and allocated resources to succeed. The regional catalysts must have the DBE promotion as part of their strategy to ensure the long term commitment that is required. It is also possible that the regional catalyst role will be transferred to another actor after some time. The DBE regional catalyst activities are regional development activities in nature and thus the most natural regional catalysts are regional development agencies. The regional catalyst model is discussed in more detail in D31.5.

Equally important to the regional catalyst role for the DBE succession is the building up of a dynamic SME community. The SME community concentrates on the application layer of DBE at first but over time they should take roles in the infrastructure layer and possibly in innovation layers as well. This evolving is essential in order to guarantee the long term sustainability of the whole Digital Business Ecosystem.

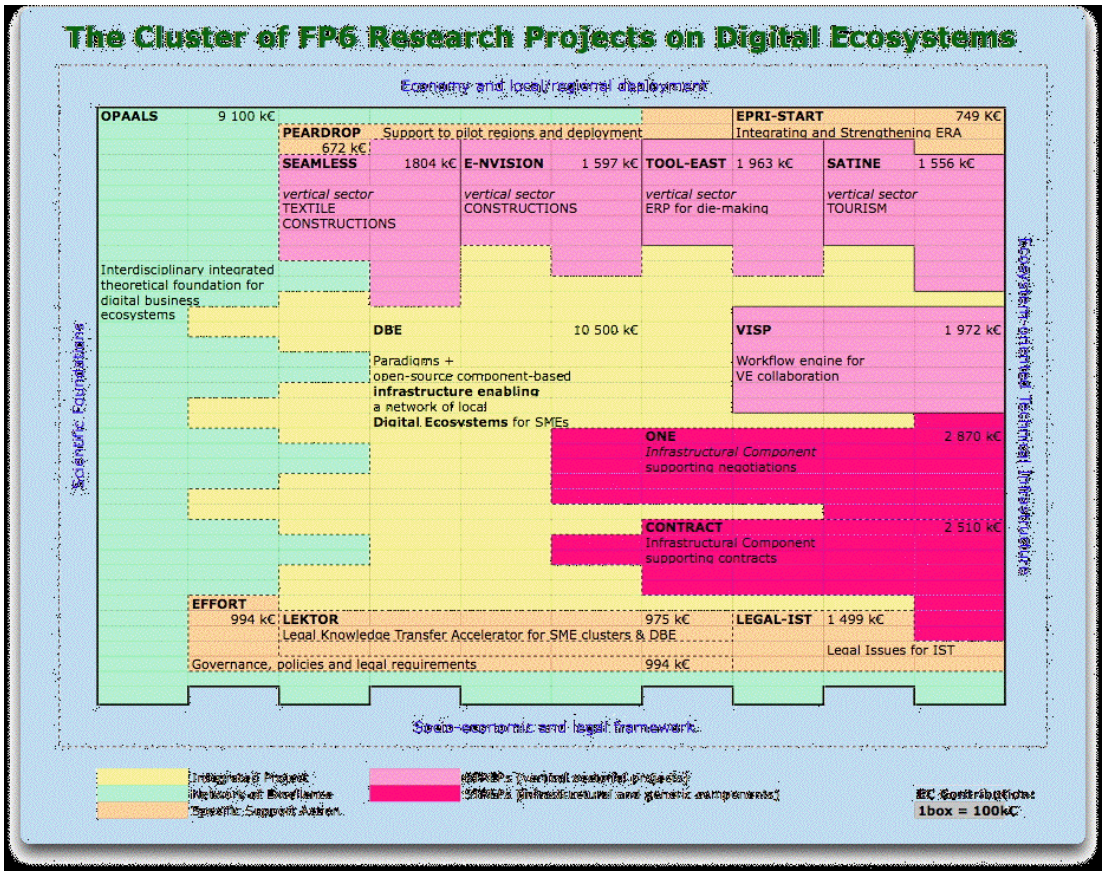
4.4 Regional sustainability in the whole DBE context

Regional sustainability is but one part of the sustainability of the whole DBE. It concerns the business domain of DBE, but there are also the technological and research aspects of DBE that need to be sustained.

As mentioned earlier in this report, the computing domain is responsible for the maintenance of the DBE code base. There are also former computing domain project partners that have committed to the further development of DBE components. This is a functioning sustainability strategy in the short term, but for the long term sustainability it is crucial to create functional open source communities to support and develop the DBE infrastructure. For this there are different strategies, one of which is the JBOSS presented in appendix 1. The regional SME communities are not ready to participate much in the development of DBE infrastructure in the short term. However, in the long term this link must also be created and enforced. Even though day to day business is the most crucial issue for SMEs, participation in the DBE open source communities can be very rewarding for some of them. There are numerous examples on utilising open source software to further the business of individual companies.

In 2005 there was written a digital ecosystem research vision by a number of DBE influencers. There the challenge of engaging SMEs in European research is divided into two; SME involvement in research and SME take-up of research results. This is the key challenge in connecting the good intentions of large research initiatives and interests of SMEs. Time to market required from SME R&D activities is too short to be matched by European projects. Also, it is not enough to have a – usually very limited - number of SMEs as direct members of a research consortium. Finally, it is not enough to claim that research activities are relevant for SMEs without integrating a larger group of them as a test-bed reflecting realistic SME market conditions. In this context, using regional catalysts as intermediates between research activities and SME engagement has proven to be more effective in this task. This has been clearly demonstrated by the DBE project.

The research activities have their own sustainability plan written in the paper mentioned above and research activities continue in a number of FP 6 projects as presented in the following picture:



Picture 5. The cluster of FP 6 research projects on digital ecosystems (http://www.digital-ecosystems.org/de/refs/ref_proj.html)

5. Conclusions

Sustainability of DBE is a multi-faceted matter that can be looked at form many different angles. Each DBE project stakeholder has developed their own sustainability plan and also the different domains; business, computing and research, have plans to succeed the activities initiated in the DBE project.

Sustainable regional DBE communities are the base on top of which the living and evolving digital business ecosystem will be built on. Without the SME communities there is no ecosystem and the SME community building is a slow and challenging task to come up with. This requires a functioning and regionally adapted regional catalyst model and both short term and long term strategic planning. This deliverable has presented the short term plans of the pilot regions and they are all slightly different. The key activities in the short term are:

1. Supporting SME service integration
2. Building up the regional communities
3. Training resource coordination
4. Cross-regional SME collaboration
5. Financing

In the long term the perspective needs to be widened even more to include active participation of SMEs with the global DBE infrastructure developer community and

possibly also the research communities. Also the role of regional catalysts changes over time towards a facilitator rather than the heart or engine of the DBE activities in a region. Long term activities also include enlargement of DBE to new business domains.

DBE sustainability is like the strategy of an organisation. It is related to the environment in which DBE is implemented in and requires operational activities to be drawn from it in order to survive in the long run. Sustainability plan, like a strategy, also needs to be updated constantly to meet the changes in the environment.

Appendix 1. JBOSS story

In the beginning of JBOSS, they had unique versions, and they provided telephone support the first 30 days and web support during the first year for the fee they charged to their customers.
However, it caused problems to them because it was not enough. It was not possible to penetrate into the industrial and business sector because there were inefficiencies they did not carry out. The business sector needs continuous certifications of the product and the big ones needs robustness and stability of the technology (let's think in banks, insurance companies, …). This is something we have already had as feedback from the SMEs particiuapting in the project.

In order to overcome this issue, then, they made the following structure of 3 different branches:

1. They have community version. This is a version open to the community, free of charge and it is the big community who introduce new features/projects to it in a total open source philosophy. The state-of-art is here, but obviously it may not e stable 100%, that's the trade-off.
2. They have an intermediate project. This is an already certified product by the company where they prove things. When a project or new feature created by the community is interesting then, after a democratic voting, they decide to include it in the project (we will study this process more in detail afterwards).
3. They finally have a business/certified version by JBOSS. This is a complete stable version for large companies and it completely under control of the JBOSS company. Complete control and quality. Customer of this version may put it in production without any risk. Indeed, there is an insurance in which RedHat and JBOSS will pay 1/3 of the expenses caused by the SW certified by them.

This may be an interesting way to structure the technical releases for the DBE project.

The JBOSS community is structured in the following way:

- There is a very important community of many contributors apart from that, which gain their reputation also in the community with their contributions.
- JBOSS has around 180 employees, all of them developers even the founder member, Mark Flory is still programming. There are no managers and the structure is very horizontal.
- There is a small committee of 3-4 people who made always the final decisions. It is not needed that this people are the managers of the company, and these people is put there by voting of the JBOSS and even the community. The community may change this core JBOSS team.

Then, the structure is that JBOSS company has certified partners which make projects to the final customers. However, the support is signed between JBOSS and the final customer. In that way, JBOSS guarantee the core project and they provide the last layer support, so the customer may be quite because they know that the SW creator is there.

Then, the icomes of JBOSS comes from a suscription fee that end users pay for technical support, a JBOSS operations network (which ease the maangement fot the different compoenents) and a complete certified software with an included open

source assurance (in case of a SW failure, JBOSS pays the end users for the losses the users have incurred).

It is very interesting the % of the source of incomes:

- 85% for suscriptions, support, maintenane, ... (this is their core). There are different levels. There is one level in which you declare a problem in the morning and in 42 minutes, you have the solution. It is very expensive, but for some customers (banks, insurance companies, …) this service has no price.
- 10% for training.
- 5% for very specialized consultancy.

It may be perceived that the core code is the base of their core business.

JBOSS has also people in contact with customers in order to catch their needs and many new features have its origin here. Other features comes from the community when the JBOSS team decides to certificate. And other features are also created by the JBOSS team itself. The feedback from every agent is very important for them.

There are a set of questions, whose answers may provide very interesting information for the DBE team.

How was JBOSS created? There were a group of people leaded by Mark Flory which were employed in ePlanet. They didn't agree in the way the application server was created and they decided to create a new one, not paying by CPU, but paying by service. They also perceived that doing things as they wanted, the developments were miuch better and faster. Therefore, in the beginning the community was already there, and they already had a set of customers waiting to pay for it. There were a common need. This is a difference from the DBE. In JBOSS, and other business around open source, the demand is pushing and willing to pay for a result. In the DBE, the EU is pushing to solve a "problem" of the SMEs to improve their productivity and so on, but it is a problem that SMEs does not know yet. From a marketing point of view, we still have to create that need and we are working on that.

Which are the steps they followed in order to become the company they are nowadays? The order is very important and you can't jump to the next till you have the formers.

1. First of all, we have to make training. We have to make that as many people as possible knows your platform as in depth as possible. The objective is to create the community. Until you don not have a community which may provide excellent support, and then we can't do business.
2. Then, if we already have the community, then we are able to start to make subscriptions and provide paid support with guarantees.
3. Then, we start to have certified partners, which are the contact with the final cusomer. However, as we have said, the certified partner (which pays to be a certified partner) does not provide the core support, they provide the customer support, the first level. As we have also said, it is JBOSS who signs the contract with the final customer because it is JBOSS who has the final responsibility.

JBOSS wants the know how to be distributed as much as possible, then the product will be saved because there will always someone who will be able to contracted by the company and provide support. And we want to do the same with the DBE.

Theis business model is to create new releases every 6 weeks, so they are always one step further than the market/community, and then the final customers always need them to be saved. It makes them not being able to rest.

The business barrier is the difficulty to learn the code. You have to produce faster than the others understand your knowledge/your code. The time of IPR in open source is the time you need to learn the code I have developed.

We have to procude services that the customers ask them for. It is true that the telcos does like the P2P networks, but if the final users finally ask for them (community plays, …), then there will be no stop.