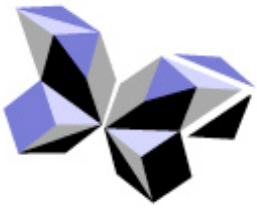

Digital Business Ecosystem

Contract n° 507953

WP N°32: DBE Regulatory Framework

D32.7: DBE Regulatory Framework – Final Report

Information Society Technologies

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Partners owning: WIT, LSE, ISUFI, UniZar

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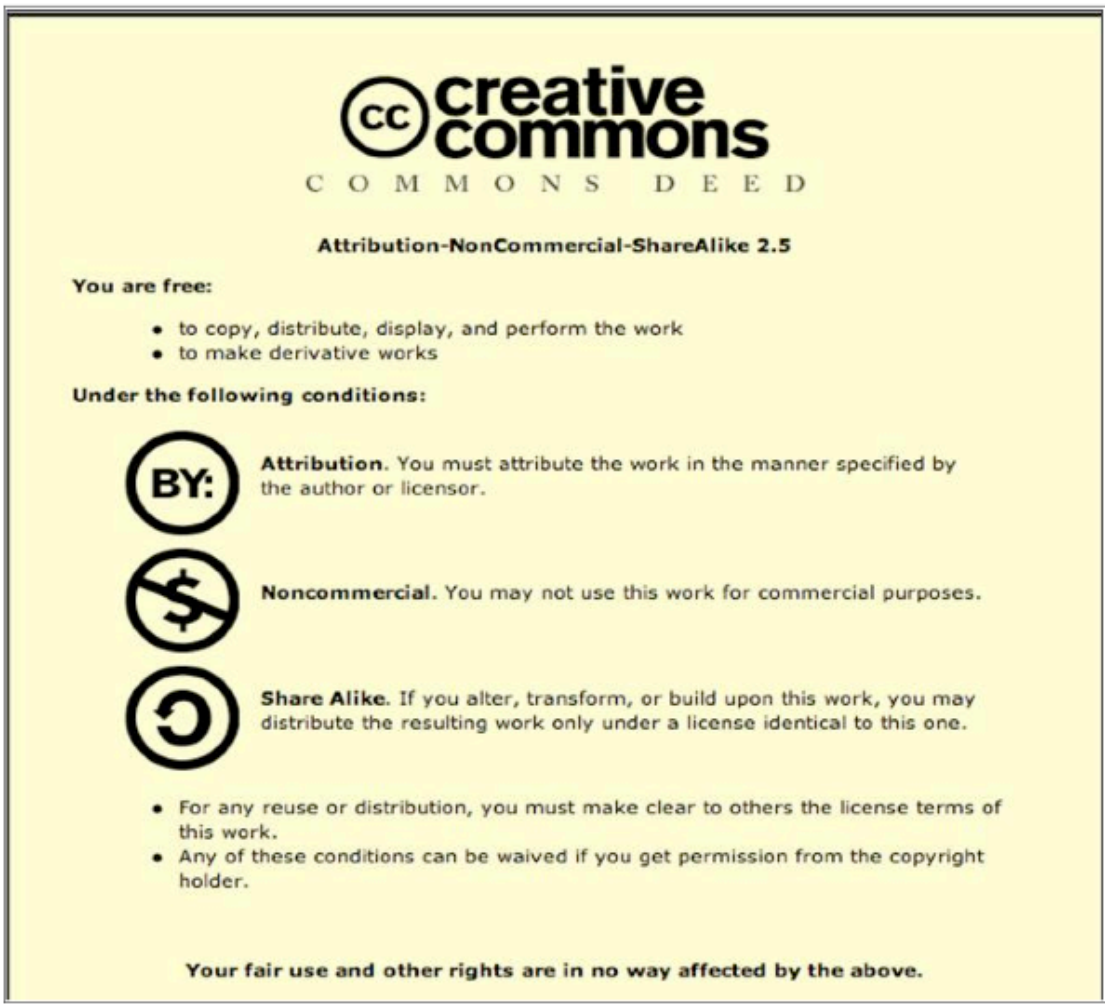
Internal Reviewer: Paul Krause, University of Surrey



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Executive Summary

The main aim of this deliverable is to provide a report on the activities of workpackage 32 of the DBE project. The document begins with a short introduction followed by a description of a usage scenario, which raises several issues which the workpackage addressed. The usage scenario consists of an opening section that sets out the 'core scenario', followed by 5 sub-sections each of which adds a further dimension to the usage scenario, contextualising the output of each workpackage task respectively.

Following this each of the workpackage sub-tasks are discussed by providing a quick summary of the task with objectives and outcomes described, a section on considerations raised by the usage scenario and also a description of how the task integrated with other tasks within the workpackage. The sub-tasks are *Taxonomy of Regulatory Issues* (LSE), *The Legal Perspective* (UniZar), *Knowledge Base Model* (ISUFI), *Contract Creation* (WIT), and *Governance Issues* (LSE).

Also included are 3 appendices. The first one describing details of the contract from a legal perspective. The second appendix shows how contracts can be created in the DBE studio. Finally there is an appendix which is an internal report on governance, which the partners felt should be included in this report as it was felt to be of interest to disseminate publicly.

Introduction

It is essential for legal certainty and building trust in networked commerce as a whole, and evolutionary DBE forms of trading in particular, to determine the regulatory framework within which the DBE will come to exist and for DBE contracts and agreements. This is all the more so when advanced technologies such as profiling systems, reputation systems and other forms of automation are used for network computing service discovery and delivery. The overall objectives of the Work package are:

- To determine the regulatory framework of DBE
- To formulate policy recommendations in relation to DBE framework
- To determine the relevant legal issues for SMEs performing business transactions within DBE
- To provide tools to enable the creation of business transaction contracts
- To identify and specify Legal ICTs relevant to DBE activities
- To provide regulatory input to Computer workpackages (data model, architecture, software implementation)
- To provide guidance on issues of governance of SME participation in DBE

This has been realised through the following three tasks:

B-11, Knowledge Base of Regulatory Issues

- Task B-11 has identified and analysed regulatory issues relevant to the DBE and conceived pilot-use cases. Key topics centred on the problem of establishing and maintaining trust among developers and adopters of DBE services, on issues such as privacy, security, authentication, IPR, competition, and payments.

C-52, Contracts and Agreements

- The primary output of Task C-52 is the provision of tools to enable SMEs to prepare, negotiate and finalise contracts for eBusiness transactions. Such contracts include both generic and sector specific Terms and Conditions. This

has been realised as a manual interactive process and does not include automated contract negotiation, which is outside the scope of the workpackage.

C-46, Knowledge Base model of the Regulatory Framework.

- Through this task, the knowledge base model for representing contracts, agreements and regulatory framework in the DBE environment was developed. This task required collaboration with tasks B11 and C-52 in order to model (at different stage of maturity) the knowledge related to contract, agreement and regulatory framework and to receive feedback on the modelling effort.

The outputs of the workpackage are represented through the following deliverables:

D32.1: Literature Review (LSE)
Report on key regulatory issues identified as most significant during the initial adoption of e-business services among European SMEs, and to building and maintaining trust in digital business ecosystems more generally.

D32.2: Generic Layer Knowledge Base (LSE)
Report on key regulatory issues identified as most significant during the initial adoption of e-business services among European SMEs, and to building and maintaining trust in digital business ecosystems more generally. Transposition of selected features of Knowledge Base of Regulatory Issues into an evolving taxonomy for supporting C46 Knowledge Base Model of the regulatory framework and C-52 Contracts and Agreement task.

D32.3: An Analysis of "Legal ICTs" (WIT)
A report of technical-legal initiatives, standards and recommendations.

D32.4: Case Study Reports (LSE)
A report on key regulatory issues identified as relevant to sector specific and local implementations of a pilot-use case. Transposition of selected features of Knowledge Base of Regulatory Issues into an evolving taxonomy for supporting Contracts and Agreement (C-52) and C46 Knowledge Base Model of the regulatory framework.

D32.5: Knowledge base model of the regulatory issue (ISUFI)
Definitive model for the regulatory framework, using the output of deliverable D32.4.

D32.6: Model for Generic Level DBE Contracts and Agreements. (WIT)
Using the output of M32.1, a model for generic level contracts and agreements in DBE was provided.

D32.7: Final Report (All)
This document.

Reglatory Framework Workflow

Figure 1 below shows the workflow of the workpackage and how the tasks are related to and dependent on each other.

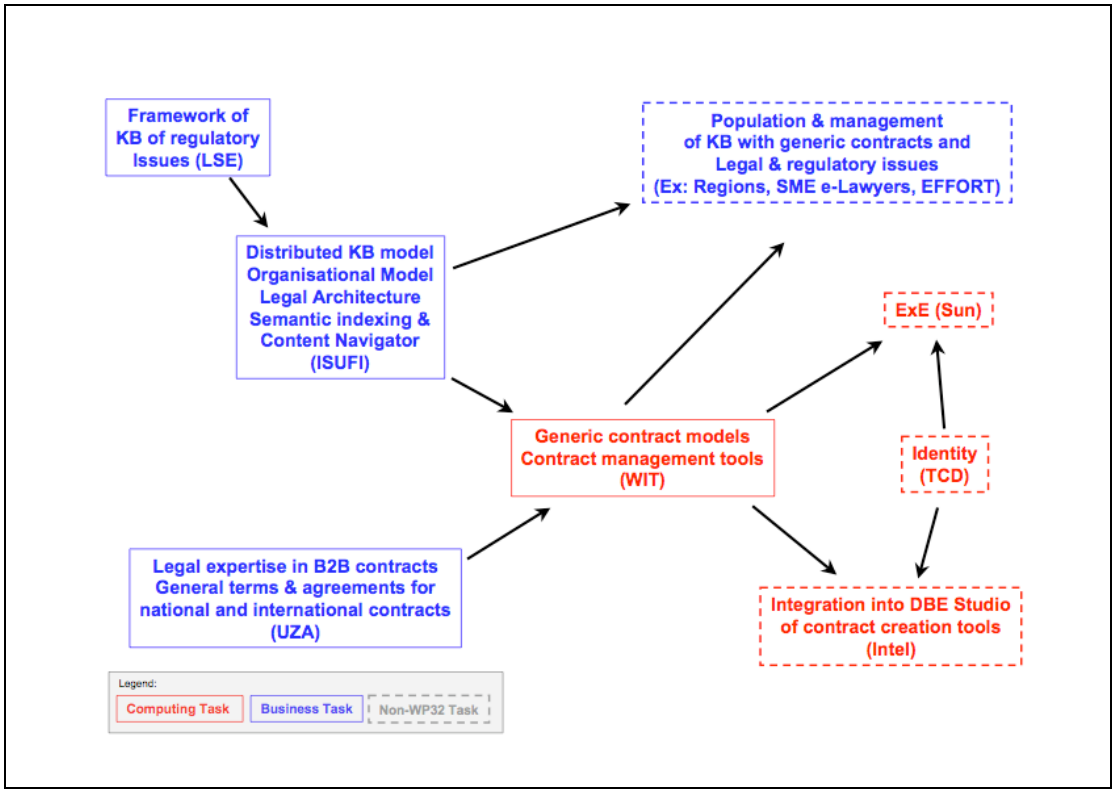

Figure 1: Regulatory Framework Workflow

1 Usage Scenario

Introduction

In this usage scenario, we draw together the contribution of each individual WP32 task into a 'real-life' scenario in order to contextualise the contribution of the workpackage. Although hypothetical, the scenario uses examples of actual business cases studied as part of the workpackage and provides an accurate depiction of all technical components involved. Constructing this scenario is a complex task since the contributions and implications of individual workpackage tasks and activities are contingent on one another, but do not fit neatly into a logical sequence of actions. This makes a simple narrative, told from the perspective of one user as they progress through a sequence of events, insufficient. The significance of each workpackage task acts as a layer or dimension that turns the simple question of automatic contract generation in the DBE into a highly intricate inter-organisational process, involving complex technologies and numerous professions. This process brings to the foreground fundamental questions concerning the role that law, regulation and technological infrastructure play in shaping business practice and regional development. These fundamental questions do not sit easily alongside a simple implementation scenario, but they nonetheless play a significant part in the design and integration of task outputs.

The usage scenario consists of an opening section that sets out the 'core scenario', followed by 5 sub-sections each of which adds a further dimension to the usage scenario, contextualising the output of each workpackage task respectively. The core scenario is deliberately simplistic and therefore it does not allow every dimension of the workpackage to be discussed in full. However, these aspects will be reflected on in the relevant task-specific sections of the deliverable that follow.

Overview of usage scenario

The usage scenario begins by setting out the 'core scenario', which is a hypothetical description of how 2 small companies come to use the DBE for publishing and searching for a service, respectively. It then describes the process of creating and authorising a contract: first, from the perspective of the service provider; and then, from the perspective of the service user. Then, the role of the knowledge base in this process is described. The knowledge base is structured according to the concepts and

dimensions set out in the taxonomy, but it requires populating and maintaining by legal professionals. Therefore, the legal perspective is the subject of the next section, which also considers the role of e-lawyers in supporting SMEs' use of contracts generated via the DBE. The role of the taxonomy in the original scenario is then described, followed by a brief description of sustainability and the part that governance plays in balancing interests and upholding the distinctive aims of the DBE.

1.1. Core Usage Scenario

GrandesTec

Rokos hotel

The following usage scenario is described from the perspective of 2 hypothetical small companies: one is a software company in Spain called GrandesTec; the other is a hotel in Finland called Rokos hotel. GrandesTec have created a successful online hotel reservation service. They have achieved significant sales in Spain and now want to discover if they can achieve a similar level of success in a pan-European market. Rokos hotel is looking at ways to cut costs and is currently dissatisfied with the online reservation system they use. Through local SME associations both companies hear about the Digital Business Ecosystem and after some research, they decide to download the DBE servent software and try using the ecosystem platform.

GrandesTec uses the DBE Studio to deploy their hotel reservation system in the DBE servent and publishes details of this service in the semantic registry of the digital business ecosystem. This description of the service then exists in a distributed repository that can be searched by potential users of the service. Using the DBE Portal the owner of Rokos hotel submits details of their business and what kind of service they require and a ranked list of appropriate services is returned to them. At the top of this list is the service provided by GrandesTec and after considering the details of GrandesTec's service more closely, the owner of Rokos hotel decides it would like to use the service.

On selecting the service a digital contract is offered to the hotel owner. The contract could be a set of terms and conditions that the hotel owner can either accept or

decline, or, if there are items that need to be negotiated[1] - such as for example, length of contract, price, quantity – a contract template will be offered. Once the terms and conditions have been accepted or the relevant fields in the contract template completed and the contract has been digitally signed by both parties, the service can be used. At this point, the rights of the user have been established and the liability of the provider if he does not fit the condition of use of the service agreed with the user has also been set.

1.1.1. Contract creation and authorisation

The contract that GrandesTec and Rokos hotel have signed is a contract appropriate for the provision of electronic services. Due to the nature of the service, which is a system that registers personal data, the responsibilities of the GrandesTec, with respect to privacy and data protection are reflected in the contract. GrandesTec already had existing contracts for providing this service in Spain, but now they want to integrate their service with the DBE and expand their business to Finland. They would like to do this preferably without incurring any further legal costs.

GrandesTec's existing contract template may not be sufficient to support business at an international level. At this point, GrandesTec may want to consult an e-lawyer. Alternatively, they may feel confident enough to look for a similar electronic services contract template in the DBE knowledge base, or else they may choose to go ahead and use their existing template. If they choose to use their existing template the contract will need to be converted into DBE format, which is to say conforming to the DBE XML Contract schema. This requires some legal expertise, but also requires an amount of technical expertise. Step-by-step instructions for how to re-format a contract template written in a word processing application to DBE format, form part of the 'Help' system provided via the DBE studio.

If the contract was simply a set of terms and conditions, the finished form could be wrapped in the service manifest and deployed with the service. If the contract is more complex, requiring an element of negotiation or specification, the service provider will need to construct fields within the contract template relating to price, quantity, length of contract etc. which the service user will need to complete. In the case of

[1] Negotiation is an important area of research that presents a number of technical, legal and business challenges.

Rokos hotel, GrandesTec may want to ask questions concerning the size of the hotel, the number of rooms it has or what 'star rating' it is. These fields may allow GrandesTec to customise the service to suit the Rokos hotel's individual organisational needs. Alternatively, they may simply relate to the service providers payment or charging model (i.e. flat rate or usage based).

On selecting GrandesTec's service, the owner of Rokos hotel is immediately offered the digital contract that GrandesTec has compiled. Rokos hotel fills in the required fields and digitally signs the contract. Once returned to GrandesTec the contract could be either manually or automatically authorised.

1.1.2. Regulatory issues arisen from the use-case scenario: applying a taxonomy perspective

The taxonomy sets out the design principles and structural parameters around which the knowledge base is modelled. In the core scenario, the focus is on contracts, but the taxonomy model can account for a wide variety of legal resources. The taxonomy ensures that legal resources are considered from a multi-dimensional perspective. One of the key dimensions of the taxonomy is trust. From the core scenario, it is possible to see just how fundamental the role of trust is to SMEs carrying business via the DBE.

Before the question of contracts even arises, both GrandesTec and Rokos hotel encounter the basic question of, 'should I try using the DBE?' Their decision will be influenced by the reputation of the DBE and by issues such as how the DBE is governed (whether it is self-regulated or has an internal board), what the legal constitution of the DBE is and what the ethos of the infrastructure is. Once they take the decision to commit time to the DBE they will take the next step and attempt to use the DBE infrastructure. At this point another set of issues arise that will test their willingness to engage DBE, such as the reliability and usability of the technology, the presence of other companies and other services in the semantic registry and the integrity and validity of the businesses processes and activities appear taking place. These business processes include the generation of valid contracts and the integrity of resources in the knowledge base. If there is any doubt cast on these issues, trust in the DBE infrastructure will not be established and SMEs such as GrandesTec and Rokos hotel will not proceed with using it. Correspondingly, if the SME has a positive

experience of these aspects of the DBE a high level of trust will be achieved. Finally, the user of a DBE service has to trust that they are being protected by the contract issued with the service. In the core scenario the data protection and privacy issues of customer data form a vital part of the business contract. If these regulatory issues have not been adequately addressed in the contract, users could be vulnerable to abuses and if this happened to be the case, trust in the DBE would be lost.

These resources are organised according to the model set out by the taxonomy, which acts as a basis for ordering and prioritising legal resources in relation to their relevance to B2B regulatory issues. The dimensions, perspectives and relationships described in the taxonomy form the structural basis on which the repository is organised and the semantic model according to which navigation is organised. As well as 3 different kinds of trust, the taxonomy is modelled on the 3 fundamental regulatory issues in B2B interactions, which are: privacy and user protection; e-signatures and authentication; jurisdiction and consumer protection.

In the core scenario, both GrandesTec and Rokos hotel need to authorise the contract they have made with a digital signature. In the case of digital signatures it is vital that the person signing a contract is the person they say they are, otherwise the contract is fraudulent and therefore invalid. In order to be validated, digital signatures require an identity expressed by digital certificate. The process of identity management and certification in relation to the DBE infrastructure has not been developed sufficiently to make this an automatic process. This process is, however, fundamentally important to the creation of trust in relation to the DBE business environment.

1.1.3. The legal perspective

According to the usage scenario, an e-lawyer may (or may not) support GrandesTec in selecting and compiling a contract to facilitate the business they will carry out via the DBE. The e-lawyer is able to satisfy questions of jurisdiction, i.e. they can verify whether GrandesTec's existing contract is applicable in the context of international as well as the national provision of electronic services. For the most part, the contract should not be an issue, since the it is based on terms and conditions generally accepted in an European business context but there may be other clauses relating to regional or sectoral regulation that need to be taken into consideration.

Due to the nature of online hotel reservations, which involves the transfer of personal

data, GrandesTec's contract will also need to refer to data protection legislation. The European directive concerning data protection binds each nation in the European Union to a common set of laws regarding data protection. The directive binds each country to abide by a set of standards, but it is each respective country's implementation of that directive that binds citizens and organisations to the substance of the directive. Each country can use different legal instruments to implement the directive therefore GrandesTec's contract has to refer to a particular implementation of data protection. According to the scencario, GrandesTec, the service provider, will host the service and as data processor, assume responsibility for abiding by privacy and data protection legislation. It is the Spanish implementation of the European directive on data protection that needs to be referenced in the contract between GrandesTec and Rokos. In the future it should be possible to link implementations and directives held within the database, so that they can be selected from a dynamically generated list.

Should a new or modified contract be required, the e-lawyer can use the knowledge base and navigation tool to search for an appropriate contract template. The navigation tool has been designed so that the person searching can either start with normative queries regarding regional or sectoral resources, or they can search starting from higher order legal concepts. In this way, the knowledge base can support e-lawyers in identifying the appropriate legal concepts, directives and legislation from which to build a contract template. The 2 modes of searching provided by the navigation tools are designed to support both legal professionals and SMEs in searching for resources in the knowledge base.

A further dimension of the e-lawyers work is the verification of directives, laws, regulations and contract clauses referred to in contract templates. The knowledge base and the taxonomic model that underlies it have both been designed to accommodate changes to the legal, technological and business environment. In this sense, the DBE regulatory framework has been designed to evolve and fundamentally change over time. This design premise sets the DBE framework apart from other models in which a static core of concepts is instated and all other fields are expected to develop around these. Whilst the ability to respond to the immediate technological, legal and business environment is an important contribution of the DBE framework, there is a burden

associated with this level of attunement and responsiveness. The need to ensure that the resources held in the knowledge base are current and constantly updated according to legislative and regulatory changes, implies considerable maintenance. Due to the legal nature of the verification process, the need to engage lawyers in this maintenance task is clear. This carries with it implications for the sustainability of the entire framework; if SMEs do not trust that the knowledge base is a valid - as in legally verified - resource, they will not use it.

1.1.4. The role of the knowledge base model

The knowledge base of regulatory issues consists of a distributed repository of legal resources and a navigation tool. Among the legal resources it contains are contract templates. If GrandesTec had not possessed a contract template sufficient to support the provision of electronic services in Finland, it is possible that they could have found an appropriate contract template in the knowledge base. The navigation of the knowledge base has been designed for use either by SMEs, or by legal professionals such as e-lawyers. For GrandesTec this means they could look up a sector, such as electronic services and search for appropriate contract templates. If GrandesTec were unsure that the contents of the knowledge base were sufficient for their needs, or felt the situation was more complex and required legal expertise, they could employ an e-lawyer who could use the knowledge base to carry out a detailed search of available resources.

Having developed a contract template for this occasion, GrandesTec could decide that they would like to place the template they have used in the knowledge base so that other SMEs can make use of it. From a copyright perspective, GrandesTec have to be sure that the contract itself is not owned, for example, by the legal firm that originally created it. Ideally, the contract would be issued under some form of General Public License (GPL), whereby, if it was ever modified to suit a different situation, it would have to be returned to the public domain, for others to use under the same terms of use.

1.1.5. The governance perspective

Governance of the DBE and the regulatory framework will act as either an incentive or a disincentive to GrandesTec and Rokos Hotel, impacting to some degree on their

decision to use and carry out business via the DBE infrastructure. If the reputation of DBE governance is well-respected and recognised as serving the interests of SMEs, then this will act as an incentive to the 2 firms and could go a considerable way towards overcoming any outstanding concerns or issues of trust that the 2 firms might have.

The regulatory framework requires the interaction of a number of different professions and groups of actors between whom a balance needs to be upheld. In the core scenario, these groups and professions include the 2 SMEs, the e-lawyer who provides assistance to the SME and the lawyers who contribute to the knowledge base. Hidden from view in this scenario is a further group: those who contribute to and manage the DBE technical infrastructure on which the regulatory framework and knowledge base exist. Co-ordinating actions and ensuring these groups and professions recognise a set of common goals is the work of governance and as such, governance plays a fundamental role in the way rights are recognised and opportunities created within the context of the DBE.

In terms of the knowledge base, maintenance actions and responsibility for the accuracy of legal resources is another important area that needs to be co-ordinated. The basis of these co-ordination activities will be determined by means of a governance model. The knowledge base is designed - at both a conceptual and a technical level – as a series of distributed databases. In this sense, co-ordination activities do not centre on the maintenance of a single resource, but on a number of inter-connected resources. One proposal for how the knowledge base would be managed and maintained is to put regional authorities in charge of these activities. This has advantages in terms of maintaining a balance of interests between business and legal actors ensuring that the resources provided by the knowledge base are relevant to local SME needs. According to this model, the e-lawyers will be responsible for maintaining the knowledge base.

There are some core values that have to be observed consistently with respect to the design of both the technical and legal architecture of the regulatory environment. For example, the taxonomy plays a defining role in how legal resources are ordered and prioritised within the knowledge base. Therefore, it is important to understand who is responsible for reviewing and where necessary re-designing this model, since this will

hold implications for the whole DBE regulatory environment. Equally, there are regulatory decisions such as: whether to use GPL style licensing for DBE legal resources; how e-signatures and identity should be authorised; and how privacy and IPR should be managed; as well technical design decisions, which will have a panoramic affect on the environment. Maintaining a balance of interests among those who take these kind of decisions and ensuring they observe the core values of the DBE is therefore fundamental. An inter-regional body composed of key stakeholders could be one way of approaching this.

2 Taxonomy of Regulatory Issues

2.1. B-11: Knowledge Base of Regulatory Issues Task Summary

2.1.1. General aims

Task B-11 aims at the identification and analysis of regulatory issues relevant to the DBE and conceived pilot-use cases. Key topics are centred on the problem of establishing and maintaining trust among developers and adopters of DBE services with respect to issues such as privacy, security, authentication, IPR, competition, and payments. Results of this, the first stages of the project were intended to support the Knowledge Base Model of the Regulatory Framework (Task C46) and Contract and Agreement (Task C-52) as well as providing indirect support to other Workpackages where necessary. The implications of these results were considered in relation to issues of governance with specific emphasis on the barriers and opportunities they present to SMEs. An active process of SME consultation was thus maintained to ensure that issues of trust remain close ties to SMEs and SME engagement.

2.1.2. Objectives

It is essential for building trust and ensuring compliance in networked commerce as a whole, and with evolutionary forms of electronic trading in particular, to identify and formalise aspects of the regulatory environment relevant to DBE implementations. The objectives of the task can be summarised as follows:

- To identify and assess the aspects of the regulatory environment that are most significant during the initial adoption of e-business services by European SMEs.
- To incorporate those findings into a knowledge base of regulatory issues that can support modelling activities associated with basic e-services in the various DBE service layers.
- To create a taxonomy for organising and analysing other regulatory issues relevant to sector-specific and local implementations of the DBE.
- To work with SMEs through Regional Catalysts to refine the knowledge base of regulatory issues for sector-specific and local implementation pilot-cases.

- To examine various models and policy considerations to encourage compliance of regulatory factors in the development and consumption of DBE services in a full implementation scenario.
- To identify and provide feedback on those areas where regulatory issues and governance concerns overlap

These objectives are achieved through the following activities and deliverables:

Activity B-11.1: *Generic Knowledge Base* • Knowledge base of fundamental regulatory issues to support modelling activities for the 'basic' e-services portfolio.	**D32.1:** *Literature Review* (LSE) (Month 16) • Report on key regulatory issues for initial adoption of e-business services among European SMEs • Key regulatory issues for building and maintaining trust in digital business ecosystems.		**D32.7:** *Final Repor*t (All) • A report of the research, achievements and outputs of the workpackage (Month 36)
Activity B-11.2: *Sector Specific Knowledge Base* • Expand the knowledge base by working with issues drawn from case studies on a sector-specific implementation of DBE.	**D32.2**: Generic Layer Knowledge Base (LSE) (Month 18) • Transposition of selected features of Knowledge Base of Regulatory Issues into an evolving taxonomy • Supporting C46 Knowledge Base Model of the regulatory framework and C-52 Contracts and Agreement task. (Month 18)	**M32.2**: *Sector/Local Specific Knowledge Base* (LSE) • Internal report on key regulatory issues identified initially as relevant to sector-specific and local implementations of a pilot-use case (Month 24)	
Activity B-11.3: *Localised Knowledge Base* • Expand the knowledge base by working with more complex range of issues drawn from case studies on a local implementation of DBE.	**D32.4:** *Case Study Reports* (LSE) (Month 28 draft) (Month 30 final) • Report on key regulatory issues identified as relevant to sector specific and local implementations of a pilot-use case. • Transposition of selected features of Knowledge Base of Regulatory Issues into an evolving taxonomy for supporting Contracts and Agreement (C-52) and C46 Knowledge Base Model of the regulatory framework.		

2.1.3. Outcomes

The main outcome of the package is to provide both a theoretical and methodological research framework for establishing a Regulatory Framework sustainable for Digital Business Ecosystems. The literature review discussed in D32.1 allowed the Task to map out the field presenting the key regulatory concerns in the literature with respect to e-business while bringing to the fore the centrality of the notion of trust as key driving force for establishing the Knowledge Base of Regulatory Issues in the DBE. The document D32.2 presents a taxonomy framework in which the initial review of regulatory issues is expanded by means of a close look at the relationships between three building blocks of regulatory issues and on the basis of a three dimensional taxonomy structure where trust types and operational perspectives matter. Thus, the SMES had the chance to reflect upon this taxonomy framework by articulating their views in document D32.4. In this empirical output, the SMEs pose the question of the commercial viability of the DBE, whereas it becomes evident that they need a supervisory authority to accept OS contributions. An authority which would solve the above regulatory dilemmas has also been proposed by other DBE partners such as ISUFI in M32.1 – "A structural BML model for the Knowledge Base" document, where the proposal for the bottom layer of the Regulatory Framework to consist of users such as lawyer SMEs – legal expert users – and government bodies is brought forward. Thus, the SMEs' views in document D32.4 seem to converge towards the ISUFI direction, as the official undertaking of the above issues from legal experts could protect both the business and technical potential of the DBE platform, making the goal of sustainability and trust far more feasible in the future.

This research work in D32.4 has also identified through interviewing SMEs in Finland, the UK and Spain three critical issues that can affect the Digital Business Ecosystem's future development. The first and most important unresolved question is the issue of what is the legal constituency of the DBE either under European, national or local law, as well as the role the business domain has in the adoption of this legal form in the standard everyday B2B practices within the DBE. Without a clear definition of this legal constituency, SMEs' engagement will be affected. The second issue is the link between legal constituency and governance of the DBE and how to

provide a parallel process of development. The third issue is the convergence between business and research aims when choosing a model. In this third issue, the area between proprietary and Open Source models is an interesting research field, but businesses do express a clear need to obtain tangible gains from the project. Hence B2B governance is also a very important issue to be researched and addressed in due course, as it intrinsically affects the sustainability and future development of the project.

In summarising, the overall map of the general aims of the Task has subsequently turned into specific research objectives which resulted in deliverables D32.1, D32.2 and D.32.4 where both theoretical and empirical issues of concern have been raised. These regulatory issues and the significance of trust in particular are further analysed in the following section through reflecting upon the usage scenario employed in this final deliverable.

2.2. B-11 Considerations based in the usage scenario

The work completed in task B-11 is fundamental to understand and determine how to create or build up within a Digital Business Ecosystem the trust elements which allow usage scenario, such as the one described in section 2.1.2, to be viable in the business environment.

The requirement to establish commercial trust between two DBE members, who until the time the usage scenario existed have had very limited contact with each other, is very important for several reasons as defined in D32.2 Taxonomy.

Trust type X: A first angle is how to establish trust from the point of view of the benefits perceived in joining the DBE. Since both companies are regulated by both EU and national rules for their commercial existence, the issue to reflect upon is why those two companies would choose to do business transactions, and share or use a service using the DBE. A first answer is provided by GrandesTech, the software company that can deliver, using the DBE infrastructure competitive services, to Rokos or other similar companies. At the core of their DBE integration is the belief that using DBE Infrastructure and tools, their projection in the SME service market is enhanced. A second answer is provided by Rokos; trusting to establish partnerships by the DBE is a way to get to know and access services that otherwise are modelled

on major hotel networks; not only that but an SME like Rokos can seek and join networks of similar SMEs sharing the same desires to open their range of services using software provided by SMEs like GrandesTech.

Trust type Y: A second angle is the expectations that these links between SMEs have in regards to each other. GrandesTech as well as Rokos, will naturally expect that each business will comply with exiting laws, norms and agreements.

Trust type Z: GrandesTech and Rokos, once they have established relations of trust, can expect an increase in their knowledge of the DBE, their business profile and enhancement in the services they can provide and improvement or increase in reliability in the technological solutions used.

For each of these types of trust both companies would have looked to the DBE from a B2B perspective taking into account the building blocks of regulatory issues supporting and enabling trust between such partnerships:

2.2.1. Privacy and user protection

GrandesTech would have to provide Rokos with software and services that comply with B2C (for the hotel customers) Privacy and user protection, as well as if Rokos was part of a network of SME hotels using a centralized or distributed booking network supported by GrandesTech protection and security in the processing and control and distribution of such data.

- The question arising regards what are the basic requirements concerning conditions of access to data and security measures to be applicable to these type of transactions.

2.2.2. E-signatures and security

Rokos would also need to put in place security policies at staff level for access and handling personal data by distributed databases. E-signatures would be subjected to authentication, integrity and non-repudiation procedures.

- Mechanisms to trace or identify misuse of data.

2.2.3. Jurisdiction and consumer protection

These is a natural concern from companies that are not located in the same country. Which laws and how they apply to particular situations that arise in business practices between a Spanish software company and a Finnish Hotel. Some type of legal procedure would have to be established in the case of dispute. This section has been developed further in the legal perspectives section on this document.

B-11 has been successful in identifying. classifying and assessing regulatory issues relevant at sector, domain and region level, that can be transposed to particular usage scenarios such as the one discussed in this document. What is relevant from the output from B-11 is the establishing of a methodology to complete this process as well as producing a model output that was well integrated in the modelling of the Knowledge base (see next section).

2.3. B-11 and Integration with other tasks

Task B11 is directly associated in its outputs with C52, Contracts and Agreements and C46, Knowledge Base model of the Regulatory Framework. Working together it has been possible for Task B11 to provide input and receive feedback on the research work done by these other two tasks.

In the case of C46, ISUFI has been able to provide a high-order model of the taxonomy using BML that could in future be used in conjunction with software annotated tools to create electronic libraries of trust issues based on domain or sector, which then can be populated by the future DBE members. This model is still under development and will in future be subject to influences from the overall DBE research work. The modelling of the taxonomy to computational models has had great significance in emerging socio-technical and computational research within EU research partners. Hence, any future modelling of Digital Business Ecosystems can draw on this and other similar usage scenarios and structural approaches that can then be integrated in higher-order models, as ISUFI did in C-46, the Knowledge Base model of the Regulatory Framework, in their first preliminary report. Taking into account the fact that the work so far completed only takes into consideration the building blocks of trust, we foresee future research in which this model can be extended to other blocks, and be integrated in modular form depending upon domains

and business sectors.

In the case of C52, WIT has highlighted the need to develop a library of contracts that can be used to fill the meta-model being developed by C46. Working with a new partner, the University of Zaragoza, discussions were instigated with a view to putting this plan into action, while the task aims through the B11 research work have been to foster the process of putting this plan into action. By the end of Activity 3, C52 WIT found that the region used as the Case Study (Aragon) is not using e-signatures, or their use is minimal[2]. Hence, WIT's work is now addressing the lack of use of this technology feature as a preliminary step to use e-contracts software. This is an example of how the Knowledge Base of Regulatory Issues is being used to identify important or relevant areas in which SMEs have or might have to comply to EU, national or regional regulatory frameworks.

Finally, the business workpackages at the core of the DBE have also used some of the findings from the literature review D32.1 to expand their own business models being presented to Drivers and new DBE partners in the consortium. Extending this impact, the business workpackages could take further advantage of the business-related empirical findings and SMEs' views on the business potential of the DBE, as these have been expressed in this workpackage output.

[2] This is going to change in the coming year when e-DNI (official identity card with e-signature microchip) will be generally available.

3 Legal Perspectives

3.1. Summary of Task

The aim if the DBE project is to allow SMEs to do business through the Internet. In order to achieve this goal, considerable technical development has been necessary, to create the digital platform itself. However, this effort is in vain if the transactions which are going to be allowed by the platform have not got legal certainty, and that is why an appropriate legal treatment is absolutely necessary. According to that aim, the University of Zaragoza (UniZar, hereinafter) took part in the project the last year, assuming the role of the e-lawyer, mainly for the purposes of WP32.

UniZar's participation is included in WP32 and closely related to Task C52 (contracts). In that sense, UniZar's work could be divided into two big parts: the first one is related to the international commercial contracts and the development of some contract templates in different commercial sectors. And the second part is a contribution to the study of the e-lawyer, what is closely related to the project's governance. UniZar's research tasks were complementary of the tasks of WIT and LSE.

In relation to the first part (contracts), different areas can be distinguished:

Firstly, there is a general area where a template of General Terms and Conditions of General Use (GTC, hereinafter)[3] has been provided in order to be used for any type of business to business (B2B, hereinafter) contract. That is why it has been made a general study about which clauses are the most common among different types of contract. And it has been also studied; in particular, which clauses are necessary for an online contract.

Secondly, the research was guided to concrete commercial sectors following a logical order. It starts from the fact that the bulk of the commercial contracts are centred on the services provision and the sell of goods. Consequently, both sectors have been analyzed according to the project.

Regarding to the services provision, Aragon was selected as one of the regions where the project is going to be implemented and, in particular, in the tourism sector.

3 See Appendix A.1

Therefore, our researches have been focused on the Aragonese Tourism Sector[4]. As a result of the study a contract template has been drafted and it will be included in the DBE Studio distribution, so the DBE users will be able to do easily their commercial transactions through the aforementioned contract.

Nevertheless, the DBE, as a pan-European project, will allow the SMEs to do their business in the Internal Market, where several legal systems coexist. That is why, the partners of the WP32 decided to draw up a new scenario in which two SMEs from two different Member States participate (Spain and Finland). And we have also included a new contract object: computer service provision. The result has been the same as before; the development of a contract that will be included in the knowledge data base. This new scenario is analyzed in point 4.2.

Regarding the selling of goods, the core of the study has been the International Sale of Goods[5]. It is based on international uniform law and the works published by the International Chamber of Commerce (ICC, hereinafter); thus, it is suitable to use this contract in a European Project and provides a great legal security. The contract template that will be part of the knowledge data base has been taken from the ICC publications.

As it's been said, all contract templates and the significant Legislation related to contracts will be included in a knowledge base. The existence of this database explains partially the third part of this contribution to the deliverable: the e-lawyer. The Law changes and its use is constant, therefore its updating is absolutely necessary in order that every commercial transaction can be valid and cause the corresponding legal consequences. In that sense, the DBE needs a tool, as the e-lawyer, which allows, among other functionalities of DBE, the aforementioned updating. Now, the problem is to determine the model of e-lawyer that suits better to the DBE. As it's been said above, if the e-lawyer is closely related to the project's governance, the e-lawyer model must be in accordance with the model of governance that may be adopted for the DBE.[6]

4 See Appendix A.2
5 See Appendix A.3
6 See Point 4.3

3.2. Considerations Raised by Usage Scenario

3.2.1. Introduction

The scenario allows the DBE to work on a new sector of service provision: computer contracts.

There are no specific Laws that govern this type of contract; therefore it is a complex contract in which every one of the agreements must be included in the contract clauses in order to prevent, as far as possible future problems.

Firstly, there is an important difference that must be explained: a computer contract is not the same as a contract made by electronic or computer means:

- *Computer contract*: here, the contract object is the sale of computer goods or the computer service provision (as in the new scenario).
- *Contract made by electronic or computer means*: the contract object is any other service provision or sale of goods, but the transaction is made by electronic means.

There is other difference between computer goods and computer services:

- *Computer goods are the computer system elements as hardware.*
- *Computer services are every one that has a particular identity related to the data processing (as in the new scenario).*

The commonest contract object in this second type of contract is the software development; in accordance with it, the contract that has been initially drawn up consists on a software development, but it also includes a software licensing clause[7].

However, in the new scenario, the service provider allows the client to use a web service on the basis of original software without any further software development in order to fit the client's necessities. Thus, the contract template that has been used by WIT a specific version of the software licensing and development contract adapted with help of the e-lawyer to the scenario:

7 See Appendix A.4

GrandesTec S.L. (the provider) Goya Ave. 150 50.009 Zaragoza, Zaragoza (Spain)	Armando Jaleo Goya Ave. 150 50.005 Zaragoza, Zaragoza (Spain)
Rokos Hotel (the client) Keilalahdentie 8 P.O. Box 303 Fin-00045 (Finland)	Seinakoji Kankunnen Keilalahdentie 8 P.O. Box 303 Fin-00045 (Finland)

STATE

I.- The PROVIDER is a company that provides computer services.

II.- The CLIENT is a hotel.

III.- The CLIENT is interested in the licensing and configuration of a computer program which allows an online hotel reservation system.

IV.- And that is why, both parties, mutually recognizing their legal capacity for contracting, assume all the obligations that stem from the following

CLAUSES

FIRST.- Contract's object.

The object of the contract is the licensing and configuration of a computer program which allows an online hotel reservation system.

SECOND.- Term of the contract.

The contract will be in force from the signature of the contract to dd/mm/yyyy and it can be automatically extended for annual periods if neither of the parties request the

end of the contract one month in advance from the expiration date.

Any one of the parties will be able to request the end of the contract at any time with an early warning of __ days/month.

THIRD.- Cooperation.

The CLIENT will give cooperation to the PROVIDER during the configuration of the program, in accordance with the good faith rules. And, particularly, the CLIENT commits himself to:

a) To supply the necessary information for the configuration of the program to the PROVIDER.

b) To take part giving the necessary data, at the request of the PROVIDER, in the tests and trials of the program.

FOURTH.- Contract price and payment.

- Currency:
- Amount in numbers:
- Amount in letters:

The CLIENT will credit the price to PROVIDER'S account num. _____, except the PROVIDER communicates other current account in writing.

Time of payment shall be 30 days from the invoice.

If the CLIENT would not pay the price when it has fallen due, the PROVIDER has the right of stopping providing the service till the price would be paid.

FIFTH.- Modifications of the information provided.

The CLIENT will be able to propose modifications in writing and through notification done through encrypted e-mail, electronically signed and with acknowledge of receipt. It must be done using the application form attached to this contract as

ANNEX 1[8]. Nevertheless, such modifications will be subject to the approval of the PROVIDER, who will have to determine if they are viable.

SIXTH.- Confidentiality and data protection.

The PROVIDER guarantees that all the technical, industrial, commercial or whatever other information given or he has access will be confidential.

Likewise, the PROVIDER compromises himself not to disclose any information about the equipments, technologies, products and projects he could know about because of meetings, visits or whatever during the configuration of the program.

The PROVIDER will take the necessary steps to guarantee that all his personnel carry out this confidentiality duty; and he will be responsible of any non-fulfilment.

Likewise, the PROVIDER compromises himself to carry out with the Organic Law 15/1999, December 13th, of Personal Data Protection and the corresponding precautions.

Specifically, the PROVIDER, as a data processor, shall process the data only in accordance with the instructions of the data controller, the CLIENT, and shall not apply or use them for a purpose other than that set out in this contract, and shall not communicate them to other persons even for their preservation.

The PROVIDER shall implement all technological measures, rules and procedures for data protection set out in the Royal Decree No. 994/1991, June 11th, which establishes the security standards for files containing personal data. In any case, these measures, rules and procedures shall be appropriate to protect against accidental loss, destruction, damage, alteration or disclosure and be appropriate to the harm which might result from any unauthorised or unlawful processing, accidental loss, destruction or damage to the personal data and having regard to the nature of the personal data which is to be protected.9

Once the provision of the reservation service finishes, the personal data shall be destroyed by the PROVIDER, together with any support or documents containing

[8] In such application form must be included, at least, the date, the name and charge of the person who proposes the modification, the element and the modification itself.

[9] The concrete security measures which the data processor is obliged to implement would be set out in an annexed security document, but there are no enough specifications in the usage scenario to develop a security document.

personal data processed.

If the PROVIDER uses the data for another purpose, communicates them or uses them in a way not in accordance with the terms of this contract, he shall also be considered as the data controller and shall be personally responsible for the infringements committed by him

SEVENTH.- Personnel displacement.

If it is necessary that the PROVIDER'S personnel move to the CLIENT'S establishment, there is only a commercial relationship without any labour link between the CLIENT and the PROVIDER'S personnel. Those displacements cannot be considered, in no way, as a surrender of workers under the article 43 of the Worker's Statute; because any displacement to the CLIENT'S establishment will be exceptional and temporal, and those workers will receive the orders directly from the PROVIDER. The PROVIDER cannot use the CLIENT'S name in any labour contract.

EIGHTH.- Licence of use.

In accordance with this contract, the CLIENT gets a Non-exclusive Licence of Use of the computer program. So, the CLIENT does not have the exploitation rights and he cannot reproduce, make new versions or derived programs, adapt or modify the program or whatever other computer program based on the confidential information given by the PROVIDER.

Neither the CLIENT will be able to decompile, make inverse engineering, hand over, allow the use to others, distribute, rent, give copies of the programs mentioned above or make its exploitation in the thirds' name.

Likewise, without prejudice of the prohibition of the program's reproduction, the CLIENT will be able to make security copies but only if the copies include all the titles, symbols of brands, symbols and other PROVIDER'S intellectual property references.

The PROVIDER will be liable of whichever claims interposed by thirds that could obstruct the use of the program to the CLIENT in accordance with this licence. However, the CLIENT will have to notify to the PROVIDER the existence and content of the claims, at most, within 3 days from the CLIENT had their knowledge.

NINTH.- Guarantee.

The PROVIDER guarantees the correct operation of the program, the correct access to it all day (24 hours) and every day and that any problem that must be under his control will be solved as soon as possible.

The PROVIDER will not be liable for any problem that must not be under his control or for any problem caused by the CLIENT'S bad use.

TENTH.- Training (*optional*).

The PROVIDER compromises himself to train the CLIENT'S personnel designated (no more than __ workers) in order to get a correct use of the program. The course will have a total of __ hours, in four sessions of ___ hours each one.

ELEVENTH.- Applicable Law.

Any questions related to this Contract which are not expressly or implicitly settled by the provisions contained in the Contract itself shall be governed by the Spanish Law.

TWELFTH.- Arbitration and Jurisdiction.

Unless otherwise agreed in writing, all disputes arising in connection with the present Contract shall be finally settled under the Rules of Arbitration of the _____ by one or more arbitrators appointed in accordance with the said Rules.

Just in case the parties would decide there is no arbitration or it would be declared null, the Courts of Zaragoza (Spain) shall have jurisdiction.

And, as a proof of consent, both parties sign this contract.

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PROVIDER CLIENT

3.3. Integration with Other Tasks

Briefly recalling what was said in point 4.1, the work made by UniZar in the WP32 is related to Task C52 (contracts) and B11 (governance).

With regard to Task C52, WIT has been in charge of the technical part and UniZar has worked on the legal part: the contract terms mentioned in points 4.1 and 4.2. UniZar has proceeded to the design and editing of the aforementioned contracts, whose computer modelling has been developed by WIT. Those contract models would be in the Knowledge Base of Regulation Issues (KB, hereinafter), with e-lawyers providing further documents for the KB.

Regarding to Task B11, UniZar has provided legal information about some issues as Alternative Dispute Resolutions (ADR, hereinafter), authentication and e-signature, payments, confidentiality in international commercial transactions and data protection. This is the content of a first part, where it has been provided a legal advice in order to help the other WP32's partners to complete their deliverables.

The e-lawyer issue is closely related to the governance issue, part of Task B11, and UniZar was asked for proposing e-lawyer models for the DBE.

Previously, it must be noticed that the aim of the e-lawyer, at this moment of the project, has been to approach the theoretical studies to real-life scenarios. For that, it has been provided an advice task which will be equally necessary in the following phases of the project development; all WP32 partners agree with it. The DBE would suffer a serious handicap, a lack of confidence and sustainability, if there were no legal expertise.

Populating and maintaining the KB of Regulation Issues and the Contract Templates cannot be possible without the e-lawyer. Moreover, without this element, the DBE would generate insecurity as a business environment. Besides, because of its legal complexity, it would not allow the SMEs to be involved in the DBE (i.e. to adapt the contracts to the computer application requires certain level of legal expertise). It would be also convenient to provide a DBE based ADR system, in which the e-lawyer figure plays an important role. Therefore, the e-lawyer must exist including advice-expertise duties and dispute resolutions.

Another different matter is what characteristics the e-lawyer must combine and how.

Relating to the e-lawyer's characteristics, they must be jurists who are familiarized with the legal advice to SMEs and the international contracting; but they must also be able to work in English –because it is essential to establish a common language of work, as in this project-, besides in their mother language. And, besides, they must be familiarized with the computer task that they must assume – the use of the KB's tools, management of the semantics, the contract development in XML language and so on, without the necessity of a specific training.

Relating to how the e-lawyer must organize these characteristics, the answer is related to the governance decisions. In fact, as it has been said in point 4.1, the e-lawyer model must be in accordance with the governance model chosen. Because of that, it has been taken as reference the document made by Mary L. Darking (LSE): *"Governance, sustainability and the digital business ecosystem"*.

According to the document's epigraph entitled "Models of existing open source governing bodies", there are basically 3 basic models of governance organisations in open source developments: Foundation, Democratic Model and The Benign Dictatorship. UniZar has proposed their corresponding e-lawyer models and a analysis of their viability:

1º) **FOUNDATION** (i.e. Apache Foundation): *"A select number of community members are made responsible for taking strategic decisions and putting forward proposals to relevant community groups. The members of the foundation are elected by community members themselves and there is often criteria applied to their eligibility."*

2º) **DEMOCRATIC MODEL**: *"Whilst all open source communities are democratic to some degree, limits are often placed on the level to which every member can vote on every issue. In placing limits, the intention is that voting will be more focused and only those members with detailed knowledge and interest in an issue will be moved to vote. According to this model, developers working on one community project would not be able vote on issues raised in another project unless they were directly related."*

3º) **THE BENIGN DICTATORSHIP** (i.e. Linux Kernel): *"One recognised and respected individual has 'the final say' in any decision making process. Clearly, this model hinges on having a leader who is capable of inspiring sufficient faith in his knowledge of the community that he is 'given' the power to act in this way."*

Nevertheless, the third option seems to be the least one that adapts to the DBE approach as an open business environment.

In the two first cases, the most appropriate option would be a "Plural E-lawyer", whilst in the third one would be more appropriate a "Global E-lawyer"; so:

1º) **PLURAL E-LAWYERS**: It could be a **CONSORTIUM OF JURISTS** who came from diverse nationalities or legal systems (DBE Legal Advice Consortium). The Consortium could be made up of selected national Law firms (National Players) that have good cooperation agreements with foreign Law firms or universities. It is also possible for governmental players to participate as e-lawyer, provided that the participate not as authorities, but as legal experts on a equal basis to other members of the consortium. This model is related to the **FOUNDATION** as a governance model.

Other possibility of a Plural E-lawyer could be an open **COMMUNITY OF JURISTS** (DBE Legal Community) which is related to the **DEMOCRATIC MODEL** of governance.

2º) **GLOBAL E-LAWYER**: It should be a **BIG LAW FIRM** with branches established in other countries (Global Player); i.e. In Spain, the main ones are Uría (http://www.uria.com), Garrigues (http://www.garrigues.com) and Cuatrecasas (http://www.cuatrecasas.com)

And interesting precedent for the first solution is the **IPR-HELPDESK** (http://www.ipr-helpdesk.com) : A reference point for intellectual property rights inquires throughout the European Union, particularly with regard to patent issues.

The main objective of the IPR-HELPDESK is to assist potential and current contractors taking part in Community funded research and technological development projects on intellectual property rights (IPR) issues. The IPR-HELPDESK also advises on Community diffusion and protection rules and other issues relating to IPR in international research projects. Another more global objective of the action is to raise the European research community's awareness of IPR issues, by emphasising their European dimension. The Consortium running the project is made up of the following partners:

- Coordinator: Universidad de Alicante.
- Content providers: Universidad de Alicante; Intellectual Property Law

Institute of the Jagellionan University in Crakow.

- Public Relations and Dissemination (EURICE): European Research and Project office GmbH.
- IT Supplier: Universidad de Alicante.

EURICE is a young spin-off company of Saarland University which was founded in 2000 in order to assist and provide consultancy to scientists, researchers and innovative companies in the area of research and project management. It provides knowledge and skills for establishing and managing international technology-oriented cooperation in order to obtain greater project impact at the scientific and commercial level. Furthermore, EURICE is a member of EARMA, the leading association of research managers and administrators across Europe, which sets the highest standards for research management and administration.

Nevertheless, whatever the model taken, the top priority aim is to be able to homogenize the decision-taking about the regulation and its interpretation and application. This idea, itself, highlights the inappropriateness of a regional e-lawyer; because a number of divergences would arise as a result of the diverse legal systems. What is not an obstacle to consider the singularities in the DBE, flexibility which is also important to avoid any concerns regarding Antitrust Law and Fair Trade Regulations. DBE shall only offer as an added value an reliable legal frame of contracting, but freedom of contract must be permitted, as allowed by the tools of DBE studio. It can be said the same about the dispute resolution.

4 Knowledge Base Model

4.1. Summary of task

The main aim of this task is the definition and the design of the Knowledge Base Model for the DBE Regulatory Framework as a part of a more general architecture that contextually has been defined for the DBE Regulatory Framework.

Key topics related with this task are focused on the technical requirements definition of the Knowledge Base and the definition of processes and mechanisms capable to enable the capture of the knowledge related to legal and regulatory issues and to allow the capability to modify and extend such knowledge over time.

Implications of these activities are mainly related with governance sensitive issue of power and control over the KB and the likely involvement of conflicting interests between various types of actors.

4.1.1. Objectives

The main goals of this task are:

- defining a comprehensive architecture for the DBE Regulatory Framework focused both on legal and regulatory knowledge and contracts and agreements;
- designing the Knowledge Base Model of Regulatory Issues;
- designing tools for implementing the processes to manage and maintain the Knowledge Base.

4.1.2. Outcomes

The results of task C46 are described in detail by deliverable D32.5. Below, a brief description of the main outcomes of the task.

In the first phase of the work, the **general context** (with a sustainability model based on the introduction of an e-lawyer actor), the **architecture of the overall framework** and the **requirements** for the Knowledge Base Model have been defined.

Then, the **Knowledge Base Model of Regulatory Issues** has been designed in compliance to the defined requirements and to the general architecture of the framework. Such a model is organised in three layers: the Regulatory Framework

Distributed Repository; a set of models for the legal and regulatory issues; a set of tools and mechanisms for managing and extracting the knowledge.

Moreover, the deliverable addresses some issues related to the management of the knowledge within the Knowledge Base and generated by the complexity of the network, as well as the increasing number of widespread actors. In particular, a set of possible **knowledge management processes** have been defined.

In the final phase of the work, the technical design (of the **tools** implementing these processes has been developed. In particular, deliverable D32.5 provides use cases, activity diagrams, sequence diagrams; GUIs for:

- a **Semantic Indexer** tool, for uploading legal resources and adding semantic content to them;
- a Semantic and syntactic **Navigator** tool, for browsing the content of the Knowledge Base with the help of its models and representations;
- a **CA Validator** tool, for providing contracts and contract models with a link to the knowledge base content.

Finally, some considerations about a **short-term viability** of the framework are proposed. In particular, D32.5 proposes a possible a mechanism for overcoming the general unavailability of legal resources in an XML format.

4.2. Considerations raised by usage scenario

In the scenario described in section 2.1.4, the service provider GrandesTec needs to use a contract template, in order to create a DBE Contract.

Assume that Finland regulation imposes some particular constrains for buying electronic services to the companies operating in the country. As a consequence, if GrandesTec wants to sell its service to Rokos (and to other potential Finland customers), it is necessary to adopt a contract template compliant to such a regulation. GrandesTec tries to address this problem browsing the content of the Knowledge Base, searching for a suitable contract template. In order to do that, it uses the Navigator tool, that enables searches based on a given concept (belonging to the Regulatory Framework taxonomies) and full-text searches. Anyway, at the end of this process, GrandesTec has not found a contract template that perfectly matches its

needs.

Given the low legal expertise of GrandesTec, the company decides to employ an e-lawyer who could support it in this complex situation. Once created the document representing the contract template, the e-lawyer needs to reference its content, creating a link to the laws that regulate a specific element within the contract. In order to do that, the e-lawyer needs to browse the content of the Knowledge Base, searching for the legal resources needed to justify and validate the content of the document. The Navigator tool provides such syntactic and semantic search fuctionalities to the the e-lawyer.

Once the legal resource has been retrieved, the CA Validator tool allows the e-lawyer to create of a link between the Knowledge Base resource and the XPath of the contract template.

In retrieving the legal resources he is interested of, the e-lawyer notices the Knowledge Base does not store some Finland laws regarding data protection issues. To overcome this problem, it decides to upload these legal resources, contributing to the growth of the Knowledge Base. In particular, it uploads the resources in an XML format, after their translation in compliance with the proper XML schemas, if needed.

Moreover, the e-lawyers wants to contribute adding semantics to these resources, in order to enables more effective search and validation mechanisms. To do that, the e-lawyer uses the Semantic Indexer tool, that enables the association among concepts in the taxonomies and (part of) legal resources.

These new legal resources are now in the Knowledge Base as indexed resources and can be used by other DBE participants to validate contracts and templates.

4.3. Integration with other tasks

Task C46 has required collaboration with other tasks of Work Package 32 in order to model the knowledge related to regulatory framework and receive feedback on modelling effort.

Concerning B.11 activity, taxonomies developed represent a basic element for adding semantics to the legal resources.

The knowledge base model and the supporting tools were modelled and designed to

support such hierarchical structure, though they show no dependencies on the specific content of the taxonomies, since the mechanisms they provide can be applied for any taxonomies.

A closer relation exists between DBE Contract Model (task C-52) and the Knowledge Base Model of Regulatory Issues. Such a relation is shown by some modelling choices adopted in the work. In particular, choosing XPath as reference language has imposed some important constraints on the outcomes of these two tasks.

Finally, the relations with the DBE Governance have to be analysed in a different perspective. The Regulatory Framework Knowledge Base has the potential to meet its requirements only if power and control issues regarding the deployment, maintenance and future evolution of the Knowledge Base are officially and (ideally) consensually solved with the contribution of as many DBE actors as possible. However, the sensitive issue of power and control over the KB and the likely involvement of conflicting interests between various types of actors is something which is closely related to DBE Governance.

5 DBE Contract Creation

5.1. Summary of task

The goal of task C-52 (Contracts and Agreements) was to create a standard format for legal contracts in a Digital Business Ecosystem, and the tools to create and manipulate these contracts. The intention was to allow for more intelligent use of contracts, for them to form a basis for the relationships between legal entities, to define the obligations and liabilities of the parties in a machine-readable format. It was established at the earliest stages of the workpackage that fully semantic contracts were outside the scope of this workpackage, and that creating a simple extensible schema that included the most common features of contracts was the best approach.

5.1.1. Objectives

- Determination of legal architecture, documents and procedures for creation and development of DBE contracts and agreements.
- Analysis of technical-legal initiatives for establishing the DBE regulatory mechanisms.
- Development of contract creation tools and services for business transactions, which will make use of the Knowledge Base Model of Regulatory Issues.

5.1.2. Outcomes

In the Deliverable D32.3 (An analysis of legal ICTs), several different types of electronic legal systems were investigated, including those dealing with end user license agreements, online dispute resolution, legal and regulatory advice services and many more. No single system or schema for describing legal documents was found to be in wide use and the most promising initiative (Oasis's LegalXML eContracts) was found to be making slow, if any, progress. It was clear from this research that XML was the most appropriate language in which to write contracts. This led to WIT developing a new XML Contract Schema influenced by this research and tools to create and edit contracts conforming to that schema. The schema, the DBE Contract Model, is explained in detail in Deliverable D32.6.

The DBE Contract Model

The DBE Contract Model was created to represent legally binding agreements

between multiple parties involved in the Digital Business Ecosystem. These agreements could be versions of end user license agreements, service level agreements, or simply instructions on how much one party agrees to pay another. The model does not attempt to define semantically each party's obligations, only to define each party's identity and provide a format for logically laying out the text of the agreement. The model allows for references to be added to the contract, both to external resources and internal contract parameters. A specific type of reference is used for referring to elements of the Regulatory Knowledge base.

DBE Contract Tools

A set of tools were implemented to create and complete DBE Contracts, and for integrating contracts with the Digital Business Ecosystem.

These tools allow DBE Contracts to be digitally signed and validated, rendered to PDF format, and also to be used as a contract Template. A contract Template allows a user to fill in a form with a number of editable fields, to create a complete contract.

The contract tools are distributed as an open source plug-in for the DBEStudio development environment. The tools form a set of editors, wizards, and actions available to the user when they wish to deploy a service.

Editors:

Contract Creator

This is an Eclipse Modelling Framework based XML editor, used for creating new Contracts from scratch or for modifying existing contracts.

This editor allows the user to construct a contract by adding legal clauses to the contract in a structured format, alongside references to variable parameters and external legal resources.

Contract Template Viewer

The Contract Template Viewer is an Eclipse plugin that is used to view a contract in a semi-editable format (A Contract Template), allowing a user to customize a contract for a specific business scenario. This approach is taken to minimize the chance of inadvertently changing the legal meaning of the contract; however this cannot be assured.

Contract Templates can include optional sections and clauses, along with editable parameters. The Contract Template viewer allows the user to keep or remove *optional*

sections or clauses of the contract, allowing a single Contract Template to be used in a variety of situations. An example of multiple option clauses is shown in the example Contract Template "International Sale of goods Contract". (see Appendix)

Other Features

Generate PDF

Any contract or Contract Template can be rendered to PDF format, through the use of XSLFO (eXtensible Stylesheet Language Formatting Objects) and Apache FOP (Formatting Objects Processor) to convert the contract from XML to PDF. A generic XSL is provided but a custom stylesheet can be used to create a more customised output.

Create Template

A Contract Template is generated from a DBE contract created using the Contract Creator. This feature creates a new Contract Template from the selected Contract instance. A contract instance and a contract Template have the same schema, allowing them both to be edited with the Contract Creator.

Digital Signatures

The ability to digitally sign and validate signed XML files has been included in the Security plugin of the DBE studio. This feature uses the XMLDSIG schema and Certificate based Identity system developed in workpackage 24 by Trinity College Dublin. The system used to sign the contracts has been separated from the identities stored in the contract itself. While this makes ensuring that the party who signed the document (i.e. certificate) match the party details described in the contract more difficult, It allows us to easily move forward to new Signature systems as they become available.

The software used to digitally sign DBE Contracts has been made available to other plguins that make up the DBE Studio to enhance security of service deployment and service consumption.

Supporting Services

Notary Service

To support the storage and non-repudiation of digital contracts a DBE Notary service was also developed. This service allows users to store their agreements in a secure location, with verifiable timestamps. Each contract is digitally signed with a

Xades[88]compatible timestamp. Future implementations of a Notary service could investigate Certificates used to sign the contracts, comparing with Certificate revocation lists or databases of Registered Business Certificates

5.2. Considerations raised by usage scenario

In the scenario described in section 2.1.3, the service provider GrandesTec wishes to create a DBE Contract from an existing text contract. The Contract Creator is used to create this document in a structured format, where all variables such as dates or prices are added as parameters that can be easily manipulated and read. These parameters allow users to simple customise a contract, where a single change is reflected in all parts of the document, and also allows the parameters to be used by other processes, such as accounting or access control.

In the described scenario, Data protection laws are an issue that need to be addressed in the contract, clarifying what the customer information can be used for, and the responsibilities of the service provider to maintain it securely. These clauses could be clarified by providing references to elements of the knowledge base, such as the (Spanish) Organic Law 15/1999, December 13th, of Personal Data Protection.

After creating the DBE contract, GrandesTec chooses to create a contract template based on this document. The user can select which parameters are editable by the companies such as Rokos hotel that are signing up to use the service. This contract template is then digitally signed and added to the service manifest.

When Rokos hotel first attempts to access the GrandesTec's Hotel Reservation Service, the contract Template is displayed to the user in the Contract Template viewer, into which the user can enter details such as size of the hotel, or other important factors that affect the overall business relationship between the two companies. Once Rokos has signed the Contract it is returned to GrandesTec where it can be evaluated and sent to the Notary service.

The Contract is now stored in a Notary Service where it can be accessed by any authorised party (a basic authorisation system is currently under development although this was not part of the workpackage tasks). This allows the machine readable parameters of the contract such as payment rates or other variables to be easily accessed by other DBE Services.

5.3. Integration with other tasks

The DBE Contract Model and Contract tools have been created with input from other tasks of Workpackage 32.

The Contract Creator allows the user to reference the knowledge base of regulatory issues when creating a DBE Contract, which means that if the legislation on a particular topic changes, then the contract Creator can notify the user. References can be made to individual issues (which are organised based on the taxonomy created by LSE) or to specific legal resources.

The Contract Creator has no specific dependencies on the knowledge base model and can be used to reference any XML based repository. XPath was selected as the referencing language as it allows us to select various sections of resources in the knowledge base.

6 Governance Issues

6.1. Summary of task

Research related to Governance and the regulatory framework was added to the WP32 workpackage description as part of the 5th contract amendment, which took place in November 2005. A total period of 5 months was designated to the study of the implications that governance arrangements may have on the participation of SMEs. These findings are summarised in internal report M32.4.

Since, in many ways, governance of the DBE regulatory environment cannot be studied in isolation from the DBE itself, therefore, internal report M32.4 has a much broader remit than that which is defined above. This remit includes the development of a theoretical and conceptual framework for studying governance that could facilitate the development of a 'governance taxonomy'.

The taxonomy could act in a similar way to the way in which the knowledge base taxonomy has worked. It could be a means of framing or structuring multi-stakeholder inputs relating to governance within a stable, but evolving framework, capable of translating such inputs into governance actions.

The taxonomy could also facilitate the development of a wikipedia style initiative where a multi-stakeholder can document and develop governance framework in an open and evolutionary way. This approach to modelling governance will be pursued as part of task 10.4 Reflexive Application of Open Source Practices' in the OPAALS Network of Excellence.

6.2. Considerations raised by usage scenario

Governance adds a number of different perspectives to the research scenario. In one sense, governance refers to the way in which processes and procedures are organised. In this context, it relates to questions of who is in charge of and who can take decisions regarding the technical infrastructure, the taxonomy, the conduct of those working within the regulatory framework and the credibility of the legal resources. It also refers to the way in which rights and responsibilities are designated and a balance

of interest upheld. The regulatory framework requires the interaction of a number of different professions and groups of actors between whom a balance needs to be observed. A governance framework should help maintain this balance by embedding the underlying values, ethos and rationale behind the design of the regulatory framework in a code of practice and a set of procedures. SMEs are by their nature extremely varied and for the knowledge base and regulatory framework to serve their interests, which they are designed to do, then their interests must be considered central.

Since it forms the basis of all processes and decision-making within the DBE regulatory framework, governance is relevant to almost every aspect of the core usage scenario. This is not to say that governance in this context is a powerful, all-encompassing, centralised authority. On the contrary, in the DBE environment, governance should be conceived of as a method of co-ordinating inter-layered activities so that they preserve a particular balance of interests and serve a set of common goals. It is a misconception to see governance as stemming from an over-arching body or organisation in the context of the DBE regulatory framework. The technical architecture of the DBE and the technical aspects of the regulatory framework are designed to be flexible and distributed. Likewise, the knowledge base is not designed as a comprehensive central resource and the taxonomy is conceived of as evolving in response to new technological and legal requirements rather than as static. A governance framework needs to ensure that this design ethos is carried through to all aspects of the environment in all current and future decision-making.

It is interesting to observe that, having said governance is relevant to almost every aspect of the core case, in many senses, the day-to-day significance of governance is somewhat hidden within the usage scenario. This phenomena occurs for 2 reasons: firstly, it is because, unlike other components of the scenario such as the taxonomy, knowledge base and contract production process, a governance model does not yet exist; and secondly like physical or technological infrastructure, governance becomes invisible in the context of routine activities, except at times of breakdown. For example, switching on a light bulb does not cause us to think about the way in which electricity is generated and routed to our homes just as being a particular nationality in the constitutional sense is not something most people think about on a day-to-day

basis. However, both infrastructure and governance fundamentally shape the barriers and opportunities that exist within a particular environment.

If a successful and trusted governance framework for both the DBE and the regulatory framework is in place then this could significantly enhance the credibility of both. Similarly, if one or the other is not trusted, this will have a corollary effect. In the core usage scenario, this particular aspect of governance is relevant right from the start. Governance of the DBE and the regulatory framework will act as either an incentive or a disincentive to GrandesTec and Rokos Hotel, impacting to some degree on their decision to use and carry out business via the DBE infrastructure. If the reputation of DBE governance is well-respected and recognised as serving the interests of SMEs, then this could go a considerable way towards overcoming any outstanding concerns or issues of trust in the infrastructure and the business practices carried out on it

6.3. Integration with other tasks

Each of the tasks involved in WP32 carry with them implications for governance. These implications have been gathered together both here and in M32.5[10], where they have been placed within a conceptual framework. In terms of SME participation, this research has drawn heavily on the SME consultation that was carried out through fieldwork conducted as part of task B11. In this consultation, the relevance of governance to all aspects of trust in the regulatory environment became clear and these aspects have been developed further in the conceptual framework for governance research produced as part of this work.

[10] See Appendix C

7 Conclusion

7.1. Summary of deliverable

This document has provided a summary of the work performed in Workpackage 32, *DBE Regulatory Framework*. A core usage scenario has been described as a means of demonstrating how the work performed over the timeframe of the workpackage has contributed to the core regulatory issues in digital ecosystems. Each of the tasks' objectives and outcomes has been described by the responsible partners together with considerations raised by that that task with respect to the usage scenario and also how that task has integrated with the other tasks in the workpackage.

The document has shown how the workpackage has met its overall objectives through the work performed by all the partners and has shown how these efforts have provided useful knowledge as described within the context of the usage scenario.

7.2. Continuity - links to other projects and other initiatives

Of the work performed within the workpackage. There are elements of the work which are being further pursued through other projects.

The modelling of governance will be pursued as part of task 10.4 Reflexive Application of Open Source Practices' in the OPAALS[11] Network of Excellence. This is also expected to act as a potential input into the EFFORT[12] SSA project.

The DBE Contract model is one of the contract models under consideration for usage in the ONE[13] STREP project. This work is also under consideration for adoption by the TM Forum[14] in their NGOSS Technology Neutral Architecure (Contracts) initiative.

The work done on trust through Task B11 is acting as an input into both OPAALS' *Distributed Accountabilty, Identity and Trust* workpackage and also as input to the ONE project.

[11] OPAALS, *Open Philosophies of Associative Autopoietic Digital Ecosystems*, http://www.opaals.org
[12] EFFORT, *Governance behaviour, Policies and Legal requirements for facilitating access to market by dynamic clustering of SMEs*, http://www.effortproject.eu/
[13] ONE, *Open Negotiation Environment,* http://www.one-project.eu/
[14] TeleManagement Forum, http://www.tmforum.org/

Finally the knowledge base modelling work done in WP32 task can act as an input to the PEARDROP[15] SSA.

The links with other European projects is shown in Figure 2 below.

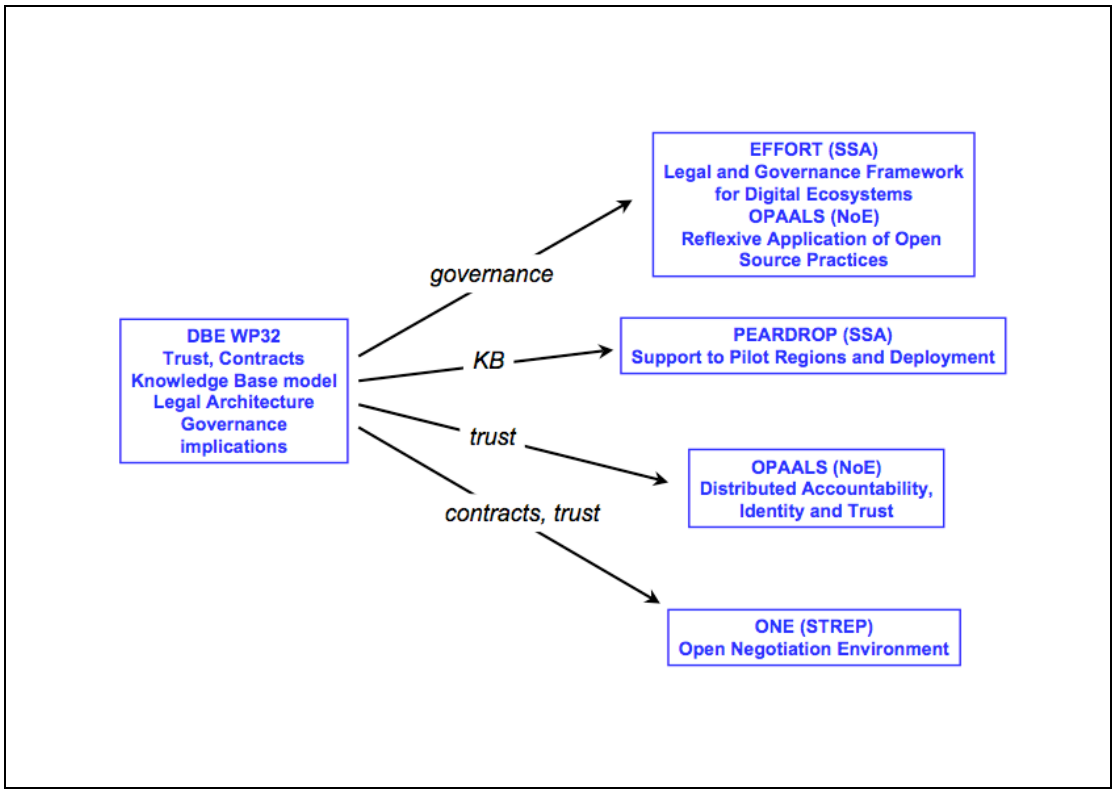

Figure 2: Regulatory Framework: The Future

7.3. Publications

The following external publications came from the work performed in the workpackage.

Tsatsou, P., Gow, G., Elaluf-Calderwood, S., and Glushkova, K., Developing a Knowledge Base of Regulatory Issues in the use of FS and OS Software the experience of the European SME sector - *IEEE International Conference on Digital EcoSystems and Technologies (IEEE-DEST2007)*, Cairns, Australia, February 2007

Tsatsou, P., and Elaluf-Calderwood, S., Theoretical and Methodological Foundations for a Knowledge Base of Regulatory Issues: Trust in Digital Business Ecosystems. *Digital Business Ecosystem Book (Book Chapter)*. Francesco Nachira (Editor). European Union Research Programme FP6 (forthcoming).

[15] PEARDROP, *Promoting Ecosystems and Regional Development – in support of Regional Operational Programming*, http://www.peardrop.eu/

Finnegan, J., Malone, P., Espinosa Marañon, A. and Bueso Guillén, P., Contract Modelling for Digital Business Ecosystems, *IEEE International Conference on Digital EcoSystems and Technologies (IEEE-DEST2007)*, Cairns, Australia, February 2007

Darking, M, Whitley, E.A. and P. Dini, (forthcoming) 'Governing diversity in the digital business ecosystem', *Communications of the ACM*

Darking, M. and Whitley, E.A. (Forthcoming) 'Object Lessons and Open Source Infrastructure for the Commons', *Science Studies*

Whitley, E.A. and Darking, M. (2006) 'Object Lessons and Invisible Technologies', *Journal of Information Technology*, Vol 21, 3, 176-184

Darking, M, Whitley, E.A. and P. Dini, (2006) 'The Challenge of building public technology infrastructure: issues of governance and sustainability in a digital business ecosystem', *The Proceedings of the 14th European Conference on Information Systems*, Gdansk, Poland

Whitley, E.A. and Darking, M. (2006) 'Object Lessons and Invisible Technologies', *Sixth Social Study of IT Workshop: knowledge and organizing* London, April 2003

Darking, M., Liebenau, J. Whitley, E.A. 'The Challenge of Building Public Infrastructure from Digital Commons', *LSE Working paper*

Darking, M., Liebenau, J. Whitley, E.A. 'From Project Management to Governance: The Case of the Digital Business Ecosystem', *LSE Working paper*

Darking, M., Liebenau, J. Whitley, E.A. 'Building Infrastructure from Digital Commons: The Case of Governance and the Digital Business Ecosystem', *LSE Working paper*

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Appendix A.1 – General Terms and Conditions of General Use[16]

DATA PROTECTION

In accordance with the Organic Law 15/1999, December 13th, of Personal Data Protection, the hotel and the travel agency inform of all the personal data provided will be included into a computer personal data index, which will be created and kept under the responsibility of the involved companies.

The compilation, file and use of the mentioned personal data are exclusively steered to the achievement of the service provision.

The hotel and the travel agency guarantee the security and confidentiality of the personal data provided. They also undertake to fulfil their obligation of secret of the personal data, to keep them and to adopt all the necessary measures to avoid their non authorized modification, lost, processing or use.

The clients of the hotel and the travel agency will be within their rights of access, rectification and opposition.

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E-COMMERCE AGREEMENT

The hotel and the travel agency agree that the use of electronic messages shall create valid and enforceable rights and obligations between them; and that to extent permitted under the applicable law, electronic messages shall be admissible as evidence, provided that such electronic messages are sent to addresses and in formats, if any, designated either expressly or implicitly by the addressee; and not to challenge the validity of any communication or agreement between them solely on he ground of the use of electronic means, whether or not use was reviewed by any natural person.

[16] Those GTC of General Use are adapted to the tourism contract.

DISPATCH AND RECEIPT

An electronic message is deemed to be dispatched or sent when it enters an information system outside the control of the sender; and received at the time when it enters an information system designated by the addressee.

When an electronic message is sent to an information system other than that designed by the addressee, the electronic message is deemed to be received al the time when the addressee becomes aware of the message.

For the purpose of this contract, an electronic message is deemed to be dispatched or sent at the place where the sender has its place of business and is deemed to be received at the place where the addressee has its place of business.

CONFIDENTIALITY

The provider/seller guarantees that all the technical, industrial, commercial or whatever other information given or he has access will be confidential.

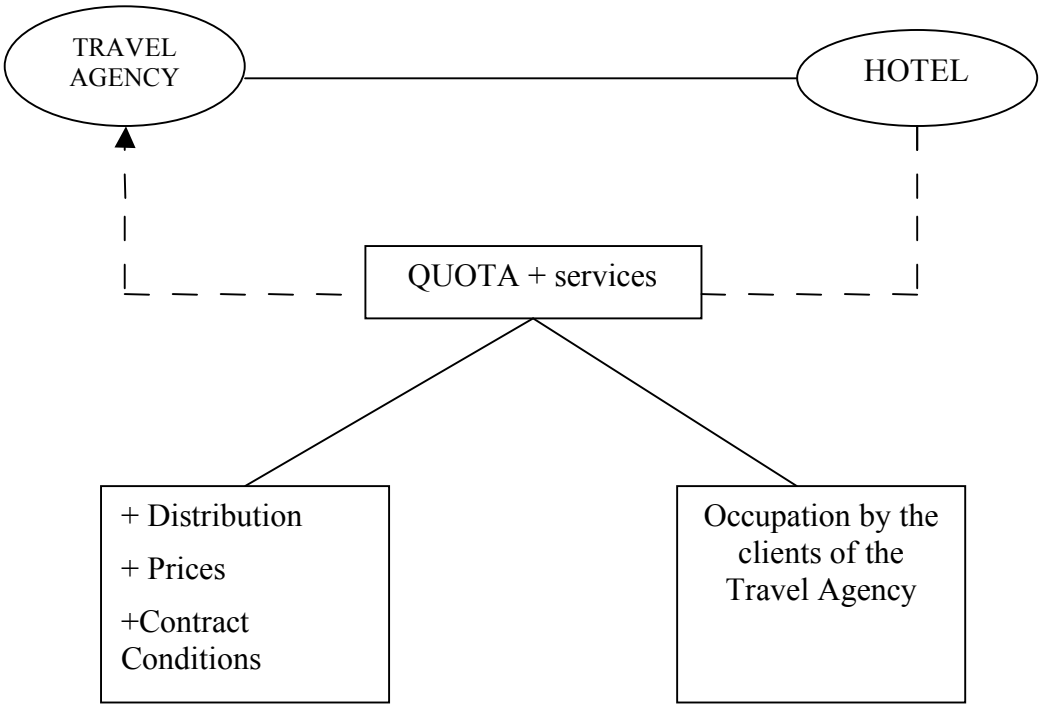
Likewise, the provider/seller compromises himself not to disclose any information about the equipments, technologies, products and projects he could know about because of meetings, visits or whatever during the service provision/sell of goods.

The provider/seller will take the necessary steps to guarantee that all his personnel carry out this confidentiality duty; and he will responsible of any non-fulfilment.

Appendix A.2 – Contract Details

I.- HYPOTHESIS

It is defined as a contract in which the parties are a travel agency and a hotel. The hotel puts at the disposal of the travel agency a certain number of rooms (quota) during a certain period of time; in order to be occupied by the clients of the travel agency in accordance with the distribution, prices and conditions established in the contract.



II.- HOW THE CONTRACT WORKS

The travel agency must send the rooming list to the hotel within a certain period of time before the clients' arrival (period of release).

Hypothesis:

a) *The rooming list has been sent in time*: the hotel commits himself to accept the rooming list and provide the services.
b) *The rooming list has not been sent*: the hotel has the free disposal of the rooms.
c) *Rooming list sent out of release*: these rooms are out of the contract, are subject to the hotel's confirmation and invoicing apart (on request).

III.- CONTRACT CONTENTS

The clauses of the contract govern the commercial relationship because there is no Law that governs this type of contracts. And that is why there must be clearly included the conditions related to:

1. Number, types and distribution of the rooms, as well as their characteristics (doubles, singles, bungalows, etc.)
2. Services that must be provided by the hotel.
3. Prices (according to the season) and price-cuttings or supplements.
4. Period of release.
5. No shows' rules.
6. Invoicing and payments.
7. Clauses about:
    a. Sole rights.
    b. Sales information.
    c. Modifications of the contract.
    d. Force majeure.
    e. Clients' claims.
    f. Jurisdiction.
    g. Applicable Law.

IV.- THE PARTIES

1. THE TRAVEL AGENCY
    a. An absolutely necessary and previous requirement is that the travel agency must get the corresponding licence from the corresponding authority.
    b. The basic functions of the travel agency are:
        i. *Mediator function*: this function is related to activities as the reservation, issue and sale of tickets, rooms, etc.
        ii. *Producing function*: this function is related to the organization and sale of "tourism packages".
    c. The travel agency can operate:
        i. *In its own name*: the hotel puts the reserved rooms at the disposal of the travel agency and its clients.
        ii. *As the representative of other national or foreign travel agencies*: the hotel puts the reserved rooms at the disposal of the travel agency or its representatives.

2. THE HOTEL
   A hotel is a company that provides rooms and other complementary services in a professional and habitual way and for a price.

   However, there are other types of tourism establishments, as follows;

   - Apartments.

- Apartahotel (apartments that include some hotel services).
- Bungalows.
- Villas.

They will be considered as tourism establishment if they are exploited under a hotel regimen with common fittings.

V.- RIGHTS AND OBLIGATIONS OF THE PARTIES

1. Rights and obligations of the travel agency.
    a. The travel agency must trade the reserved rooms.
    b. The travel agency must provide the sales information to the hotel.
    c. The travel agency must occupy the reserved rooms.
    d. The travel agency must pay the price.
    e. Other obligations.

2. Rights and obligations of the hotel.
    a. The hotel must put the quota at the disposal of the travel agency.
    b. The hotel must provide the lodging services.
    c. Other rights and obligations.

VI.- TOURISM CONTRACT

We can distinguish between two big groups of clauses:

- Particular Clauses
- General Clauses, this type can also be:
    - Binding
    - Optional

And this contract follows on from this scheme:

February 01, 2007

THE PROVIDER Contact person (name and address)

THE CLIENT Contact person (name and address)

PARTICULAR CLAUSES

- Number, types and distribution of the rooms and their characteristics.
- Complementary services that the hotel can provide.
- Prices (depending on the seasons) and their extras and so on.

- Payments.

GENERAL CLAUSES

Binding General Clauses

LEGAL CAPACITY

The parties guarantee their legal capacity for contracting and assuming all the obligations that stem from this contract.

DATA PROTECTION

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For the purpose of this contract, an electronic message is deemed to be dispatched or sent at the place where the sender has its place of business and is deemed to be received at the place where the addressee has its place of business.

OBLIGATIONS AND LIABILITY OF THE PARTIES

- The hotel is not liable for the damages which came from major force circumstances (i.e. cancellations caused by governmental interventions, wars or war threats, disturbances, fires, floods, earthquakes, accidents, storms, terrorist attacks or industrial acts that affect the hotel.
- If the travel agency has not paid in the established time, the hotel has the right of cancelling the reservations.
- The hotel's quality has been established according to the normal standard of the destination. The service can be interrupted at any time by renovations, maintenance or construction.
- The accuracy of the information provided about the service has been checked. Nevertheless, the hotel is not liable for any unforeseen changes out of its control.
- Breach of contract:

    - **Overbooking:** if the client of the travel agency arrives to the hotel at the established time and date, but the hotel can not provide the room because of its fault or negligence it is in an overbooking situation, the hotel will have to find the nearest hotel with the same category or major. The hotel will pay any difference on the price. Likewise, the hotel must notify the overbooking situation to the client or the travel agency before the arrival of the client. The hotel will assume all the telephone or equivalent costs that the client could have because of the situation. The hotel will also pay the transport to the other hotel.

      If the client wants to return to the first hotel when there is quota, the hotel will have to pay the transport of return to the first hotel and whatever other expenses caused by such situation.

    - **Non-fulfilment by lack of occupation by the travel agency:** if after the correct receipt of the rooming list the travel agency does not occupy the confirmed rooms, the travel agency will have to pay the established price if the hotel proves the real vacancy of such rooms. The travel agency will also have to pay a % from the established price as indemnity for the caused damages.

      If, on the contrary, the hotel can occupy the rooms –in this case the travel

agency is the one who has to prove it-, the travel agency will have to pay the differential between the established price and the final price of occupation because of the losses.

- **Non-fulfilment of the prices by the hotel:** if the travel agency would have a demonstrable knowledge about the hotel is offering lower prices than the agreed ones in this contract, such prices will automatically be cut to the demonstrated ones.

- **Non-fulfilment of the confidentiality clause:** the damaged party will have the right of the free and unilateral resolution of the contract. In such case, the party who caused the damage will have to pay the losses related to the term of the contract that has been removed by the resolution of the contract. This party will also have to pay a % from such amount as indemnity.

CANCELLATIONS

If the travel agency, in the period of time between the delivery of the rooming list and the arrival of the clients, cancels one or more of the confirmed rooms, it will have to pay a % from the agreed price as indemnity.

NO SHOWS

For the hypothesis in which the client, whose name is included in the rooming list, does not appear in the hotel. Or, if the list does not nominate the clients, there will not appear the enough number of people to occupy the confirmed rooms; the travel agency will have to pay a % from the agreed price as indemnity.

CLAUSE OF TRADING

The travel agency must trade the reserved rooms in a diligent way and as far as possible according to its commercial organization, without any obligation related to the result.

LODGING SERVICES

The hotel must provide the lodging once the reservations have been confirmed by the receipt of the rooming list.

CONFIDENTIALITY CLAUSE

Both parties, the travel agency and the hotel, guarantee the strictest confidentiality about all this contract contents.

Optional General clauses

APPLICABLE LAW

The Spanish Law will be the sole applicable Law to this contract, its existence requirements and obligations, breach of contract and its consequences.

JURISDICTION

The Courts of -------- will be the competent to resolve all the matters which arise between the parties.

ARBITRATION AND ALTERNATIVE DISPUTE RESOLUTION (ADR)

All the matters which arise between the parties will be put down under arbitration before the (Arbitration Court) and in accordance with its Regulations.

PERIOD OF RELEASE

The travel agency must deliver the rooming list at least 7 (seven) days before the arrival of the clients to the hotel. This term will be diminished to 3 (three) days in low season and it will be extended to 21 (twenty-one) days in high season.

When the rooming list has been delivered in time, the hotel must accept it and render the contractual services to the clients of the travel agency in accordance with its category and fittings. And the travel agency must pay the established price for each room.

On the contrary, if the rooming list has not been delivered in time, the hotel will be able to dispose of the referred rooms.

REQUESTS OUT OF RELEASE (ON REQUEST)

All the requested rooms by the travel agency after the referred terms in the previous clause will be out of this contract. These rooms will be under the hotel's confirmation in the next 48 hours since the request is regularized; and they will be paid separately.

CLAUSE IN FAVOUR OF THE TRAVEL AGENCY

The travel agency will have the right of demanding the hotel liability if the travel agency is sued by the client because of the damages caused by the hotel.

CLAUSE IN FAVOUR OF THE HOTEL

Power to modify the quota: the hotel only has to keep at most, for the rest of the contract term, a quota equivalent to the occupation average in the initial months. Thus, the hotel will be able to lower the initial quota, but he will also be able to extent it depending on the real occupation in the referred months.

Information about the sales: the travel agency will provide to the hotel the information about the sales of the quota every (two months) during the term of the contract.

SOLE RIGHT CLAUSE

The leisure activities will be operated by the hotel in exclusive, so the travel agency will not be allowed to offer them as a part of the holiday package.

PRICE

The hotel guarantees that the prices of this contract are not higher than the established ones on its contracts with other travel agencies.

VII.- OTHER EXAMPLES OF CONTRACTS IN SPAIN

These contracts are real and one of the parties is a real user of the DBE (Viajes Ordesa –a travel agency-, but the other party's name is not real).

CONTRACT 1:

ACUERDO DE COLABORACIÓN PARA REALIZACIÓN DE CONSULTAS Y RESERVAS A AIRLINE VÍA INTERNET

En Madrid, a 22 de abril de 2004

DE UNA PARTE D. _____, en nombre y representación de AIRLINE, con domicilio en Madrid, Avda. de la Industria, 6-8 y CIF: _____

Y DE OTRA PARTE DÑA. M.D. Juan Lahuerta, en nombre y representación de VIAJES ORDESA S.A. con CIF: A-50142983, con domicilio en Zaragoza, calle Cortes de Aragón, 4 Cód. Postal 50002. Teléfono 976 22 66 66, Fax 976 22 64 64, e-mail: ordesa@grupoeuropa.com

EXPONEN

PRIMERO. Que AIRLINE ha desarrollado un sitio Web desde el cual se permite a las Agencias de Viajes, vía Internet, realizar consultas de disponibilidad y reservas de plazas aéreas.

SEGUNDO. Que la AGENCIA está interesa en el uso del sistema de Reservas de AIRLINE, vía Internet, quedando regulado su uso bajo las siguientes

ESTIPULACIONES

PRIMERA. El presente acuerdo regula exclusivamente el uso del Sistema de Reservas de AIRLINE a través de Internet por parte de la AGENCIA DE VIAJES minorista firmante.

El resto de condiciones relativas a; comisiones, forma de pago y demás condiciones comerciales quedan reguladas por el acuerdo de colaboración firmado por ambas empresas.

SEGUNDA. La AGENCIA solicita a AIRLINE, quien acepta, el acceso y uso gratuito del sistema de reservas, mediante conexión por Internet. De existir costes de acceso, éstos correrán por cuenta de la AGENCIA.

TERCERA. AIRLINE facilitará a la AGENCIA una única clave de acceso al sistema arriba mencionado para cada uno de los puntos de venta (sucursales) de que ésta disponga.

La AGENCIA podrá, a través del Sistema, modificar libremente y bajo su responsabilidad la clave facilitada.

Desde el momento de la comunicación y el alta de la clave, la AGENCIA se declara plenamente responsable de su uso. Quedando facultada AIRLINE para dar de baja unilateralmente si observara un mal uso de la misma.

CUARTA. Ambas partes, se comprometen a guardar absoluta confidencialidad sobre la clave y las condiciones pactadas en este acuerdo.

QUINTA. Cualquier dato de carácter personal que conforme al desarrollo de este sistema la AGENCIA ceda a AIRLINE, contará con todos los requisitos exigidos en la vigente Ley Orgánica de Protección de Datos (LO 15/1999), siendo de su única responsabilidad la adopción de las medidas de control exigidas en la citada legislación para la obtención de los citados datos.

SEXTA. AIRLINE, como propietaria del servicios se reserva la facultad de resolver el presente contrato en cualquier momento, sin mas obligación que la comunicación de forma fehaciente y por escrito a la AGENCIA con 7 días de antelación, sin que por ello, la AGENCIA pueda exigirle el pago de cantidad alguna en concepto de indemnización de cualquier clase, derecho al que renuncia de forma expresa en este acto.

SÉPTIMA. Para la resolución de cualquier conflicto derivado de la interpretación o ejecución del presente contrato, las partes, con expresa renuncia a su fuero propio si lo tuvieran, se someten a la jurisdicción de los Juzgados y Tribunales de Madrid.

En prueba de conformidad, las partes lo firman por duplicado ejemplar en lugar y fecha:

Por AIRLINE **Por la AGENCIA DE VIAJES**

_____ _____

AIRLINE INFORMA

Estimado colaborador,

La WEB de AIRLINE ya está disponible. Puedes consultar toda la información que desees; tarifas, clases de reservas, horarios, vuelos, etc.

Para reservar a través de nuestro sistema de reservas on-line para Agencias de Viajes debes tener en cuenta lo siguiente:

CÓDIGO DE ACCESO

Para obtener tu código de acceso entra en www.airline.com menú de agencias y sigue atentamente los pasos que te indicamos.

RESERVAS

Todas las reservas se realizarán a través de nuestra página web www.airline.com y los billetes se imprimirán directamente en la impresora de la Agencia de Viajes. Pronto recibirás tu stock de billete.

COMISONES

- Billetes reservados y emitidos por la Agencia de Viajes, 5% del importe de la tarifa (tasas e impuestos no comisionables) + 15,00 € de CARGO POR EMISIÓN.
- Billetes reservados por el cliente en Internet y emitidos en la Agencia de Viajes, 15,00 € por CARGO DE EMISIÓN.

CONDICIONES DE PAGO

- **Tarifas de pago inmediato. Clases S, T, K, B y C.** Se deberá realizar la reserva, pago (con tarjeta de crédito) y emisión de manera simultánea.

  La WEB de AIRLINE dispone de un sistema de "pasarela de pago" que no permitirá confirmar la reserva sin que se hayan facilitado los datos de una tarjeta de crédito a la que cargar el importe del billete.

  Posteriormente, AIRLINE liquidará el importe de la COMISIÓN y el CARGO POR EMISIÓN a la Agencia de Viajes, asumiendo la Compañía aérea todos los gastos financieros de la operación.

  Cuando el cliente desee abonar el importe del billete en metálico, la Agencia de viajes tendrá que utilizar su propia tarjeta de crédito.

- **Tarifas sin pago inmediato. Clases Y y D.** Se podrá realizar la reserva, emitiendo 7 días antes de la salida del vuelo. AIRLINE liquidará mensualmente, mediante recibo domiciliado, todas las reservas realizadas el mes anterior.

CONTRACT 2:

El presente documento constituye el contrato que regula el acceso a Cruise.net (en adelante denominado CruiseShip, con dirección web: www.CruiseShip.com.es), que es el sitio web de CRUISESHIP reservado a las Agencias de Viajes que suscriban el presente documento, aceptando las siguientes condiciones y responsabilidades de acceso y uso.

1. CRUISESHIP pone a disposición de la Agencia de Viajes el servicio Cruise.net, con las siguientes prestaciones:

   - La visualización de la disponibilidad de camarotes en los Cruceros de Costa.
   - La posibilidad de efectuar "on line", peticiones de reserva y recibir, mediante el mismo medio, confirmación de dicha reserva por parte de Costa Cruceros.
   - La gestión de las reservas.
   - La visualización de la producción de la propia agencia de viajes.
   - Las comunicaciones de tipo comercial, administrativo y operativo.
   - La consulta de notas de prensa del sector turístico.
   - Informaciones de carácter general.

2. La Agencia de Viajes nombra como "Responsable CRUISESHIP" a la persona física que se designa en este contrato, en quien concurre en calidad de titular, administrador o jefe de la Agencia de Viajes, que representará a la Agencia de Viajes ante CRUISESHIP en todas las cuestiones relativas al sistema CRUISESHIP.

   La Agencia de Viajes tiene la facultad de modificar la designación de Responsable CRUISESHIP, pero la misma sólo surtirá efecto frente a CRUISESHIP una vez transcurridos dos días hábiles desde la recepción de la notificación escrita de la nueva designación.

3. Corresponde al Responsable CRUISESHIP, en representación de la Agencia de Viajes:

   - Recibir y custodiar las contraseñas de acceso y determinar las personas de la Agencia a las cuales atribuir y/o dar a conocer la(s) contraseña(s) y/o permitir el acceso a CRUISESHIP.
   - Determinar el nivel de acceso a las categorías de información y a la posibilidad de efectuar reservas "on line".
   - Determinar las modalidades con las cuales permitir a dichas personas el acceso a CRUISESHIP, el uso de la información allí disponible y la reserva "on line".
   - Proceder a la periódica sustitución de la(s) contraseña(s) y en general observar el puntual cumplimiento de dichas reglas.
   - Vigilar el uso inadecuado o ilegítimo de la información disponible en CRUISESHIP, impedir el acceso a CRUISESHIP a personas distintas de las autorizadas por la Agencia de Viajes.
   - Vigilar el uso inadecuado y el mal uso del sistema de reserva "on line", y todo aquello que pueda perjudicar a COSTA CRUCEROS y a la venta de sus productos.
   - Comunicar a COSTA CRUCEROS cualquier irregularidad que aprecie en el sistema de reserva "on line" y las que puedan afectar a la confidencialidad de los datos del sistema.

4. La Agencia de Viajes responderá frente a CRUISESHIP, frente a sus clientes y a cualquier tercero, incluidas las autoridades administrativas con competencia en las materias turísticas, de consumo, de protección de datos personales, y cualquier otra, de los incumplimientos de las obligaciones detalladas en el punto anterior y, en especial:

    - De la custodia de las contraseñas de acceso y del uso realizado de las mismas por la Agencia de Viajes, su personal y cualquier otra persona que accediera a las mismas.
    - De mantener la confidencialidad de los datos personales y de la información comercial a que tenga acceso a través del sistema CRUISESHIP.
    - Del pago a CRUISESHIP del precio de todos los viajes cuyas reservas hubiera confirmado a través del sistema CRUISESHIP y, en su caso, de los gastos de cancelación, incluso en los casos que la Agencia no pudiera repercutirlos al pasajero o cliente final por no haber recabado puntualmente su aceptación mediante la firma del contrato de viaje combinado.

5. Mediante el acceso al sistema CRUISESHIP la Agencia de Viajes podrá bloquear en opción una o varias cabinas de los viajes de Crucero programados.

    El bloque en opción no se convertirá en reserva en firme si no es confirmada en el periodo de tiempo que conceda el sistema, produciéndose su cancelación automática al finalizar dicho periodo de tiempo.

    Desde el momento que se produce la confirmación, la reserva es firme y su eventual cancelación posterior producirá los gastos establecidos en las condiciones generales del programa-folleto, a cuyo pago a CRUISESHIP se obliga la Agencia de Viajes.

    En algunas ocasiones, cuando la fecha en que se intenta el bloqueo en opción es muy próxima a la fecha de inicio del viaje y cuando quedan pocas cabinas libres para una concreta salida del viaje de crucero, el tiempo de opción desaparece y el sistema impide el bloqueo, comunicando que esa concreta salida es de confirmación inmediata.

    Tras la confirmación de la reserva, CRUISESHIP enviará (vía e-mail) a la Agencia de Viajes una carta de confirmación de la reserva y requerirá la aportación de los documentos necesarios (documentación de los pasajeros, ejemplar del contrato, justificante de pago, etc.) para poder emitir la documentación de viaje. Sin perjuicio de la carta de confirmación de reserva, la firmeza de la reserva se produce desde la confirmación del sistema CRUISESHIP.

6. CRUISESHIP no asume ninguna responsabilidad por el uso inadecuado o ilegítimo de la contraseña, de la facultad de acceso al sistema CRUISESHIP, de la información allí disponible y de la facultad de efectuar reservas “on line” por parte del personal o de los colaboradores, empleados o no, estables u ocasionales, de la Agencia de Viajes y, en general, de los que accedan a la Agencia y a sus terminales.

7. la Agencia de Viajes es la única responsable, frente a sus clientes y a las autoridades administrativas con competencia en la materia, de cumplir con las obligaciones establecidas en los artículos 5 y 6 de la Ley Orgánica 15/99, de

Protección de Datos de Carácter Personal y de la correcta realización y envío del "Contrato de Viaje Combinado" dispuestos por CRUISESHIP.

8. El presente contrato tiene duración indefinida, produciéndose su extinción en los siguientes casos:

   - Automática y simultáneamente a la extinción del acuerdo comercial vigente entre la Agencia de Viajes y CRUISESHIP.
   - Por denuncia unilateral de la Agencia de Viajes o de CRUISESHIP.
   - Por resolución, en caso de incumplimiento por la Agencia de Viajes de alguna de las obligaciones derivadas del mismo o por inobservancia de las condiciones de seguridad del sistema y del deber de confidencialidad de los datos contenidos en el mismo.

   La extinción del contrato no dará lugar a indemnización alguna entre las partes, sin perjuicio de las que se pudieran exigir como consecuencia del incumplimiento de las obligaciones derivadas de las relaciones entre las partes.

9. CRUISESHIP tiene la facultad de interrumpir o finalizar en cualquier momento el funcionamiento del sistema CRUISESHIP y la página web, o de modificar el tipo y la cantidad de información asequible, y de revocar en cualquier momento, a su discreción, la habilitación de acceso concedida a la Agencia de Viajes, sin que tales actuaciones generen responsabilidad alguna a su cargo.

10. Las reservas y ventas de viajes de Cruceros efectuadas a través del sistema CRUISESHIP quedan sujetas al régimen pactado entre CRUISESHIP y la Agencia de Viajes en el correspondiente acuerdo de colaboración comercial vigente en cada momento, cuyos pactos y condiciones integran este contrato.

11. Para la resolución de los conflictos que pudieran suscitarse entre la Agencia de Viajes y CRUISESHIP y sin perjuicio de los pactos contenidos al respecto en el acuerdo de colaboración comercial que mantengan vigente, que será de aplicación prioritaria a estos efectos, las partes se someten expresamente a la Jurisdicción y competencia de los Juzgados y Tribunales de Madrid, con renuncia expresa de cualquier otro fuero que pudiera corresponder.

La Agencia de Viajes CRUISESHIP S.L.

Nombre de la Agencia de Viajes

Código Costa

Responsable CRUISESHIP [17]

(Nombre y Apellidos)

[17] El responsable CRUISESHIP deberá ser el titular o el administrador de la Agencia u otro jefe de la empresa.

NOTA: todos los campos son obligatorios.

Puesto (titular/administrador/jefe)

Dirección de correo

Fecha

_____ CRUISESHIP, S.L.

Sello y firma

e-mail que han adjuntado al contrato:

From: <cruiseship_es@costa.it>

To: <ordesa3@grupoeuropa.com>

Sent: Thursday, November 24, 2005 4:02 PM

Subject: HABILITACIÓN DE LA NUEVA VERSIÓN DEL CRUISESHIP – http://www.cruiseship.com.es

Estimado Agente de Viajes,

Referente CRUISESHIP.

Según su solicitud a través del "Acuerdo de habilitación del acceso a CRUISESHIP", tenemos el placer de comunicarle que su agencia ha sido habilitada a utilizar la nueva versión del CRUISESHIP.

De ahora en adelante, podrá acceder al sistema CRUISESHIP desde el sitio www.cruiseship.com.es el acceso es reservado y protegido y se accede digitando cuanto figura en la página inicial:

NOMBRE DE USUARIO (xxxxxxxx)

CLAVE (costaxx)

Para cualquier duda, aclaración o dificultad en la navegación puede contactar con u operador de CRUISESHIP llamando al siguiente número de teléfono (horario de mañanas de 09:00 a 13:00h. y tardes de 16:00 a 19:00h. de lunes a viernes; sábados de 09:00 a 13:00h.) Madrid 915558550 – Barcelona 934875685

Le recordamos que en la sección "Gestión de Agencia", el titular podrá personalizar el perfil de los colaboradores de la agencia, asignándoles desde la función del menú "Gestión de Usuarios" tres diferentes niveles de acceso y de seguridad, habilitándolos, por ejemplo, (1) ver sólo la disponibilidad, (2) RESERVAR o (3) a visualizar los informes de producción. A cada colaborador le será asignado u nombre de usuario y una password que permite identificar de manera inequívoca quien realizó la reserva. Un instrumento más que CRUISESHIP ofrece en garantía de su operador. CRUISESHIP es un instrumento innovador de Marketing y Venta, que CRUISESHIP pone a disposición de los Agentes de Viaje, para simplificar el trabajo de la agencia y mejorar la relación con el cliente. Gracias a la simplicidad del sistema, CRUISESHIP es de uso inmediato desde la primera vez que se accede, simple, e intuitivo, operativo las 24 horas del día y todos los días de la semana (salvo breves interrupciones debidas al mantenimiento del sistema).

CRUISESHIP es un instrumento profesional ofrecido desde una óptica del servicio entre CRUISESHIP y el Agente de Viaje.

www.cruiseship.com.es

Gracias y buen trabajo.

CONTRACT 3:

VIAJES PEPE

ANEXO AL CONTRATO DE GRUPO

REUNIDOS

De una parte, D. _____, mayor de edad, con DNI nº xxxxxxxx, en condición de representante de la entidad VIAJES PEPE, S.A. (en adelante Agencia Mayorista) con domicilio en TORREMOLINOS (Málaga), calle Hoyo Profundo, Edificio EL PARLAMENTO I, local 9, y provista de CIF nº _____ t Título – Licencia CI AN 29958-3, inscrita en el Registro Mercantil de Málaga, Tomo 3760, Libro 2671, Folio 128, Hoja MA-75995, inscripción 1º en Málaga a 4 de marzo de 2005.

De otra parte, D./Dña. M.D. JUAN LAHUERTA, mayor de edad con DNI nº xxxxxxxx, en su condición de representante legal de la entidad VIAJES ORDESA, S.A. (en adelante Agencia Minorista), con domicilio en la calle Cortes de Aragón, 4, de ZARAGOZA, y provista de CIF nº A 50142983. Y que tiene una sucursal en calle Caspe, 7, Zaragoza.

Ambas partes se reconocen capacidad para firmar el presente documento y en virtud del cual

EXPONEN

PRIMERO. Que la Agencia Mayorista tiene suscrito un contrato de colaboración con el Grupo o Asociación: GRUPO AMERICA.

SEGUNDO. Que por este documento, la Agencia Minorista, reconoce pertenecer, en el momento de la firma, al citado Grupo o Asociación y que se compromete a notificar a la Agencia Mayorista su baja en el Grupo o Asociación si eventualmente se produjera.

TERCERO. Que en virtud de dicha pertenencia, la Agencia Mayorista concede a la Agencia Minorista las condiciones generales que consten en el contrato del Grupo o Asociación.

Las condiciones o cláusulas que se exponen en este documento y, especialmente las relativas al pago y las formas del mismo, serán de aplicación individual a la Agencia Minorista. No aplicando, en ningún caso, trato más favorable en materia de pagos que el que se detalla en el presente documento.

CUARTO. La Agencia Mayorista deberá recibir el importe de las reservas de la siguiente manera:

RECIBO DOMICILIADO A 7 DÍAS: LAS RESERVAS CON ENTRADA ENTRE EL LUNES Y EL DOMINGO DE CADA SEMANA, SERÁN LIQUIDADAS LA SEMANA SIGUIENTE.

CUENTA CORRIENTE DE DOMICILIACIÓN: CAI-xxxx xxxx xx xxxxxxxxxx

La Agencia Minorista se compromete a notificar de forma fehaciente cualquier modificación en el número de cuenta que se pudiera producir.

QUINTO. En lo no dispuesto en este anexo estará de aplicación, será de aplicación el contrato firmado con el grupo de pertenencia.

SEXTO. La duración del presente contrato será de un año desde el momento de la firma, prorrogable automáticamente, por iguales periodos de tiempo, salvo que exista denuncia expresa por cualquiera de las partes, la cual deberá efectuarse con una antelación mínima de 15 días.

Y, en prueba de conformidad, firman las cláusulas anteriores del presente documento, en Madrid, a 23 de junio de 2006,

Por la/s Agencia/s Minorista/s **Por la Agencia Mayorista**

(sello y firma) (sello y firma)

CLÁUSULA ADICIONAL. Para cuantas cuestiones pudieran surgir de la interpretación y cumplimiento del presente contrato, ambas partes, con renuncia expresa a cualquier otro fuero que pudiera corresponderles, se someten expresamente a la jurisdicción de los Juzgados y Tribunales de Málaga. La presente cláusula afecta igualmente a los administradores que incurran en causa legal de responsabilidad.

Y, en prueba de conformidad, firman la presente cláusula por duplicado ejemplar, y a un solo efecto, en el lugar y fecha que figuran en el encabezamiento.

Por la/s Agencia/s Minorista/s **Por la Agencia Mayorista**

(sello y firma) (sello y firma)

ANEXO I

PARA LA REALIZACIÓND E CONSULTAS Y RESERVAS A EMPORI VIAJES A TRAVÉS DEL SISTEMA DE RESERVAAS ON LINE

EXPONEN

PRIMERO. Viajes PEPE ha habilitado un servidor accesible desde Internet que permite a las Agencias de Viajes efectuar consultas y reservas sobre los viajes y servicios organizados por Viajes PEPE.

SEGUNDO. Que estando interesada la AGENCIA DE VIAJES que suscribe en el uso y sistema de reservas PEPE mencionado en el apartado anterior, lo formalizan con la sujeción de las siguientes

CLÁUSULAS

PRIMERA. El presente anexo, regula exclusivamente el uso del sistema de reservas de VIAJES PEPE a través de Internet por parte de la agencia minorista. Por lo demás, la relación entre ambas partes, es decir, las condiciones comerciales, comisiones, fecha y forma de pago se continuarán rigiendo, también para las reservas que se realicen por este canal de venta y en todo lo no previsto en este anexo, por el acuerdo de colaboración vigente, el cual ambas partes ratifican expresamente, sin perjuicio de las renovaciones que del mismo periódicamente, de mutuo acuerdo, se realicen.

SEGUNDA. La Agencia de Viajes solicita a VIAJES PEPE, quien acepta, el acceso y uso gratuito del sistema de reservas, mediante conexión por Internet. Los costes de acceso, en todo caso, correrán por cuenta de la Agencia de Viajes.

TERCERA. VIAJES PEPE facilitará a la Agencia de Viajes una única clave alfanumérica de acceso al sistema mencionado en el expósito I para cada una de las sucursales que ésta disponga. Esta clave podrá ser modificada por la Agencia de Viajes, bajo su responsabilidad.

Desde el momento del alta en el servicio y la comunicación de dicha clave, la Agencia de Viajes se declara plenamente responsable del uso del sistema, de las reservas que se realicen con su clave o la modificada en el uso de su facultad, así como de cualquier tipo de operación que desde dicha Agencia de Viajes se lleve a cabo empleando este servicio, corriendo, por tanto, con todas las obligaciones que de ello se pudieran llegar a derivar, a cargo de la Agencia de Viajes.

CUARTA. Ambas partes se obligan a guardar absoluta confidencialidad sobre dicha clave bajo la responsabilidad que le corresponda en cada momento, según lo previsto en este anexo.

QUINTA. VIAJES PEPE como propietaria del servicio, se reserva la facultad de resolver el presente contrato en cualquier momento, por incumplimiento de las condiciones pactadas. Sin previo aviso, sin que por ello, la Agencia de Viajes pueda exigirle el pago de cantidad alguna en concepto de indemnización de cualquier clase, derecho al que renuncia de forma expresa en este acto.

SEXTA. Para la resolución de cualquier conflicto derivado de la interpretación o ejecución del presente anexo, las partes, con expresa renuncia de su fuero propio, si existiera, se

someterán a la jurisdicción de los Juzgados y Tribunales de Málaga.

En prueba de conformidad, ambas partes firman el presente documento.

En Madrid, a 23 de junio de 2006.

POR VIAJES ORDESA, S.A. **POR VIAJES PEPE, S.A.**

M.D. JUAN **_____**

SOLICITUD DE ACCESO A VENTA DE RESERVAS

ON-LINE

Madrid / Torremolinos, a 10 de Febrero de 2006.

Estimado Amigo y colaborador:

Acusamos recibo de tu solicitud de clave para acceso a venta de reservas on-line.

Agradecemos tu interés ya que ni siquiera hemos comunicado oficialmente la puesta en marcha y activación de nuestra web dado que nos encontrábamos todavía en la fase final de pruebas para optimizar sus aplicaciones.

Os queremos indicar que para poder activar este sistema de reservas, necesitaremos previamente el contrato debidamente cumplimentado de vuestra central.

Para daros, como siempre, todo tipo de facilidades, decirnos qué usuario y qué clave queréis. El único requisito es que sea en mayúsculas y un máximo de 8 dígitos en cada campo.

USUARIO: XXXXX

CONTRASEÑA: XXXXX

Sin otro particular y agradeciendo de nuevo el interés mostrado, recibe un cordial saludo.

Atentamente,

VIAJES PEPE

Departamento Reservas Internet

Appendix A.3 – Sale of Goods Model Contract

I.- INTRODUCTION

This model contract is primarily directed at contracts for the sale of manufactured goods intended for resale, where the purchaser is not a consumer and where the contract is an independent transaction rather than part of a long-term supply arrangement.

In this contract is important the fact of the applicable law because, failing contrary agreement between the parties, the model contract subjects the transaction to the United Nations Convention for the International Sale of Goods (CISG, hereinafter).

II.- RIGHTS AND OBLIGATION OF THE PARTIES

1. Rights and obligations of the seller.
    a. *General obligations:*
        i. To deliver the goods.
        ii. To hand over any documents relating to the goods.
        iii. To transfer the property in the goods.

    The CISG provides supplementary rules for use in the absence of contractual agreement as to when, where and how the seller must perform these obligations.

    b. *Rules that implement the seller's obligations in respect of the quality of the goods:*
        i. The seller must deliver goods that are of the quantity, quality and description required by the contract.
        ii. One set of rules involves the seller's obligation to deliver goods that are free from any right or claim of a third party, including rights based on industrial property or other intellectual property.

2. Rights and obligation of the buyer.
    a. *General obligations:*
        i. To pay the price.
        ii. To take delivery of the goods as required by the contract and the CISG.

    The CISG provides supplementary rules for use in the absence of contractual agreement as to how the price is to be determined and where and when the buyer should perform his obligation to pay the price.

    b. *Regarding to the quality of the goods:*

i. The buyer must give notice of any lack of their conformity with the contract within a reasonable time after he has discovered it or ought to have discovered it.

III.- INTERNATIONAL SALE OF GOODS CONTRACT

SELLER (name and address) Contact person (name and address)

BUYER (name and address) Contact person (name and address)

The Parties (Seller and Buyer) guarantee their legal capacity for contracting and assuming all the obligations that stem from the following

CLAUSES

GOOD SOLD (Description of the goods)

e.g. 100 Levis' trousers; Model: 507; Size: M

CONTRACT PRICE

- Currency:
- Amount in numbers:
- Amount in letters:

If no price has been agreed, the Seller's current list price at the time of the conclusion of the Contract shall apply. In the absence of such a current list price, the price generally charged for such goods at the time of the conclusion of the Contract shall apply.

Unless otherwise agreed in writing, the price does not include VAT and it is not subject to price adjustment.

The price indicated under this clause includes any costs which are at the Seller's charge according to this Contract. However, should the Seller bear any costs which, according to this Contract, are for the Buyer's account, such sums shall not be considered as having been included in the price under this clause and shall be reimbursed by the Buyer.

DELIVERY TERMS

- Recommended terms (according to Incoterms 2000):
  - ☐ **EXW** Ex Works named place: _____
  - ☐ **FCA** Free Carrier named place: _____
  - ☐ **CPT** Carriage Paid To named place of destination: _____
  - ☐ **CIP** Carriage and Insurance Paid To named place of destination: _____
  - ☐ **DAF** Delivered At Frontier named place: _____
  - ☐ **DDU** Delivered Duty Unpaid named place of destination: _____
  - ☐ **DDP** Delivered Duty Paid named place of destination: _____

- Other terms (according to Incoterms 2000):
  - ☐ **FAS** Free Alongside Ship named port of shipment: _____
  - ☐ **FOB** Free On Board named port of shipment: _____
  - ☐ **CFR** Cost and Freight named port of destination: _____
  - ☐ **CIF** Cost Insurance and Freight named port of destination: _____
  - ☐ **DES** Delivered Ex Ship named port of destination: _____
  - ☐ **DEQ** Delivered Ex Quay (duty paid) named port of destination: _____

- Other delivery terms _____

CARRIER (where applicable)

Name and address Contact person

TIME OF DELIVERY

Indicate here the date or period at which or within which the Seller must perform his delivery obligations according to this clause of the respective Incoterm.

INSPECTION OF THE GOODS BY BUYER

☐ Before shipment place of inspection: _____

☐ Other: _____

If the parties have agreed that the Buyer is entitled to inspect the goods before shipment, the Seller must notify the Buyer within a reasonable time before the shipment that the goods are ready for inspection at the agreed place.

PAYMENT CONDITIONS

☐ **Payment on open account.** Unless otherwise agreed in writing, or implied from a prior course of dealing between the parties, payment of the price and of any other sums due by the Buyer to the Seller shall be on open account and time of payment shall be 30 days from the of invoice. The amounts due shall be transferred, unless otherwise agreed, by teletransmission to the Seller's bank in the Sellers country for the account of the Seller and the Buyer shall be deemed to have performed his payment obligations when the respective sums due have been received by the Seller's bank in immediately available funds.

Time for payment (if different from above) ____ days from date of invoice. Other: _____

☐ **Payment in advance.** If the parties have agreed on payment in advance, without further indication, it will be assumed that such advance payment, unless otherwise agreed, refers to the full price, and that the advance payment must be received by the Seller's bank in immediately available funds at least 30 days before the agreed date of delivery or the earliest date within the agreed delivery period. If advance payment has been agreed only for a part of the contract price, the payment conditions of the remaining amount will be determined according to the following rules:

If the parties have agreed on payment by documentary collection, then, unless otherwise agreed, documents will be tendered against payment (D/P) and the tender will in any case be subject to the Uniform Rules for Collections published by the International Chamber of Commerce (hereafter ICC).

Date (if different from above): _____ ☐ Total price ☐ __ % of the price

☐ **Documentary Collection.** To the extent that the parties have agreed that payment is to be backed by a bank guarantee, the Buyer is to provide, at least 30 days before the agreed date of delivery or at least 30 days before the earliest date within the agreed delivery period, a first demand bank guarantee subject to the Uniform Rules for Demand Guarantees published by the ICC, or a standby letter of credit subject either to such Rules or to the Uniform Customs and Practice for Documentary Credits published by the ICC, in either case issued by a reputable bank.

☐ D/P Documents against payment D/A ☐ Documents against acceptance

☐ **Irrevocable documentary credit.** If the parties have agreed on payment by documentary credit, then, unless otherwise agreed, the Buyer must arrange for a documentary credit in favour of the Seller to be issued by a reputable bank, subject to the Uniform Customs and Practice for Documentary Credits published by the ICC, and not to be notified at least 30 days before the agreed date of delivery or at least 30 days before de earliest date within the agreed delivery period. Unless otherwise agreed, the documentary credit shall be payable at sight and allow partial shipments and transhipments.

Place of issue (if applicable): _____

☐Confirmed ☐Unconfirmed

Place of confirmation (if applicable): _____

Credit available:

☐By payment at sight

☐By deferred payment at: ____ days

☐By acceptance of drafts at: ____ days

☐By negotiation

Partial shipments:

☐Allowed

☐Not allowed

Transhipments:

☐Allowed

☐Not allowed

Date on which the documentary credit must be notified to Seller (if different from above)

☐____ days before date of delivery ☐ Other: _____

☐**Other** _____ (e.g. cheque, bank draft, electronic funds transfer to designated bank account of Seller)

INTEREST IN CASE OF DELAYED PAYMENT

If a party does not pay a sum of money when it falls due the other party is entitled to interest upon that sum from the time when payment is due to the time of payment.

Unless otherwise agreed, the rate of interest shall be 2% above the average bank short-term lending rate to prime borrowers prevailing for the currency of payment at the place of payment, or where no such rate exists at that place, then the same rate in the State of the currency of payment. In the absence of such a rate at either place the rate of interest shall be the appropriate rate fixed by the law of the State of the currency of payment.

DOCUMENTS

Indicate here documents to be provided by Seller. Parties are advised to check the Incoterms the have selected.

☐Transport documents: indicate type of transport document required _____

☐Commercial Invoice

☐Packing list

☐Insurance document

☐ Certified of origin

☐ Certificate of inspection

☐ Other: _____

LIABILITY FOR DELAY

If the parties have agreed a cancellation date, the Buyer may terminate the Contract by notification to the Seller as regards goods which have not been delivered by such cancellation date for any reason whatsoever (including a force major event).

When there is delay in delivery of any goods, the Buyer is entitled to claim liquidated damages equal to __ % of the price of those goods for each complete week of delay. Liquidated damages for delay shall not exceed __ % of the price of the delayed goods.

LIABILITY FOR LACK OF CONFORMITY

The buyer shall examine the goods as soon as possible after their arrival at destination and shall notify the Seller in writing of any lack of conformity of the goods within 15 days from the date when the Buyer discovers or ought to have discovered the lack of conformity. In any case the Buyer shall have no remedy for lack of conformity if he fails to notify the Seller thereof within 12 months from the date of arrival of the goods at the agreed destination.

The price abatement for retained non-conforming goods shall not exceed:

☐ ___ % of the price of such goods

OR

☐ _____ (specify amount)

APPLICABLE LAW

Any questions relating to this Contract which are not expressly or implicitly settled by the provisions contained in the Contract itself shall be governed:

A. by the United Nations Convention on Contracts for the International Sale of Goods (Vienna Convention of 1980, hereafter CISG), and
B. to the extent that such questions are not covered by CISG, by reference to the law of the country where the Seller has his place of business.

RESOLUTION OF DISPUTES

Unless otherwise agreed in writing, all disputes arising in connection with the present Contract shall be finally settled under the Rules of Arbitration of the ICC by one or more arbitrators appointed in accordance with the said Rules.

☐ **Arbitration**

☐ ICC (according to said above)

Place of arbitration _____

☐ Other _____ (specify)

☐ **Litigation (ordinary courts)**

In case of dispute the courts of

_____ (place)

shall have jurisdiction

Appendix A.4 – Complete Contract for Usage Scenario

I.- THE CONTRACT

1. THE PARTIES
    a. *The service provider*. It is a computer company that provides computer goods or/and services.
    b. *The client*. It is the company that buys the computer good or/and service. It is important to know if the client has any computer knowledge or not; or if he has a computer department or not; or if he does not have computer knowledge, either computer department. Depending on what of the three previous situations we are, the liability may change.

2. RIGHTS AND OBLIGATIONS OF THE PARTIES
    a. *Rights and obligations of the service provider:*
        i. The development of the program.
        ii. The installation of the program in the client's equipments.
        iii. Licensing the use of the program.
        iv. To train the client's personnel.
        v. Confidentiality.
        vi. Exclusive agreement (if that is the case).
        vii. The delivery of the backup copy.
        viii. The delivery of the use and technical documentation.
        ix. Guarantee.
        x. To provide the client with the information about the development of the program.
        xi. To support the client's controls.

    b. *Rights and obligations of the client:*
        i. To pay the price.
        ii. Not to break the intellectual property tights of the service provider.
        iii. To cooperate with the service provider while the program is being developed.
        iv. The final endorse.
        v. He can control de development of the program.

II.- SOFTWARE DEVELOPMENT CONTRACT

February 01, 2007

GrandesTec S.L. (**the provider**) Goya Ave. 150 50.009 Zaragoza, Zaragoza (Spain)	Armando Jaleo Goya Ave. 150 50.005 Zaragoza, Zaragoza (Spain)
Rokos Hotel (**the client**) Keilalahdentie 8 P.O. Box 303 Fin-00045 (Finland)	Seinakoji Kankunnen Keilalahdentie 8 P.O. Box 303 Fin-00045 (Finland)

STATE

I.- The PROVIDER is a company that provides computer services.

II.- The CLIENT is a hotel.

III.- The CLIENT is interested in the development of a computer program which allows an online hotel reservation system.

IV.- And that is why, both parties, mutually recognizing their legal capacity for contracting, assume all the obligations that stem from the following

CLAUSES

FIRST.- CONTRACT'S OBJECT.

The object of the contract is the development of a computer program which allows an online hotel reservation system.

The description of the characteristics and functions that the program must play; the client's hardware and software characteristics where the program will be installed are described in the **ANNEX 1**.

SECOND.- Program's Specifications Document.

Both parties agree that, before the term of the program's development starts, the PROVIDER

must prepare the Program's Specifications Document in accordance with Annex 1.

The Specifications Document will have to be handed to the CLIENT at most on dd/mm/yyyy. The instalment of the document will be signed by both parties.

Within 10 days from the instalment of the Specifications Document, the CLIENT will have to declare to the PROVIDER his purpose of:

A) Continuing with the program's development project in accordance with the Annex 1 and according to the Specifications Document handed.
B) To desist from the project.
C) Continuing with the project, but including modifications o changes in the Annex 1.

This notification will be done through encrypted e-mail, electronically signed and with acknowledgement of receipt.

If the CLIENT consents, according to A) option, the project will continue in accordance with the next clause and the others in this contract.

If the CLIENT gives up from the project, according to B) option, the CLIENT will pay to the PROVIDER the amount of _____ Euros at that moment.

If the CLIENT introduces modifications, according to the C) option, the PROVIDER will have to accept or reject them within 10 days from his knowledge about those modifications and through the electronic notification said before.

If the modifications are rejected, the CLIENT will be able to choose between continuing and giving up the project within 10 days from the knowledge of the PROVIDER'S position. If the CLIENT gives up, he will have to pay to the PROVIDER the amount of _____ Euros at that moment.

If the modifications are accepted, the PROVIDER will be able to ask for a modification of the total price agreed in this contract. In that sense, the PROVIDER, within 10 days from the instalment of the proposal of modifications, will have to communicate the price variation proposed to the CLIENT. Within 10 days from the instalment of the new price's proposal, the CLIENT will be able to choose between accept and give up the project. In case of giving up, the CLIENT will have to pay the amount of ____ Euros at that moment.

The modifications made as a consequence of what has been agreed in this clause, both the Annex 1 and the total price, will be part of this contract being added to it.

The silent of any party, when the terms fixed in this contract have passed, is equivalent to acceptance.

All intellectual and industrial property rights related to the Specifications Document belong to the PROVIDER.

SECOND BIS (optional).- Prototype.[18]

Once the Specifications Document has been approved, both parties agree the realization of a prototype of the program whose price will be ____ Euros, which will be paid at the time of its delivery.

Such prototype will be handed and installed; at most, ___ days/month from the perfect acceptance of the program's Specifications Document by the CLIENT. Once the prototype has been finished, it will be installed in the client's hardware for its use during ___ days.

After this term passes, in 10 days the CLIENT will be able to communicate all the remarks he considers about the prototype and if he wants to include any changes or modifications into the project. Just in case the CLIENT would like to include any change or modification, the PROVIDER should determine if those are viable and the extra cost. The PROVIDER must communicate it within 10 following days.

THIRD.- Program's development.

The PROVIDER will make the program in accordance with the Annex 1, the Specifications Document and/or the prototype approved by the CLIENT.

The program should be installed and working perfectly before dd/mm/yyyy.

FOURTH.- Price.

The parties agree that the total price is _____ Euros. At the moment of signing this contract the CLIENT pays the amount of _____ Euros.

The rest of the price will be paid by the CLIENT in accordance with the following instalments:

1.- ___ days from the delivery of the Specifications Document, the amount of ____ Euros.

2.- Before the date dd/mm/yyyy, the amount of _____ Euros.

3.- Before the date dd/mm/yyyy, the amount of _____ Euros.

4.- At the moment of the delivery and complete installation of the program, the amount of _____ Euros.

5.- Passing two months from the delivery and complete installation, the amount of _____ Euros.

[18] In some cases, before drafting the Specifications Document, the client can directly choose the prototype and, from the prototype, can decide whether to continue or not with the project or to make modifications. In that case, what is established in the second clause would be applicable, but changing the reference to the specification document by the reference to the prototype.

The CLIENT will credit the previous instalments to PROVIDER'S account num. _____, except that the PROVIDER communicates other current account in writing.

If the CLIENT would not pay any of the previous instalments when they have fallen due, the PROVIDER have the right of stopping the realization of the program and not to continue with it till those instalments would be paid.

FOURTH BIS (optional).- Payments according to the instalment of the prototype and other parts of the program.

The parties agree that the total price is _____ Euros. At the moment of signing this contract the CLIENT pays the amount of _____ Euros.

The rest of the price will be paid by the CLIENT in accordance with the following instalments:

1.- ___ days from the delivery of the Specifications Document, the amount of ____ Euros.

2.- At the moment of the delivery of the prototype, the amount of ____ Euros.

3.- At the moment of the delivery and complete installation of the program, the amount of _____ Euros.

4.- Passing two months from the delivery and complete installation, the amount of _____ Euros.

The CLIENT will credit the previous instalments to PROVIDER'S account num. _____, except that the PROVIDER communicates other current account in writing.

If the CLIENT would not pay any of the previous instalments when they have fallen due, the PROVIDER have the right of stopping the realization of the program and not to continue with it till those instalments would be paid.

FIFTH.- Modifications while the program is being developed.

While the program is being made, the CLIENT will be able to propose modifications in writing and through notification done through encrypted e-mail, electronically signed and with acknowledge of receipt. It must be done using the application form attached to this contract as **ANNEX 2**[19]. Nevertheless, such modifications will be subject to the approval of the PROVIDER, who will have to determine if they are viable and the extra cost within 10 days from the instalment of the proposal of modifications. After the CLIENT has received the PROVIDER'S proposal, the CLIENT will have to communicate if he accept or not the budgetary variation.

[19] In such application form must be included, at least, the date, the name and charge of the person who proposes the modification, the element and the modification itself.

The silent of any party is equivalent to acceptance.

SIXTH.- Control of the program's development.

In order to guarantee that the development of the program is under control, the parties designate the following speakers:

- As PROVIDER'S speaker: Mr. _____, Project's Director.
- As CLIENT'S speaker: Mr. _____.[20]

Without prejudice to the liability of the previous speakers, both parties will be able to designate their respectives, to whom they can ask the technical questions that could arise during the development of the program.

The speakers will meet, at least, once _____[21] by teleconference, in order to know and determine how is going on the development of the program. Nevertheless, it can be meetings in shorter terms, if any of the parties applies for that.

At least, the speakers will attend these meetings, being also capable to attend them other people who are involved in the development of the program but only if they have been designated by the parties. Every meeting must be described in a minute, according to the application form attached as **ANNEX 3**, which will have to be signed by all those present and there should be included all the problems detected till that moment and the steps that are going to be taken in order to get a solution.[22]

SEVENTH.- Cooperation.

The CLIENT will give cooperation to the PROVIDER during the development of the program, in accordance with the good faith rules. And, particularly, the CLIENT commits himself to:

a) To allow the people designated by the PROVIDER to access to his equipment where the program must be installed.
b) To supply the necessary information for the development of the program to the PROVIDER through the speaker designated in the previous clause.
c) To attend the teleconferences said before and the others those have been required by any of the parties.
d) To take part giving the necessary data, at the request of the PROVIDER, in the tests and trials of the program.

EIGHTH.- Confidentiality.

The PROVIDER guarantees that all the technical, industrial, commercial or whatever other

[20] There must be included the charge of the speaker.
[21] To include the term depending on the contract term (once a month, etc.).
[22] In the application form of the minute must be included, at least: date and time of the teleconference, those present, the agenda and all the agreements related to the agenda.

information given or he has access will be confidential.

Likewise, the PROVIDER compromises himself not to disclose any information about the equipments, technologies, products and projects he could know about because of meetings, visits or whatever during the development of the program.

The PROVIDER will take the necessary steps to guarantee that all his personnel carry out this confidentiality duty; and he will responsible of any non-fulfilment.

Likewise, the PROVIDER compromises himself to carry out with the Organic Law 15/1999, December 13th, of Personal Data Protection and the corresponding precautions.

NINETH.- Personnel displacement.

If it is necessary that the PROVIDER'S personnel move to the CLIENT'S establishment, there is only a commercial relationship without any labour link between the CLIENT and the PROVIDER'S personnel. Those displacements cannot be considered, in any case, as a surrender of workers under the article 43 of the Worker's Statute; because any displacement to the CLIENT'S establishment will be exceptional and temporal, and those workers will receive the orders directly from the PROVIDER. The PROVIDER cannot use the CLIENT'S name in any labour contract.

TENTH.- Delivery and installation of the program.

The PROVIDER will have to finish and install the program in the CLIENT'S equipments within the term established. The CLIENT is responsible of the computer equipments statement where the program will be installed and the operating system and the base program specified in the Annex 1.

The PROVIDER, after the program has been installed, will give the Manual to the CLIENT.

ELEVENTH.- Acceptance.

Once the program has been installed, the CLIENT will examine it in order to check that there are all the conditions and specifications that should be included.

The checking will have to be done within 30 natural days from the complete installation of the program. If the term has passed without any notification from the CLIENT about his purpose of **acceptance**, **refusal** or **review's extension application** using the application form attached as **ANNEX 4**, this silent will be equivalent to the CLIENT'S acceptance[23].

[23] The acceptance application form will have to include the date, the client's representative, the comments about the program and, finally, the acceptance, refusal or review's extension application.

Nevertheless, the total review term must always be within 45 days from the date of the program's installation, unless the PROVIDER allows a longer term in writing.

If the CLIENT do not accept, circumstance that will have to be communicated in writing and with the causes detailed, the PROVIDER will have to provide the necessary services in order to get the program agreed in this contract. Such services will not increase the price agreed in the contract.

TWELFTH.- Guarantee.

It is established a guarantee term of six (6) months from the CLIENT'S acceptance of the program installed. Within that guarantee term, the PROVIDER commits himself to make good, without any extra cost for the CLIENT, whatever program's error if the PROVIDER is the responsible.

The PROVIDER guarantees that the program is, before its installation in the CLIENT'S equipments, free of virus or other defaults that could damage the computer system of the CLIENT. The CLIENT guarantees that his computer system is free of virus or other defaults that could damage the program's installation and its correct working.

All the questions, errors or consequences that came from a bad use of the program by the CLIENT'S personnel or somebody else who's not allowed by the PROVIDERS will not be covered by this guarantee.

Whatever error of the program that must be solved will be paid out of the total price agreed in this contract and according to the current prices when the guarantee term passes. Nevertheless, the CLIENT can sign the MAINTENANCE CONTRACT attached as **ANNEX 5**.

THIRTEENTH.- Licence of use.

In accordance with this contract, the CLIENT gets a Non-exclusive Licence of Use of the computer program developed for the connection to the digital platform of the DBE. So, the CLIENT does not have the exploitation rights and he cannot reproduce, make new versions or derived programs, adapt or modify the program or whatever other computer program based on the confidential information given by the PROVIDER.

Neither the CLIENT will be able to decompile, make inverse engineering, hand over, allow the use to others, distribute, rent, give copies of the programs mentioned above or make its exploitation in the thirds' name.

Likewise, without prejudice of the prohibition of the program's reproduction, the CLIENT will be able to make security copies but only if the copies include all the titles, symbols of brands, symbols and other PROVIDER'S intellectual property references.

The PROVIDER will be liable of whichever claims interposed by thirds that could obstruct the use of the program to the CLIENT in accordance with this licence. However, the CLIENT will have to notify to the PROVIDER the existence and content of the claims, at most, within 3 day

from the CLIENT had their knowledge.

THIRTEENTH BIS.- Program's Property Rights (*in case the client receives the property)*.

The CLIENT will have the intellectual property of the computer program developed for the connection to the digital platform of the DBE. Nevertheless, in accordance with this contract and in a irrevocable way, the CLIENT allows to the PROVIDER the reproduction, translations, decompilations, inverse engineering, adaptations, modifications, maintenance acts, new versions, derived programs or software developments; but only if those acts are for the exclusive profit of the company.

All intellectual and industrial property rights related to the program developed will belong to the CLIENT, to whom the technical documentation will be given at the moment of the program installation.

FOURTEENTH.- Training (*optional*).

The PROVIDER compromises himself to train the CLIENT'S personnel designated (no more than __ workers), after the installation of the program, in order to get a correct use of the program. The course will have a total of __ hours, in four sessions of ___ hours each one.

FIFTEENTH.- Applicable Law.

Any questions relating to this Contract which are not expressly or implicitly settled by the provisions contained in the Contract itself shall be governed by the Spanish Law.

SIXTEENTH.- Arbitration and Jurisdiction.

Unless otherwise agreed in writing, all disputes arising in connection with the present Contract shall be finally settled under the Rules of Arbitration of the _____ by one or more arbitrators appointed in accordance with the said Rules.

Just in case the parties would decide there is no arbitration or it would be declared null, the Courts of Zaragoza (Spain) shall have jurisdiction.

And, as a proof of consent, both parties sign this contract.

---------- ----------

PROVIDER CLIENT

Appendix B – DBE Studio and Contract Creation

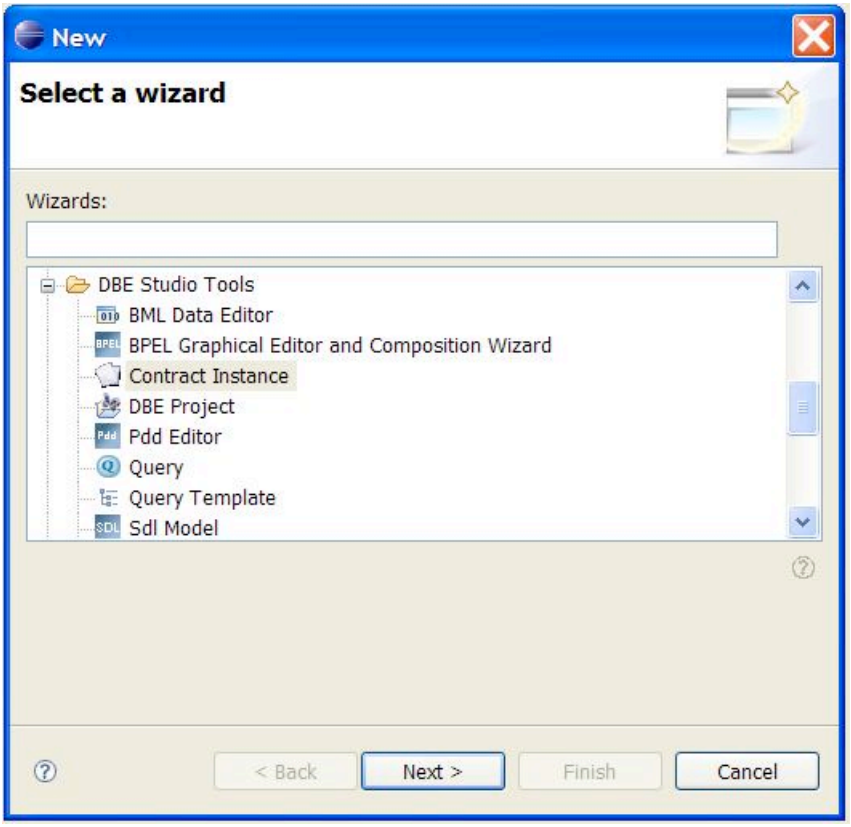
Contract Creation instructions

These Instructions describe how to create a new DBE contract Template and attach it to a DBE service

In DBEStudio

select "contracts" Folder in your DBE Project using the Package Explorer

File>>New >>Other>>DBE Studio Tools >> Contract Instance

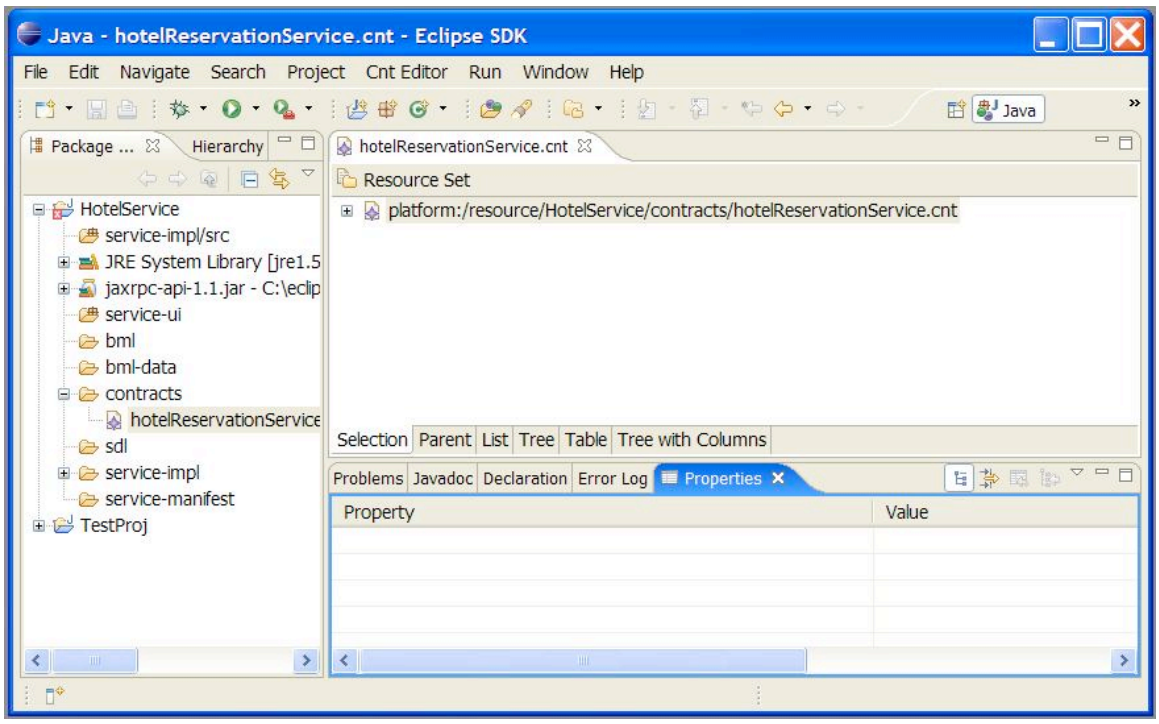


Press next to move to the Contract wizard

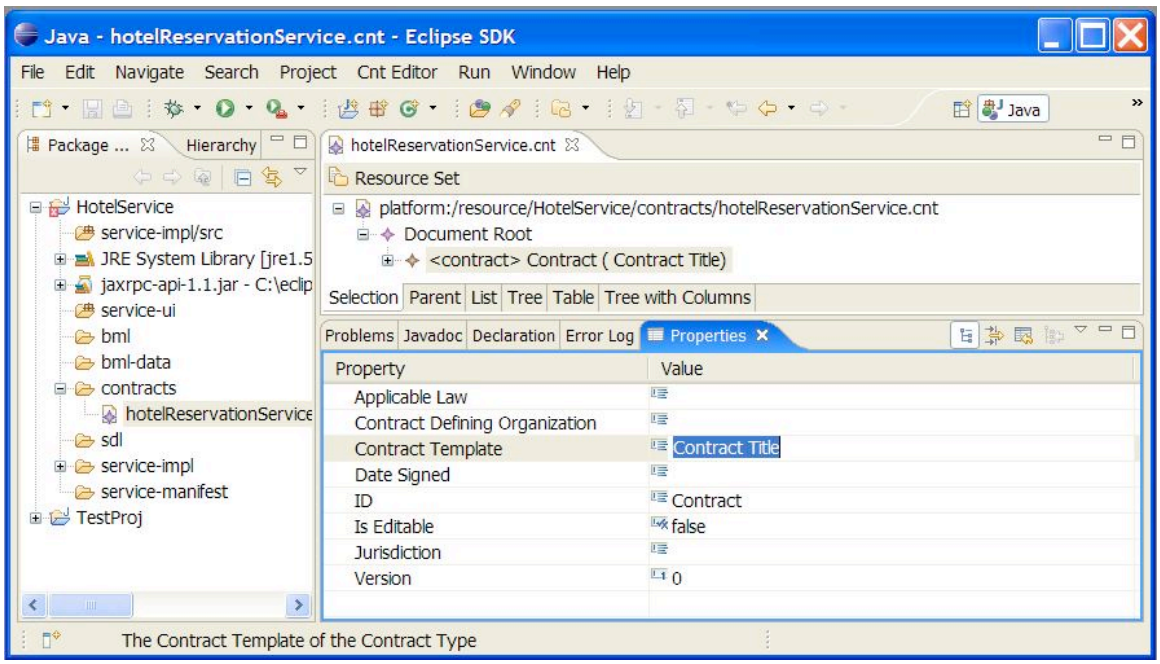
Select Base Contract that new Contract will extend

Set new file name

Press Finish

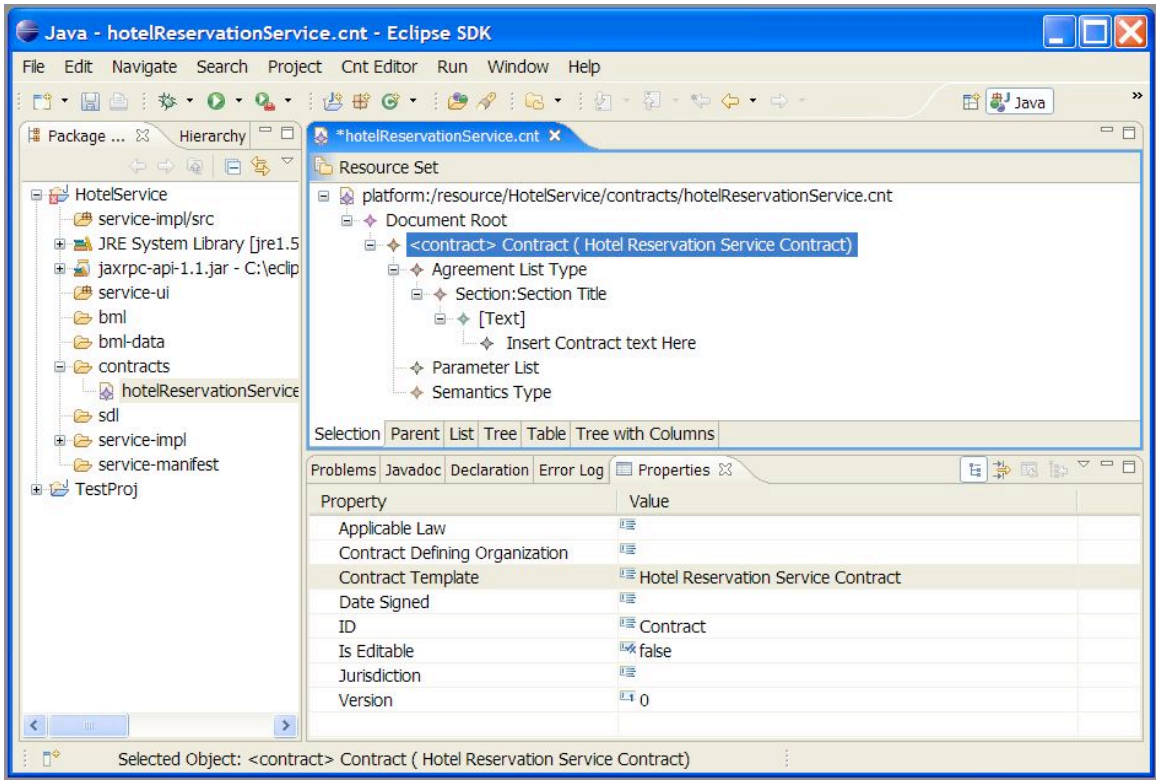


The new contract is now opened in the Contract Creator, a tree based xml editor



By expanding the contract in the Resource window we can view the attributes of the Contract. We can edit the Contract properties by clicking on the Contract Element and editing values in the *Properties window.*

We first replace the text *Contract Title* property *Contract Template* with the name of the contract or contract Template we wish to create. (A contract Template is simply a reusable Contract with editable fields or parties)



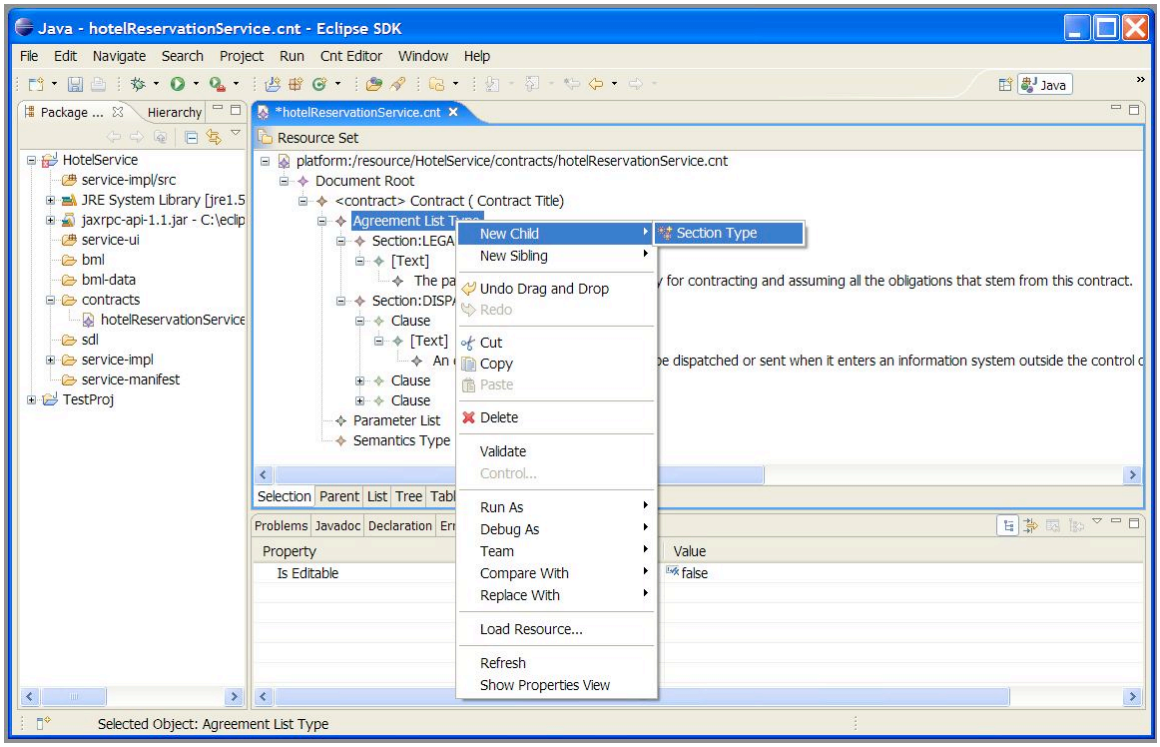
Above shows the Contract with new Title and expanded to show Elements

The default blank contract already contains 3 elements, the Agreement List which holds the text of the contract, the Parameter List which holds any variables or other parameters that you may wish to make machine readable, and the semantics section, [Ref].

Inside the Agreement List there is currently one Section, which in turn holds a Legal Text Element.

A Legal Text Element can hold a number of LegalTextParts, each of which can represent plain text, parameters, or references. By default the Legal Text Element contains a single plain text element containing the text "*Insert Contract text here*". The simplest way to convert a plain text contract to a DBE contract is to simply copy the entire contract into a single Legal Text part. This will however loose all then benefits of the DBE Contract Model.

To convert a plain text Contract into A DBE Contract, simply add new sections and clauses as appropriate, setting titles and text values as required. New Sections, clauses and LegaltextParts are added by right clicking on an Element and selecting *new child* or *new sibling* and the required Element



The difference between a section and a clause is based on the way that legal Documents are typically written, a section will usually have a title and deal with an individual topic. Clauses are used for lesser issues.

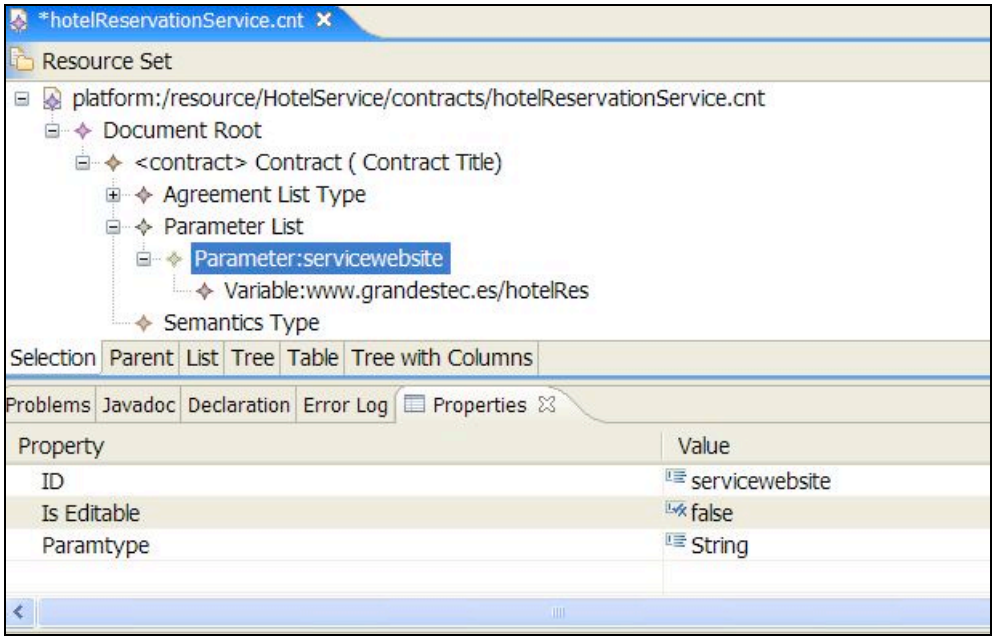
Using parameters

A parameter is either a String date or number that, is likely to differ between different instances of a contract template, or is referenced in several parts of the contract and should be consistent.

Creating the parameter

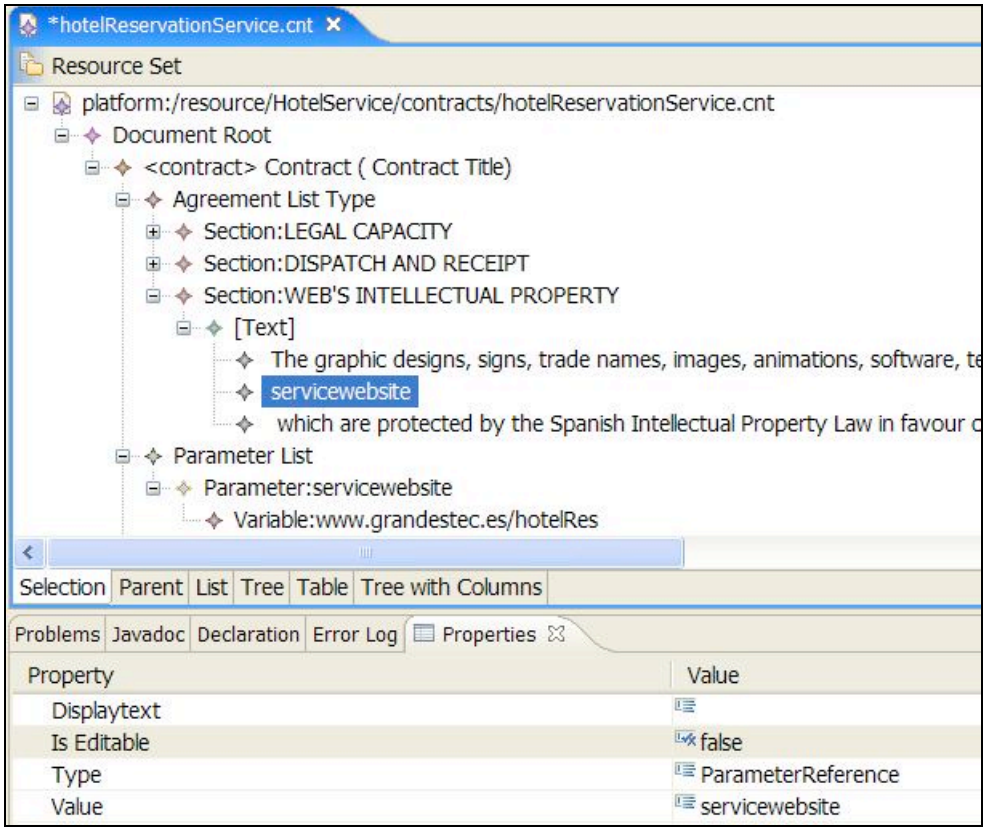
First step is to add the required parameter to the parameter list, by right clicking on the parameter list, and selecting *new child> parameter*

Set the ID of the parameter to a unique value, this is used to reference the parameter. Set the *ParamType* to the required parameter type (String/Integer/Date). Then right click on the parameter and add the corresponding Element to hold the parameter value (Variable/Number/Date). The *value* of this element is the content of the value of the parameter.



In the above example the created parameter is a string with the value www.grandestec.es/hotelRes and the unique identifier is *servicewebsite.*

To use the Parameter in the agreement list we reference it using a LegalTextpart with *Type* set to *ParameterReference.* To add a Legaltextpart to a LegalText Element right click on *[Text]* , select new child> LegalTextPart

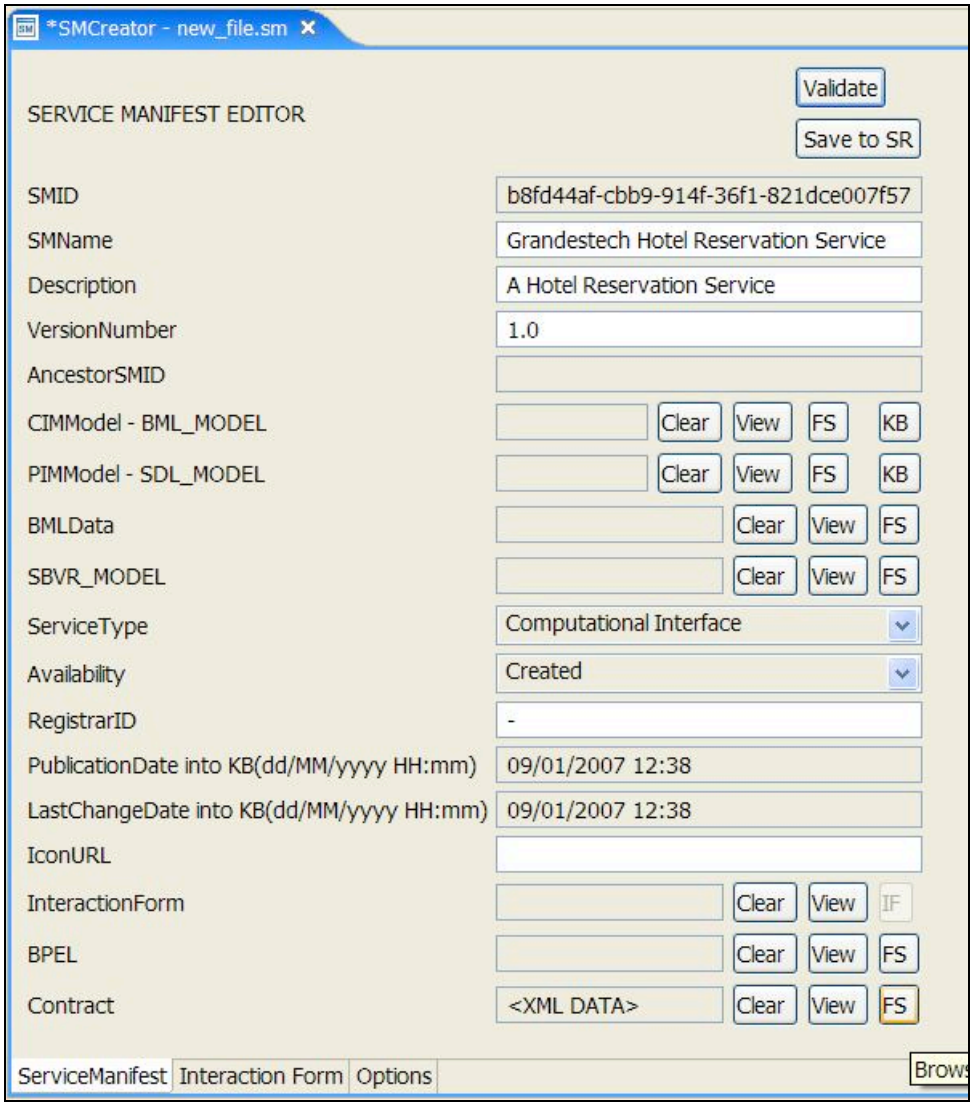


In the above example the ParameterReference Legaltextpart has been added to the legalText (along with two other Text Legaltextparts). The value of the ParameterReference LegalTextpart is set to *servicewebsite*

Other ReferenceTypes

LegalTextparts can also be used to reference other things, such as legal resources, other clauses in the contract, and external Regulatory Databases.

Once the Contract is completed attach the contract to the Service by including it in the Service Manifest. This is only suitable when you wish make the contract or contract template publicly available.



The contract is attached as the last element in the Service Manifest form, by selecting the file from the filesystem. (click “FS” and select contract file from browser)

Appendix C – Internal Report on Governance (M32.5)

The following is a document on DBE Governance produced by LSE as part of WP 32. As the document was in fact an important internal report, it was decided to attach it to this report to indicate the work performed in the work package on this subject.

Workpackage 32 DBE Regulatory Framework
Sub-task B11 Knowledge base of regulatory issues
Internal Report M32.5 **Discussing and acting on DBE Governance Issues: towards a consolidated framework** **Mary Darking, LSE**

Executive Summary

This internal report consolidates research contributions that have been made on DBE governance. These contributions were produced as a result of research carried out for Workpackage 32 DBE Regulatory Framework. Research into the DBE regulatory framework has been particularly useful in bringing questions of general DBE governance into focus. However, governance of the DBE regulatory framework should be considered a related but separate area of governance that requires specific attention due to the techno-legal nature of the framework. These questions cannot be considered in isolation to questions of general DBE governance, since they are fundamentally linked to broader questions of governance concerning the DBE as a whole. For this reason, the decision was taken to extend the remit of this report in order to encompass broader questions of general DBE governance, which included attempts to consolidate the diverse actors involved in sustaining the DBE infrastructure, as well as governance of the regulatory framework.

The first section of the report provides an overview of events and discussions that took place regarding questions of DBE governance and sustainability in the 6 months following the 2nd annual review. Through this narrative of events, the author's own research interventions are explained and contextualised. The texts which comprised these interventions are provided as appendices to this report. The second section

draws on research interviews carried out with SMEs as part of WP32 task B11 and WP27, in which DBE driver SMEs were asked specific questions regarding governance. The third section draws together contributions on governance that have been made to other DBE deliverables. Finally, the fourth section draws on academic articles the author has published on the topic of DBE governance to propose a framework for discussing and acting on DBE governance issues.

1 Introduction

This report forms part of workpackage 32 and corresponds to internal report M32.5, which was added to the description of task B11 in amendment 5 (accepted by the Commission in November 2005).

In the amended description of workpackage 32, the scope of this internal report was originally limited to the identification of governance concerns that may influence current and future SME participation in the DBE. The purpose of the report was to ensure that the task of creating a knowledge base of regulatory issues remained firmly underpinned by SME needs and concerns. On this basis, the report was intended to build upon social science fieldwork that had been carried out with SMEs as part of workpackage 27 Studying Engagement Practices (Deliverable D27.2) and as part of task B11 Knowledge Base of Regulatory Issues in workpackage 32 (Internal Report, M32.2).

Following the 2nd annual review in January 2006, the broader significance of governance to the DBE project and the future sustainability of the DBE infrastructure became a central concern of both project participants and reviewers. For this reason, the scope of work relevant to this internal report was extended so that it might form a social science contribution to governance concerns raised at the 2nd annual review. Outputs and contributions on governance associated with this work were provided throughout the research period due to the pressing nature of sustainability questions faced by the project. The original remit of the report concerning SME participation in the formation of a regulatory framework is met by the contribution made to this deliverable, D32.7 DBE Regulatory Framework Final Deliverable, sections 2.1.5 and 7.

The main part of the research underlying this report was carried out over a 5 month period from January 2006 – May 2006. The scope of research activities was event-driven and the approach action-oriented. In line with this methodological approach, a number of research interventions were made including: attempts to stimulate open debate on sustainability issues through the use of internet-based blogs and discussion forums; and through contributions to sustainability discussions and deliverables. In addition to these interventions, 2 academic articles and a book chapter were written on the topic of DBE governance.

This report is designed to consolidate and contextualise the research contributions and interventions associated with this work. The first section of the report provides an overview of events and discussions concerning governance that have taken place within the project since the 2nd annual review. Actions on governance that were recommended at the 2nd annual review are summarised and the interventions that were made as part of this research to push recommended actions forward are detailed.

Selected texts on which these interventions were based (such as the text from discussion forums and blogs) are listed in the annex of this report and their role described as part of the narrative of events provided in this section.

The second section draws on SME viewpoints regarding governance collected through research interviews carried out for deliverable D27.2 on SME Engagement Practices and deliverable D32.4 Locational Issues for the Implementation of the Knowledge Base. These viewpoints are analysed and key concepts relating to DBE governance are extrapolated.

The third section consolidates contributions that have been made to DBE deliverables as part of this research. The far-reaching nature of DBE sustainability and governance questions meant that the need to frame current thinking on these topics was not just a research issue, but a practical concern regarding the need to develop a context for questioning and debate. By contributing to sustainability discussions and deliverables, providing a contribution to D32.5 and D32.7 DBE Regulatory Framework Final Deliverable, and to the social science final deliverable D18.7, a generalised framework for discussion and debate on governance slowly emerged.

In section 4 this framework is elaborated on through reference to 2 journal articles and a book chapter that the author has written on DBE governance. The theoretical framework for considering governance issues focuses on a definition of digital ecosystems as a form of digital commons. The definition of commons used reveals governance to be a key part in determining the codes of practice and regulatory arrangements applied to individual situations of exchange. Through the development of ideas provided in these academic pieces, a potential theoretical framework for talking about DBE governance emerges and the outline of a taxonomy for exploring governance issues is described.

A note on research method

A common criticism levelled at social science research is that it is not action-oriented and cannot produce research results in a timeframe relevant to practitioners. This criticism is unfounded clearly, since the timeframe of research, the character of research actions and the speed at which results are disseminated are purely questions of design. For example, this research was designed using an action research approach. The first reason for selecting this approach was that it afforded transparency to the fact that the researcher was explicitly employed to study governance and in some way influence or contribute to the construction of a governance framework. This context would have made straightforward participant/observer research problematic since the researcher was required to influence events as part of her role. The second reason was that an action research method allowed the researcher to respond to events, as they took place and enabled her contributions to remain relevant at all times. According to action research methodology, fieldwork was therefore carried out using cycles of reflection and action with the dual aim of making a beneficial intervention in the process at stake and of making a research contribution to governance as a political and organisational phenomenon (Fitzgerald and Kenny, 2003).

One of the action-oriented approaches used was writing web logs and generally initiating discussions in the public domain via the project web site. These

interventions were designed to support an objective to make communication and decision-making more visible to those outside the project's existing organisational boundary. This objective was shaped by feedback that had been received from SMEs, who had been sought out to engage in the project, but who had not been granted access to the chief means of decision-making and communication used by the project, such as project meetings and mailing lists (Darking and Whitley, 2005).

2 Discussions, events and research actions relevant to the construction of DBE governance framework

This section provides an account of the research actions carried out by the author of this report. These actions are set in the context of significant discussions and events concerning governance that took during the research period.

Until the 2nd annual review of the DBE project, which took place Tampere in January 2006, there had been no open discussion concerning governance and the DBE. Ideas regarding governance and sustainability had been raised at business domain meetings and a deliverable on sustainability was produced by 2 partners in which a proposal for a 'DBE foundation' was put forward. However, debate on these topics had not been opened out to the project membership as a whole and, crucially, agreement on these plans had not been reached at project management level.

These two factors were clearly in evidence at the annual review where it was noted in the reviewers report that there was obvious conflict within the consortium around sustainability and governance issues (p.42, Report of the DBE 2nd annual review). There was criticism that open consensus had not been sought, that sustainability had not been appraised from all stakeholder perspectives and that important aspects of governance such as codes of conduct and a bill of rights had not been considered.

The reviewers were also critical of these two aspects in the review report, which was circulated to the project membership on 28th February 2006. With regard to governance 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).

Prior to the DBE 2nd annual review, an attempt was made in December 2005 by members of the project management executive board (PMEB), to open out discussions surrounding governance. An open discussion thread was started by the Project Manager on the DBE website. The first or 'seed' posting exposed a difference of opinion that had occurred at project management level. Following the annual review, this thread was eventually removed from the website in an attempt to encourage open contributions from project partners.

Immediately after the annual review, the researcher acted on proposals that had come out of a general discussion held at the end of the review process, producing a number of draft e-mails and discussion postings designed to initiate an open consultation process. These draft documents were circulated to members of the consortium and feedback was sought. One of the partners consulted suggested that if the push to create an open forum came from a partner who had received favourable feedback at the review, the initiative might serve to alienate parties who had not, thus compounding existing divisions. On the basis of this feedback the researcher abandoned these efforts and instead worked together with the project partner responsible for web site design and construction in order to instigate an open consultation process. A method based on document version control was designed and posted to the DBE web site discussion forum on 2nd February 2006 http://www.digital-ecosystem.org/Forums/DBE%20Governance%20-%20process. Through this process it was hoped that documents contributing to a framework for governance could be published and revised using an open and transparent process, therefore reducing the level of disruption that hidden agendas had so far caused. However, despite promoting the initiative using project mailing lists, there was not enough support for the process from the project membership, evident from the low number of responses that the initial posting elicited.

Feedback regarding this process indicated a number of reasons why it had not been successful. One criticism was that the process was too regimented and that it focused on bureaucratic instead of community oriented aspects of consensus or constitution building. Other feedback described the standard of language used to describe the process as being 'too good' and it was claimed that individuals had been put off contributing to the open forums because they could not match this standard. There was also feedback to say that the idea of governance was not adequately understood and the issues associated with governance had not been sufficiently opened up to allow participation. Underlying this feedback was a general recognition that the atmosphere within the project at this point in time was still very tense and contributing to these discussions was seen as a political gesture that carried with it personal risks. In this climate of political unease, there were more disincentives than incentives to engaging in open dialogue.

This example and the issues raised by the 'governance process' initiative underlined the difficulties associated with open agenda setting. In order to address these difficulties, the researcher started a web log on governance together with the regional catalyst for the West Midlands http://soagovernance.blogspot.com/2006/02/welcome-to-soa-governance.html The first entry, written by the researcher, was designed to emphasise the difficult group dynamics that underlie processes where the appointment of authority is in question (appendix 1). The second entry was a case study based on a report written by the Working Group on Internet Governance (WGIG) who had been commended by their appointees (the United Nations) on the exceptionally open and inclusive methods of collaborative communication and decision-making the group had put in place (appendix 2).

The concertation meeting organised by the Commission in early February 2006

provided a good opportunity for DBE project partners to see sustainability and governance issues in the context of the cluster of projects that form the Innovation Ecosystems Initiative (IEI) although internally, tensions within the DBE project were still running high. Direct contact with other project participants facilitated inter-project networking and brought home the reality that the future of digital ecosystems lay in the hands of these projects and not the DBE project. At the meeting it became clear that the DBE Project Officer wanted the open consultation process initiated by the DBE to incorporate all members of the IEI cluster of projects. Given the difficulties that had been experienced with respect to trying to achieve a basic level of open dialogue within the DBE, this constituted a serious challenge. In addition, individual projects were not used to working together to create joint forums in this way. Subsequent to the concertation meeting it was clear that, from a management perspective, seeking out members of other projects and asking for their collaboration brought to the fore issues of trust. Given the competitive climate that surrounds European Commission funding and the significance that partnering and alliance forming holds in that context, perhaps this was not surprising. However, what was clear was that inter-project communication would not just happen 'naturally', but would require a robust framework for communication and participation if barriers presented by lack of trust were to be overcome.

Following the concertation meeting, a business domain meeting was held in London, in March 2006. The meeting represented the first occasion since the annual review that members of the business domain had sat down with one another. Fundamental rifts within the PMEB were still in evidence, but attention was now focused on the recommendations that had been made in the report of the 2nd annual review that by this time was available to the consortium. Following the commission's recommendation that sustainability and governance should be treated separately, the researcher provided a social science contribution at this meeting in the form of a presentation on governance that attempted to underline this distinction. Using the WGIG case as a basis for discussion, she emphasised how questions of mandate, representation and membership were key factors in establishing a strong basis for communication and debate, as were the need to develop shared definitions, in particular, of governance. On this basis, the researcher sought to obtain a mandate in the form of agreement from all meeting participants that a wholehearted effort should be made to establish an open consultation process. Despite this attempt on the part of the researcher and the clear and numerous recommendations in the 2nd annual review report that an open consultation process should be started, there was still resistance. Nonetheless a form of mandate was achieved and it was agreed that 2 new discussion threads would be started: a 'who we are' thread designed as a means to make individual project participants visible to the public domain http://www.digital-ecosystem.org/Forums/WhoWeAre ; and a thread that aimed to open out internal meetings and discussions regarding sustainability, and provide 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.

Another significant outcome of the business domain meeting was that the focus of discussion shifted from governance to sustainability. The author assisted in this process by, at the request of the meeting, providing a short presentation on

governance that served to emphasise this distinction. As had often proved to be the case within the business domain, tensions between participants were reduced through focus on regional and SME concerns. From a stakeholder perspective, these were not the only concerns represented by meeting participants, industrial and research partners were present too. However, the interests of these participants were not discussed and as a consequence the subject of exploitation therefore remained obscure. The realignment of business domain interests away from governance toward the sustainability of regional and SME engagement was reflected in the work that went into planning how the rejected sustainability deliverable would be re-written. The author was asked to contribute a section defining sustainability and describing how to carry out a stakeholder analysis. Once finished, with its detailed contributions from each of the DBE regions describing their sustainability requirements and plans, the deliverable constituted an important part of gathering stakeholder requirements and concerns, particularly at the regional level.

Political conditions within the project inhibited efforts to generate an open consultation process capable of drawing in the full scope of stakeholders with a shared interest in ecosystem governance. Therefore, an alternative approach to gathering data for the stakeholder analysis was required. Since the position of the regions and SMEs was captured as part of the re-submitted sustainability deliverable, the researcher decided to contact the computing domain and prompt a sustainability discussion among the developers. This research intervention was motivated by the following recommendation from the DBE 2nd Annual Review Report:

> "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, the researcher compiled a series of questions that she e-mailed to each computing partner (appendix 3). The focus of these questions was on obtaining computing partners' opinions of how sustainability - in the sense of an actively maintained and developing codebase - could be achieved. All but one computing partner replied to the questions and from these responses the researcher formulated a discussion paper that she circulated among the developers (appendix 4). In order to follow up on this consultation the researcher attended 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. At the suggestions of the researcher, 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 (appendix 5). In order to move these decisions forward, the researcher designed and oversaw a nominations process by which a developer was nominated to each role respectively for a trial period of 2 months. By the time the trial period came to an end, the researcher was no longer working on the DBE project.

The following table lists the events and research actions described in this section in chronological order. It also provides a list of documents that each intervention required. The appendix to this report contains a selection of these documents, listed accorded to the number indicated in the right-hand column.

Table of events and research actions

Date	Events and research interventions	Research interventions - documents	Appendix Number
29.12.05	Open consultation discussion thread started by project manager		
19.01.06	DBE 2nd Annual review		
23.01.06	Annual review web log and discussion postings	Draft postings	
24.01.06	Governance process posting	Governance process postings	
27.02.06	Governance web log started – entry 1 Governance web log – entry 2		1 2
09.02.06	Concertation meeting		
01.03.06	Business domain meeting	Presentation	
06.03.06	'Who we are' discussion thread started	Discussion thread seed posting	
27.03.06	Sustainability discussion thread started		
31.03.06	Consultation with computing domain begins	Short questionnaire	3
27.04.06	Computing domain discussion agenda	Discussion agenda document	4
04.05.06	Computing domain meeting	Presentation	
09.05.06	Computing domain meeting notes sent to mailing list	Meeting notes	5
04.07.06	Leadership election process designed	E-mails to developers	

	and overseen		

This section has dwelt on internal project related experiences that played a role in the development of governance issues and debates. The following section draws on an alternative source of data relevant to DBE governance, focussing specifically on DBE driver SMEs and their understanding of governance and the regulatory framework.

3 SME views on the question of DBE governance

This section will look at aspects of governance identified by SMEs relevant to their continued involvement and participation in digital ecosystems. The research data on which this section draws is taken from research interviews carried out with SMEs as part of task B11 and reported in deliverable D32.4 and internal report M32.2. It also draws on previous research carried out on SME engagement as part of WP27, reported on in deliverable D27.2.

Many of the questions that SMEs raised with respect to governance were extremely relevant to the internal processes detailed in the previous section. The focus of the SMEs was on if and when the DBE would be consolidated as a legal entity or organisation that would exist beyond the end of the funded life of the project. They were keen to know what kind of organisation would be created and whether the legal identity would be recognised at EU level and in other world economic blocks. One of the benefits of the DBE regulatory framework is that it has the potential to lessen some of the legal barriers that prevent SMEs from internationalising their business. A strong DBE identity, constituted in such a way as to overcome such barriers and harmonise the differing, sometimes contradictory regulations relating to business law in EU member states was seen by SMEs as a potential benefit of associating themselves and engaging with the DBE (Gow et al, 2005:32). As well as the legal benefits of consolidation, SMEs were also concerned about privacy and security issues within the DBE and perceived a legally defined DBE entity as capable of somehow underwriting data transfer processes.

However, SMEs were quick to foresee the difficulties inherent in establishing a governance framework and constitution sufficiently flexible and extensible to account for the potential growth and diversity of the DBE network. Whilst SMEs could see a clear link between sustainability, governance and the legal constituency of the DBE under either European, national or local law, they also recognised that it was hard to envisage how a single organisational or legal entity could account for all aspects of the DBE: from security; to the regulatory framework; to associations with standards bodies. For example, the exponential growth of contracts and legal bindings implied by carrying out business via the DBE appeared to one SME as "something that would benefit from a common framework" (Gow et al, 2005:14). However, one of the inherent advantages of SMEs in the market for software compared to larger companies is their agility. Whilst consolidated legal frameworks might lessen some of the risks associated with entering into contracts, SMEs were keen not to lose the flexibility that comes from entering into business on the basis of informal agreements and 'handshakes'. Whilst recognised as not being sufficient for underwriting larger contracts, SMEs nonetheless depend on this kind of business practice to speed up

their customer response time .

In addition to acknowledging a range of formal and informal contractual arrangements, another important consideration for SMEs' agility was their capacity to provide technological solutions within a time frame designed to suit their clients. An important factor within this was the use of open source licensing. By having access to source code and therefore the ability to design and implement technological solutions as and when required, small software houses are able to fix bugs and develop integration schema according to their own timeframes. With proprietary technologies, especially those produced by large technology companies, the SMEs are forced to wait for the next version release date for a system and even then, they cannot guarantee that the specific bug or integration issues they are interested in will have been addressed. Bypassing these limitations allows them to remain customer-oriented, pushing out solutions according to their customers' timeframes (D27.2: p45).

For the open source SMEs, sharing knowledge and source code is not only a question of licensing. However, with respect to continued engagement, concerns were expressed about the possibility that larger companies might attempt to 'carry off' DBE developments into the proprietary domain. One SME related this concern to the constitution and balance of interests represented by a potential DBE entity "…it's a sensitive issue because you can lose people at that point if there's suddenly a board full of IBM people or people who aren't traditionally seen as good community members" (M32.2 :p.21). This prospect was a clear disincentive for SMEs to dedicate their limited time to making contributions to code development (D27.2:p.52). Rather than simply a question of licensing, concerns were also apparent with respect to the degree to which the DBE was actually committed to open code development and knowledge sharing. Driver SMEs were not given access to DBE deliverables or communications and it was not until fairly late into the project that developer mailing lists and forums were fully opened out.

In terms of styles of governance communication and organisation, SMEs drew attention to the variety of business models and practices that they mobilise collectively and which constitute another inherent advantage they have over larger companies. Focussing too intently on a single organisational model or legal constitution could have the effect of "shutting out" a group of people or an area of expertise (M32.2:p.16). As such, reflecting the diversity and flexibility of SMEs within governance arrangements emerged as a key priority.

4 Towards a categorisation of SME concerns

The internal processes involved in developing an approach to governance described in section 1 and the perceptions of SMEs described in section 2 both provide important insights into what is perceived as important in the context of developing a DBE governance framework. In this section, these 2 areas are considered in relation to one another and in relation to the way that different methodologies can hold consequences for how governance research and consultation is framed.

From the narrative of events described in section 1 it is clear that some stakeholders

have more influence than others in the debate on governance. In situations where this is the case, a multi-stakeholder consultation and analysis can prove extremely important in terms of bringing voices and opinions into a process in which they have been marginalised. In this sense, building up a multi-stakeholder picture of digital ecosystems is directly tied to the question of consultation. A multi-stakeholder analysis is not simply a process of naming those groups and individuals who have a current or future interest in digital ecosystems. It is a question of speaking to stakeholders and encouraging them to express their priorities and concerns with respect to engagement and participation in digital ecosystems. It should be made absolutely clear that speaking on behalf of stakeholders or surmising what their opinions may or may not be, instead of engaging them in consultation, does not constitute a valid contribution to a stakeholder analysis. Given the SME-oriented focus of the DBE, particular attention should be given with respect to feedback on DBE governance provided by SMEs. By their nature, SMEs are extremely diverse and the tendency to generalise their behaviours in lieu of a due process of consultation is strong. This is particularly true where SME opinions hold a political weight, as they do in those European projects designed around the Lisbon objectives.

A second point to consider about multi-stakeholder analyses is that there is a tendency only to include human stakeholders where, in effect, organisational, regulatory, constitutional, infrastructural and technological priorities can also be important. For example, the regulatory framework for digital ecosystems carries with it some specific governance requirements that will influence the way that ecosystem based e-business interactions will be carried out. Putting technological concerns before human concerns can prove controversial, however, once again the issue is one of balancing interests and in each instance, remaining true to an agreed set of constitutional principles or priorities can constructively underpin processes of decision-making or debate.

Combining a taxonomical approach with multi-stakeholder consultation and analysis provides an interesting balance between stakeholders and the broader principles at stake. As researchers in WP32 have proven, generating a taxonomical classification of dimensions and building blocks, which are then qualified or tested through stakeholder consultation, can produce interesting results. Maintaining the process of iteration between classification and consultation ensures that any frameworks applied evolve according to the needs and aims of stakeholders.

Looking at the events described in section 1 and the views of SMEs expressed in section 2 a number of key observations can be made that are sufficiently robust to constitute a preliminary iteration of core categories according to which concepts relating to DBE governance can be classified.

From the events described in section 1, the fundamental importance of a shared strategic vision comes to the fore. Consensus building is a core aspect of community building and it is clear that hidden agendas relating to future strategic directions can have a damaging effect on a nascent community or group, particularly where those agendas involve changes to core values. From the DBE experience, key concepts can be derived from this experience, such as the importance of consensus-driven constitution building, in which stakeholders develop core values and strategic

priorities together. Consensus building is a slow process and needs to be inclusive if a true balance of interests between stakeholders of varying standing and influence are to be genuinely part of the process. Particular attention needs to be paid during the process of drafting governance principles and codes of practice to ensure that straightforward opportunism of those that were 'there at the start' is not allowed to take precedence over a framework born of a genuine balance of interests. Simply imposing a regime or model without undertaking consensus-building activities carries with it risks and can only be successful where substantial trust exists between participants. It is important that the values and priorities developed as a result of consensus building are constitutionally embedded in documents such as a bill of rights or manifesto since regular reference to these can prevent fundamental rifts from recurring in the future. For example, if a digital ecosystem is to be safeguarded from domination by either a single powerful actor or a cartel of such actors, then a principle of non-domination needs to be instated constitutionally and a policy for adhering to this principle needs to be put in place.

A valid and respected process of decision-making requires a strong and inclusive framework of communication. On this point, the admittance of SMEs to discussions concerning the future of DBE governance plans is a fundamental requirement of future sustainability. So far the viewpoints of SMEs have been included through a process of consultation and engagement carried out by DBE regional catalysts and social science researchers. However, for knowledge sharing to occur on an equal basis, a robust adherence to open and transparent decision-making processes that are inclusive and follow due process are essential to the stability and credibility of the DBE constituency.

Questions of transparency are further underlined in the DBE 2nd annual review report in the context of exploitation plans of industrial partners.

> "As a consequence [of the conflict in the consortium around sustainability and governance issues] there is no clear commitment from the industrial partners in any future exploitation activity, either at the basic code technology level, or at the scientific level, or at the business ecosystem level" (p.42)

Questions of transparency and industrial exploitation become confused where exploitation is not focused upon developing the exploitation of a technology developed by a project, but on a form of 'project brokering' that appears to be taking place at a level above the individual project. Large industrial companies are traditionally understood to be in fierce competition with one another and where questions of one company encroaching on another's market share are concerned this is indeed the case. However, in the field of public funded projects, there are other ways that companies can serve their own interests and profitably collaborate with one another without market share becoming an issue. By playing the role of 'project broker' industrial partners can carry out strategic alliance formation where access to individual project outputs and resources are provided as a favour which it is expected, will be returned. In the context of European Commission funded research, the lack of transparency surrounding this form of project exploitation creates problems both for the commission and for project leaders who are not affiliated to large corporate

companies.

DBE research on SME engagement practices concluded that credibility and attunement were central to the process of engagement in each of the 3 DBE regions. These concepts, together with the concept of trust identified as fundamental to the development of the regulatory framework, are extremely significant dimensions not only to engagement and the regulatory framework respectively, but also to governance and sustainability. Recognising that trust and credibility are context and stakeholder specific has been a key contribution of DBE social science research. These findings underline the need for allowing diverse regional governance models to emerge that are attuned to the specific priorities of regional stakeholders. Light coordination and the potential for alliance formation between regions and regional bodies presents opportunities for knowledge sharing and collaboration without the burden of centralised management mechanisms or priority setting.

From the experience of the DBE Developer group it seems lightweight organisation and synchronisation are more suited to the development of flexible, distributed infrastructure than rigid, centralised management structures. Maintaining the open source ethos that if a component is useful it will survive, if it is not it will die out, keeps the development of the infrastructure closely bound to movements in software development, the interests of open source developers and the business viability of proposed developments. These priorities were of greater interest to DBE developers than the need for association, alliance formation or organisational consolidation. However, particularly with respect to standards and the open source movement, alliance forming could play a key part in DBE sustainability. The difficulty lies in ensuring that alliance formation does not compromise constitutional values, otherwise these activities could lead to fundamental rifts.

Clearly, to participating SMEs, knowledge sharing and technology licensing were key concerns. Being able to fully participate in DBE development activities as well as other areas of communication not only increases the credibility of the DBE in the eyes of SMEs, but ensures that the infrastructure reflects their needs and requirements. One of the unique qualities that the DBE has to offer is that it allows SMEs to define a technological and business environment according to their own requirements. For this quality to be fully realised, the regulatory environment of the DBE needs to actively protect the interests of SMEs and work to prevent those interests being overtaken or monopolised by larger players.

One of the architectural principles of the DBE is that technological lock-in at the level of hardware, languages, standards or protocols should be eradicated as far as possible, or at least, kept to an absolute minimum. Therefore, changes in technology development methodologies and approaches that would ordinarily undermine other forms of infrastructure should, in principle, be embraced by ecosystem communities. For this to be possible, governance principles and codes of practice need to remain ‘technology agnostic’ and alliance formation undertaken in the knowledge that social relationships can exhibit the same level of lock-in as technological ones.

5 Contributions on governance made to other DBE deliverables

As the project entered its final year, the far-reaching implications of governance were evident to most areas of research being undertaken in relation to the future sustainability of the DBE. From the evolutionary environment to the development of the knowledge base of regulatory issues, governance research poses important questions regarding power and influence within the DBE. This section contains two contributions that were made to DBE deliverables in order to address such questions. The first contribution comes from the revised DBE deliverable on sustainability D34.5.2; the second comes from WP32 deliverable D32.5 on the knowledge base of regulatory issues. Contributions have also been made to the final WP32 deliverable; the final social science deliverable D18.7; and the final sustainability deliverable D34.7.

Social science contribution to D34.5 Sustainability deliverable

Understanding the difference between sustainability and governance

As a term, the word sustainability originates from the field of natural resource management. In this field, there is recognition that some kinds of resources are used by many individuals 'in common'. An example could be a water supply or perhaps an area of land on which a number of people graze animals. In these scenarios, the lake or field is viewed as a resource system and the water or grass that individuals appropriate from it are described as resource units (Ostrom, 1990). In these examples, it is recognised that if the overall quality of a resource system is to be maintained, then individuals cannot make excessive demands on it. For example, if one individual chooses to graze a large number of animals on a piece of common land in order to benefit themselves, then the overall quality of the land will deteriorate, to the detriment of the others who have need of it. Hardin (1968) refers to this particular set of circumstances as 'the tragedy of the commons', where individuals think chiefly of their own concerns, disregarding the impact their needs may have on others or on the long term sustainability of the resource system.

In this particular example, sustainability refers to the need to oversee situations where resource systems can become overcrowded or overused to the extent that their ability to produce resource units is put in jeopardy. In the past, two schools of thought have dominated the way in which 'common pool resources' such as these have been viewed. The first school of thought argues that only the state can manage these kinds of resources in a fair and responsible manner and the second argues that management of such resources is best carried out by private sector organisations. What is common between these schools of thought is that the option that stakeholders themselves could self-organise and take control of the situation as opposed to *needing* an external body to do organise them on their behalf is rarely considered. This new school of thought is referred to as 'collective action' and it is an approach that is gaining credibility both on the ground and in policy circles.

In principle, therefore, 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. Governance differs from the more familiar term - management - because it implies a model of organisation that is negotiated and consensually agreed upon by

stakeholders. This contrasts with the concept of management, which is principally concerned with top-down methods of co-ordinating behaviour within the bounds of a single organisational entity. The term governance therefore tends to be used in situations where a bi-lateral approach to organisation applies i.e. where a number of otherwise autonomous individuals and organisations are required to act collectively. In these situations, it would be inappropriate to impose an over-arching management body or structure since stakeholders cannot easily be made subordinate to each other.

An interesting question surrounding the sustainability of the DBE is that, unlike the common pool resources described above, the DBE infrastructure does not diminish with use, in fact it expands. It is conceivable that capacity of the physical infrastructure could be exceeded and overuse in this sense could occur. However, overall, the more business models that are described within the infrastructure the more connections and combinations will be possible which should enhance the usability of the infrastructure. Unlike a natural resource, therefore, instead of trying to limit appropriation to ensure sustainability, in the case of the DBE, there are advantages to allowing open access to the infrastructure and encouraging use. In this sense, the DBE in its current form is more like a public good than a private good or a common pool resource, as described above. As with any public good, the key question then becomes how to organise and motivate stakeholders to share responsibility for maintenance and provision. In order to understand what kind of motivations exist, the resource units that the DBE is capable of producing need to be understood from a multi-stakeholder perspective. Different users will derive different benefits from using or engaging with the infrastructure and it is these interests and motivations that need to be harnessed. At this stage, it remains difficult to define exactly what the core resource unit that the DBE provides is. Ideally, it would be quantified as a 'tangible business benefit to an SME' since this has been the aim of the development process. However, since the infrastructure is still in development, this measure cannot be empirically tested.

Useful perspectives from social science work

The following section draws upon work that has been carried out by social science researchers in the DBE in which the issue of DBE sustainability has been addressed. Firstly, it describes the concept of multi-stakeholder analysis as it was used by Mary Darking as part of her socio-technical analysis of SME engagement in WP27. Secondly, it draws upon the work of Antonella Passani and her analysis of social networks, which uses the concept of social capital to explore key relationships formed by regional catalysts. Thirdly, it documents important insights from the work of Evangelia Berdou on the sustainability of open source projects are considered in relation to the embedded nature or knowledge and socio-economic relationships. Finally, it draws upon recent empirical work carried out by Panagiota Pstatsou and Silvia Elaluf-Calderwood that continues to refine and develop the concept of trust in relation to the DBE.

Multi-stakeholder analysis

As a large scale infrastructure, the DBE has the potential to mean lots of different things to lots of different people. In order to understand the diverse motivations that exist for engaging with an infrastructure and potentially sharing responsibility for its provision, a multi-stakeholder approach offers an effective way of ascertaining

diverse requirements and motivations. The table below is taken from a paper written by Whitley and Pouloudi[24] that takes an interpretive view of stakeholder analysis. The interpretive approach places particularly strong emphasis on the idea that all stakeholders will have there own world view and will see things according to their own perspective. The approach that Whitley and Pouloudi have developed is designed to be of particular relevance to difficult or 'entangled' situations involving complex information systems.

Table showing principles of stakeholder behaviour and their implications for stakeholder identification and analysis taken from Whitley and Pouloudi[25]

Principles of stakeholder behaviour	Implications for stakeholder identification
• The set and number of stakeholders are context and time dependent	• Set of identified stakeholders should reflect the context • Set of identified stakeholders should be reviewed over time
• Stakeholders are inter-related	• Consider how stakeholders are linked • Adopt a long term perspective
3. A stakeholder's role can change over time	• Study how roles and perceptions change
Stakeholders may have multiple roles	
Different stakeholders may have different perspectives, values and wishes	• Acknowledge diversity of interests and values • There are different versions of who the stakeholders are (depending on whose stakeholder viewpoint is adopted)
The viewpoints and wishes of stakeholders may change over time	• Viewpoints and wishes should be reviewed over time
Stakeholders may be unable to serve their	• Acknowledge the interests

[24] Whitley & Pouloudi, 2006 (in press)
[25] Whitley & Pouloudi, 2006 (in press)

interests or realise their wishes	attributed to the stakeholders by others
Stakeholders have hidden agendas	• Explore why the particular stakeholder interests are reported
	• Consider conflicts and power issues

In addition to these considerations, there are a number of authors who argue that technology and technological components should also be taken into account in stakeholder analysis. That is to say that whilst technologies do not have the same status as people within a stakeholder process, they are nonetheless capable of making implicit demands on a situation. Therefore, it is not only the requirements of people that need to be considered, but also the requirements of both technical components and the infrastructure as a whole. This approach can sound like a diluted version of technological determinism where technologies rather than people are seen to dictate the course of human and social development. However, socio-technical approaches to stakeholder analysis do not take this line. Instead, they argue that the degree to which human or technological concerns dictate what happens can vary and is completely situation dependent.

In the context of the DBE, this approach could help understand how different stakeholders derive value from engaging with different aspects of the DBE as both a social and technological phenomena. Understanding how value is derived and understood from a stakeholder perspective could aid the process of understanding what might motivate different stakeholders to play a role in the provision of the DBE infrastructure or in maintaining key relationships. At this stage in the DBE's development, both of these aspects of sustainability are at a critical stage and careful attention needs to be given to securing the short to mid-term future of key relationships.

Social networks and social capital

Understanding the nature of key relationships within the DBE has been a central aspect of research carried out by CENSIS. Empirical work carried out in the regions showed how each individual region is presented with different opportunities for drawing new stakeholders into the DBE. The strategic effort of regional catalysts in carefully building these relationships is noted in each of Censis' deliverables but what is also noted is that regional catalysts were most successful where they focused on linking the aims of the DBE up to existing local and historical networks. In this sense, the DBE provided a means of reinforcing and substantiating existing socio-economic relationships in the region. When seeking to understand motivations it is clear that the regional catalysts were pursuing a strategic goal that the DBE - as a policy instrument - set for them. However, for the SMEs and other significant actors that the regional catalysts enrolled there were other motivations.

Throughout the time that Censis carried out empirical work in the regions it should be remembered the DBE was in pre-prototype form. Therefore the ultimate end that should motivate SMEs to participate in the DBE i.e. that the DBE would offer them significant business opportunities and advantages through pan-European collaboration and access to new technology- was not yet a reality. Nonetheless, the regional catalysts did manage to enlist SMEs and other influential regional actors to become involved and this became a central research question for CENSIS. From the SME viewpoint, CENSIS noted that for most small companies, the advantage of becoming involved in the DBE was that it offered access to the DBE as a *social* network. In particular, it allowed them to become part of a network that offered access to people and organisations that would have been inaccessible to them otherwise. Censis used the concept of social capital to explain these dynamics and provided a very interesting analysis of SME behaviour based on this concept. Understanding the diverse range of social advantages that can be derived from a situation was a key insight into DBE activities.

This perspective has the potential to offer more insights if it is used in the context of sustainability discussions, particularly in relation to short term sustainability actions at which time the DBE infrastructure will still be unlikely that the DBE will be able to demonstrate conclusive business advantages for SMEs. One area that Censis identify as holding the potential to consolidate existing social networks is training, but there again, a coherent body of DBE training material is difficult to produce while the infrastructure is till in development. The power of the DBE as a policy object - as something that was instrumentally set up to activate and maintain a particular network of organisations - should remain in the short to mid-term, but if the DBE is to attain genuine self-sustainability, in the long term, it will need to be able to operate independently of central funds. However, as the following two sets of research findings show, this option cannot form the immediate focus of sustainability planning until the platform has achieved a basic operational level of success and the value of the DBE to its stakeholders has been realised, particularly in the eyes of open source developers and SMEs.

Open source

The particular circumstances of the DBE are such that finding relevant cases in any body of research is a challenge and in the area of open source this is certainly true. In deliverable 18.3 written by Evangelia Berdou, the author showed that currently there is a bias towards case studies that only feature volunteer communities and focus on cultural explanations for developer motivations such as reputation or licensing arrangements. Berdou's work emphasises that whilst volunteer communities do exist, key relationships that underpin communities are nonetheless embedded in existing social structures. By extension Berdou argues that the concept of volunteer contributor in its purist sense perhaps does not exist. From her empirical work Berdou has found that volunteers do benefit financially from their contribution and companies with stakes in a particular development frequently hire contributors to hack on parts of the project they are most interested in. These are important to considerations to bear in mind in the DBE's quest to attract volunteer contributors and create a sustainable open source developer community.

Two important theoretical considerations that Berdou identifies in relation to open source communities are the embededness of knowledge and of socio-economic

relations. The word embededness is used to capture the reality that the characteristics of open source communities are not necessarily available for study in a simple objective manner, but require an understanding of circumstance, practices and community identity. In relation to knowledge, two key issues that Berdou identifies are the organisation of software development work and the way knowledge is shared in open source communities. Communities and codebases tend to grow in parallel with contributors experiencing a high sense of shared ownership and responsibility. In terms of the way knowledge is organised, tasks are clearly modularised and often involve processes that are highly parallel.

Other actions that might also encourage the formation of a sustainable developer community that Berdou identifies are: good documentation and channels for online support and communication and connecting the project to the existing overlapping networks of relations between companies and communities which can be achieved through prioritising the involvement of companies with a proven record in open source development. She also emphasise the need to fostering collaborative relations between volunteer communities, businesses and public institutions and sees these relations as crucial for sustainability. Finally, she recommends that connecting the DBE to large scale public implementations of open source, especially government to business initiatives might also be a valuable route to pursue.

Critical issues for DBE sustainability and the role of trust

Some of the latest empirical research that has been carried out with SMEs is documented in Deliverable 32.4 written by Silvia Elaluf-Calderwood and Panagiota Tsatsou. Feedback from SMEs reported in this deliverable indicates that there are a number of critical issues with respect to both the business and technical sustainability of the DBE. A key concern of WP32 is how the legal constituency of the DBE - after the end of the project - will be described under European, national and local law. Decisions taken in this regard will hold implications for how legal issues such as the underwriting of contracts and electronic signatures will be achieved.

Among driver and implementer SMEs, the DBE platform usability and its current lack of business utility have raised concerns about business objectives and the commercialisation of technical models developed in the DBE environment. From the SME perspective, sustainability will be strongly influenced by the ultimate usability of the platform. SMEs are conscious that the Evolutionary Environment is not ready and won't be ready until after the end of the projects and there are other aspects of the technology that the SMEs do not yet understand how they work. At the moment, security and identity are two of the most critical issues with respect to SME perceptions of the current usability of the system. Without a viable way of sending and receiving data securely SMEs cannot take the risk of committing client information to the DBE.

The SME viewpoint of the DBE has been a focal organising force in the development of the platform. SME feedback from engagement events and code camps has shaped the development process at every stage. At this point in the project the SME perspective is important because it makes us aware of the gap that exists between achieving viable DBE supported business interactions and the status of the platform at this point in time. However, whilst the issue of viability from the SME perspective is still fundamentally important, it is not the sole factor in understanding the

sustainability of the DBE it would be wrong to focus sustainability planning purely around the SME point of view. Other routes towards achieving sustainability need to be considered such as, for example, finding applications and large-scale technology implementations that can use the DBE platform.

The conceptual focus of WP32 is on trust and it is clear from the empirical data presented in D32.4 that there will be a gap between the point at which the project ends and the point at which appropriate levels of trust in both the DBE infrastructure and the commercial viability of the DBE vision has been achieved. This absence is of critical importance and allowing adequate time for trust building will be a vital aspect of sustainability planning.

Summary of social science findings

Social science has the potential to offer some valuable insights into how to approach the issue of sustainability and the DBE. The analysis of the DBE as a good that was provided in section [..] offers a potentially interesting perspective on DBE sustainability. However, this is only one approach and there are a number of other ways of conceptualising the DBE that might be equally helpful. As well as thinking of the DBE as a good, the 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 the DBE. The polymorphic character of the 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 simply to obscures more than it reveals.

The social science research on sustainability has applied various different conceptual approaches and focused on a range of different stakeholders from SMEs to open source communities. However, there are many more standpoints that could be taken. Identifying these standpoints and conceptualising related issues and concerns is likely to be one of the most challenging issues in sustainability planning.

Contribution to WP32 deliverable D32.5

Governance and the Regulatory framework

Specific set of governance principles capable of addressing issues specific to processes of law making. In order to explain the relevance of governance in the context of the regulatory framework, the researcher contributed the following text to deliverable 32.5 Knowledge base model of regulatory issues. The following passage is taken from chapter 2 of that deliverable.

Whilst the legal system is, in theory, available for anyone to use, the case based nature of law and the professional requirements necessary to practice law create thresholds that cannot be crossed by the 'average citizen'. The historical cases upon which law is based are held in legal libraries or their equivalent and the understanding required to interpret those cases to contemporary situations can only be accessed via

firms of legal associates. Physical, social and financial barriers exist that prevent those who need to make use of the legal system from accessing the information and professional networks that they need to in order to do so.

In a social sense, the concept of a knowledge base of regulatory issues is highly significant because, in theory, such a repository disembeds knowledge of legal issues from historical networks of relationships and closed information spaces through which this knowledge has traditionally been stored and maintained. This implies greater access to regulatory information for those who have been historically excluded from engagement with legal systems. Increased access to regulatory information implies greater participation in the use of that information, which in turn implies greater involvement in the iterative construction of legal principles. When cast in these terms, the consequences of historical exclusion from access to legal information and services is significant not only to individuals but to the evolution of legal principles and practice. Conceived of in its broadest sense, increasing access to legal information and services therefore has the potential to expand the 'social knowledge base of regulatory issues' and realign it towards the interests of the less powerful and therefore historically excluded members of society.

Whilst the technological architecture of the DBE knowledge base of regulatory issues makes the possibility of a distributed knowledge base functionally possible, the issues that are defined in this deliverable as concerning legal architecture and knowledge management pose some challenging questions. Whilst divorcing regulatory issues from traditionally closed social networks and information repositories is in some sense desirable, from a knowledge management point of view, if the integrity and relevance of a body of professional knowledge is to be retained, it cannot simply be divorced from the practices through which that knowledge is produced. Therefore, one of the challenges facing the knowledge base for regulatory issues is how to engage legal practitioners in the use and update of the knowledge base. However, if the knowledge base is not to simply reify the problems of exclusion that it sought to overcome, a boundary has to be maintained between those who have control over the knowledge base itself and those who are contributing to it. A level of mediation is required to ensure that the balance between regulatory need and relevant contribution is maintained. Otherwise, the knowledge base could become dominated by the interests of a few actors such as large corporations, cartels of selected users, or totalitarian governments.

Historically, the interests of powerful actors have been biased toward the tendency to dominate the development of legal frameworks. By increasing participation among small businesses, whose regulatory needs have been traditionally overlooked, contributions to the knowledge base can be elicited from legal practitioners in response to the distinct needs of that group, generating opportunities for interaction for both the legal profession and SMEs.

The problem remains of how to achieve a balance of interests within the knowledge base. It is clear that some form of mediation will be required. ISUFI suggest both a centralised and a locally-centralised model for knowledge management. Within these models local government actors and regional authorities act as mediators. Understanding the full implications of what this mediatory role would entail and developing a code of practice for those mediators providing guidelines on how knowledge management and the engagement of legal professionals can be achieved

and detailing how the legal architecture and technological infrastructure should be maintained to achieve a balance of interests should constitute a significant aspect of digital ecosystem governance.

6 Towards a theoretical framework for governance

The DBE is a unique and innovative technological infrastructure and participants who have been involved in its construction each have distinct views on governance requirements. The multi-faceted nature of the infrastructure together with the diversity of stakeholder concerns means that a fundamental difficulty arises from thinking of the infrastructure 'as a whole'. In order to address this difficulty and thus facilitate a process of structuring thoughts and concerns regarding governance, a theoretical framework is introduced and discussed in this section. This framework forms the basis of a model that could facilitate the development of a governance taxonomy. By developing a coherent basis for structuring and organising thoughts on digital ecosystem governance, it is hoped that the taxonomic model could facilitate the development of a 'wikipedia style' initiative that will support the open and collaborative development of the many and varied aspects of digital ecosystems governance.

As a result of work carried out in relation to this internal report, two academic articles and a book chapter have been written on the topic of DBE governance. The first article is due for publication in the Communications of the Association for Computing Machinery; the second article will be submitted to Organization Science. In addition, the author wrote a book chapter for a proposed DBE book to be edited by Mr Nachira. In this section, excerpts from each of these academic pieces are provided. The theoretical framework that emerges forms the outline of a taxonomic model for analysing and constructing a collaborative knowledge base of governance issues and concerns.

7 Excerpt from Communications of the ACM article entitled: Governing diversity in the Digital Ecosystem

In the case of the DBE, creating a framework for governance refers to the need for a set of core principles and a methodology for allowing a distributed model of governance to evolve. One component of this model will establish the organisational and constitutional apparatus necessary to support the development of the codebase, formulating a basic framework for community decision-making. In seeking to engage the wider open source community, the character of these organisational and constitutional mechanisms will need to be carefully considered.

Whether the codebase is overseen by a foundation (such as the Apache foundation), a 'democratic model' based on voting rights, or a benign dictatorship (such as the Linux kernel), leadership will be an extremely important aspect of the ecosystem's development. Presently, there is the risk that differences in software approach, disputes over semantics or dominant private sector interests could lead to 'forking' where disagreements about which direction a particular project should take leads to groups splitting off from one another. The potential impacts of forking have been minimised through a 'do or die' attitude towards individual projects, which have to

survive according to their own merits. This attitude is underpinned by a service oriented approach to integration, which means no individual component is structurally indispensable. However, when the temporary joists provided by European project funding and management are removed, a strong leader could potentially encourage the resolution of political situations and ensure that the efforts of the community remain focussed.

In creating a model of governance for the DBE the core values of the project—to create a public infrastructure to support local and regional development—will have to be acted on. Historically, the engagement and implementation strategy of the project was designed to ensure that the DBE had strong attachments to regional economic and government actors. Although collaboration across European regions presents a number of challenges including language and regulatory barriers, any model of governance developed would need to recognise the importance of structural regional involvement to the success of the DBE. These core values have proven to be important in terms of fostering interest in the pre–prototype stages of development. In the past, the motivations of open source contributors have been stereotyped and participators classified as hobbyists or altruists. Although these terms fail to capture the serious business and methodological reasons that exist in support of open source development, a collective interest in technology 'as a public good', capable of serving social as well as private interest has proven to be undeniable.

The question of motivation is often framed in terms of what incentives, other than financial ones, exist for contributing to an open source project. Some have argued that instead of financial reward, there is a reputation incentive that inspires individual contributors whilst others attribute this to the notion of gifts. The idea of reputation incentive is a useful one for understanding the organisational and governance requirements of a new open source community such as the DBE. Contributors to the DBE project are searching for reassurance that, firstly, DBE codebase development and maintenance will continue beyond the end of the project and that, secondly, the project will remain open and their contributions will not be lost. By establishing a framework for governance that can account for crucial issues such as licensing and citation, these issues can be addressed.

Within the developer group, reliable citation and signalling mechanisms are fundamental to establishing a foundation of trust. If contributions are not clearly authored then the whole basis for 'voting through' software alterations is open to question. Similarly, if voting systems appear inefficient or non–representative then there are also grounds for contributors to lose faith in basic community processes. The problem arises for new open source communities where these mechanisms have not yet been established and where a particular project or concept has yet to become a viable product.

> Valid signalling mechanisms and market success infers that reputation incentives can only be gained from open source projects that are up and running but this begs the question, how does an open source project get up and running in the first place. Possible explanation could be down to

ideological superstructures[1]

By ideological superstructures these authors refer to other kinds of incentives that developers might find in being part of a particular project. For example, the concept of establishing technical infrastructures as non–proprietary public goods is a powerful one which has the potential to interest and motivate. However, in order to mobilise contributors motivated by these ends, clear indicators need to be established that the project is not going to 'go proprietary'.

Any democratic system of open source community governance requires a robust system for assigning voting rights and collecting votes. In the first instance it may only be developers who are allowed to vote on an issue but, as the community expands, there may be a need to design voting forums that are able to address a variety of community needs. For example, those interested in technical developments may not be as interested in the development and marketing needs of the community or the provision and management of community resources. In the case of the DBE, community resources together with DBE core services comprise an important part of the overall infrastructure and may have specific contribution and decision-making requirements, hence any decision-making relating to theses components needs to be fully devolved.

In talking to the SMEs, the question of membership and having contributors from big technology companies involved in the community was generally not seen as a problem. In this respect, contributors from large technology companies were judged on their ability 'to be a good citizen' in the same way as anyone else. One reason for this is that contributions to open source software projects usually give citation details that refer to the individual and exclude details of the company for which that individual works. However, whilst developer communities may have found the means to create a temporary equality between contributors that disregards the status of individual firms, achieving the same situation within a framework of governance pertaining to a complex technological infrastructure presents a significant challenge.

The consensus among SME participants in the DBE was that ultimately these contributors would be judged by their behaviour. Trust in the community and confidence in its ability to succeed was tied directly to how open contributors were prepared to be rather than to the size of the organisation they came from.

[1] Franck, E. and Jungworth, C. (2002) 'Reconciling investors and donators – the governance structure of open source' Working paper series, No.8, University of Zurich, p.15 http://opensource.mit.edu/papers/jungwirth.pdf Last accessed 8.08.05

8 Excerpt from forthcoming article entitled: Building Public Infrastructure from Digital Commons: the case of governance and the Digital Business Ecosystem

Where community of practice approaches contribute to our understanding of how the dynamics of shared meaning, learning and identity have the potential to draw individuals together into a cycle of learning and increased participation (Lave and Wenger 1991) that are off the organisational chart (Thompson, 2005), recent research from legal and economic scholars into 'the commons' has pointed to the relevance of similar dynamics in situations of exchange (Benkler 2003; Frischmann 2005; Benkler 2006; von Hipple 2005; Nelson, R 2006). According to these approaches, norms and conventions are shown to play a greater role in the exchange of goods, and in knowledge and information sharing, than traditional economic analyses tend to depict (Liebenau & Bordeau de Fontenay 2006e). Distinguishing formal social groupings from informal social groupings, such as communities of practice, is significant because such communities are constitutive of a form of collective action (Olson 1965; Hess et al. 2006) that is at odds with traditional perceptions of top-down organisational modelling. In the context of governance, extending analyses of organisations, situations of collaboration and exchange, and regulatory form to include a spectrum of formal and informal arrangements and practices is therefore important, particularly in the study of infrastructure, which draws heterogeneous groups of people together via a range of more or less prescriptive forms of interaction (Star and Ruhleder, 1996).

Considered historically, some governance regimes can be understood to be a distillation of norms and collective experience, whilst others are the result of conditions imposed by influential regulatory and decision-making bodies that lie outside the collective (Ostrom, 1983). Prescriptive formalisation of spontaneous groupings and practices in an attempt to leverage the benefits they bring can prove counter-productive or even ruinous, as Thompson (2005) points out. Thus the historical development of governance arrangements can be seen as the iterative but often discontinuous formation of groups and the relative formalisation of organisational arrangements through their association with institutional forms.

The focus of this paper is a case study which documents a process through which the governance arrangements for a geographically-dispersed group of individuals and organisations, seeking to build a technological infrastructure from a set of digital commons, are being negotiated. The antecedents of governance documented by cases such as these are important to capture because they mark a time before political structures are simply accepted as 'the way things are'. They mark the passage from experimental working arrangements and the opportunism afforded to those who were 'there at the start', to a fully-fledged governance framework. Where these frameworks are sought during processes of innovation - and where that innovation concerns the development of a technological infrastructure - the iterations between organisational arrangements, regulatory form and technological design are even more textured and dynamic.

Key aspects of governance

Whereas previously the term 'governance' was predominantly used to describe the

relationship of a government to the people it governed, it has in recent times been extended to describe 'corporate governance', which denotes among other things, the relationship between companies and their shareholders (Benn and Durphy, 2006; Coyle 2003). In parallel to this, movements in the civil sector have seen governance extended to include all aspects of civil society and not simply those pertaining to central government (Ostrom 1983). In addition, as understanding has grown of the choices inherent in the design, development and use of technology, governance is now also used to describe the design of key relationships and dependencies inherent in the provision of technological systems; from managing outsourcing relationships to understanding the architectures that denote relationships between key technical components. In this area, there is a growing tendency to view the term governance as a means of referring to technology portfolio management and therefore as an issue requiring a modelled solution offering 'the answer' to 'a problem'.

Traditionally, however, the study of governance suggests a critical exploration of constitutional relationships rather than a restatement of them. This critical view of governance corresponds with that of Foucault and other authors who have taken the line that governance can be inscribed in all aspects of human, social and technological arrangements (Foucault, 1974; Rose, 1990; Star, 1991b). Within those arrangements are the knowledge or 'information spaces' in which people build, develop and preserve their understanding of a particular set of practices (Star and Ruhleder, 1996).

The increasing use of open source software licensing and development methodologies has brought questions concerning what constitutes common or public property back into focus (Lessig, 2003; de Joode 2005). The classification of a particular resource as a private, public or commonly owned good has enormous consequences, since it to some degree determines the kinds of analytical schema, policy instruments and institutional arrangements put in place to address sustainability issues. However, this classification can be problematic and 'the commons' has in some senses become a 'catch-all' category used to describe the many and varied situations and conditions for which traditional economic theory is unable to account (Liebenau & de Fontenay, 2006e).

Institutional arrangements for governing the commons are also subject to classification, based either on models of market-led governance arrangements put in place by private sector actors, or policy-driven arrangements constituted by a central authority (Ostrom 1983). As Ostrom observes, the potential for the people within a situation to take charge of designing and maintaining governance arrangements by and for themselves is rarely considered. However, moving from a situation where the call for collective action is heard to a point where a set of working institutional and organisational arrangements are in place is a slow and intricate process. The protracted and complex nature of these processes is often at odds with the impulse of policy-makers and large private sector actors to seek out and apply existing models. What is interesting to note is that this tendency remains consistent, even in cases involving the governance of infrastructure, open source development and fast-paced innovation; three areas in which there is an acknowledged dearth of understanding and successful examples to draw upon.

Re-conceptualising analyses of the commons

Liebenau and Bourdeau de Fontenay (2006e) draw upon the work of legal scholars

and economists to realign arguments about the commons in order to draw focus away from the classification of particular kinds of resource towards what they consider to be the more critical issue of property rights use and exchange. Following Benkler, they understand the commons to be "a particular type of institutional arrangement for governing the use and disposition of resources". For Benkler the salient characteristic of those resources being that they "may be used or disposed of by anyone" (Benkler 2003; Liebenau and Bordeau de Fontenay, 2006e:5). However, they add to this a notion from Frischmann, who emphasises an important distinction between institutional form (property right, regulation, norm, etc.) and institutional function (opening or restricting access). Frishmann makes the point that:

> "Tying form and function together obscures the fact that the management principle can be implemented through a variety of institutional forms, which are often mixed (property and regulation, private and communal property etc.) and not necessarily through particular forms of property rights." (Frischman 2004; Liebenau and de Fontenay, 2006e:6)"

Liebenau and de Fontenay argue that what characterises all forms of exchange "at the root [are] attributes of transactions that are more efficiently dealt with through norms then by full economic costs" (2005:6). According to traditional economic analysis, transactions are ordinarily understood to take place within a market that may or may not be directly regulated by a central authority to protect against market failure. However, the point that Liebenau and de Fontenay make is that there are many forms of exchange that concepts of markets do not address well, such as gift relations, which they describe as neglected, and public property, which is simply excluded. All of these forms of exchange should be analytically comparable, such that the transition from one form to another can be analysed and we can do away with the artificial differentiator between owned and supposedly 'unowned' property.

They call for an extension of the study of the commons in order to generate a frame of analysis capable of taking into account the full range of exchange situations and conditions of which governance arrangements are a fundamental part.

> "commons and markets share characteristics that can generally be called governance within a jurisdiction and the norms (and associated rules) of the transference of property" (2006e:3).

By taking this position, the authors are able to extend analysis of property rights transactions to include a broad range of exchange situations, overcoming some of the limitations of economic analysis founded on market transactions. This affords a more situation specific notion of what the commons are in a given set of circumstances, focusing analytical attention onto the range of social phenomena at stake and the precise nature of institutional and regulatory governance arrangements, as opposed to some 'objective' classification of resources. Using the concept of transaction costs to make their point they argue:

> "[…] low transaction costs are achieved through a diversity of social and human idiosyncrasies such as the ability to develop routines, to adopt customs, to integrate within one's language and/or religion… dimensions that may benefit the members of a community by such factors as creating trust and/or reducing the significance of incomplete contracts. Those are also the dimensions that make the analysis of the commons so important to the understanding of networks, infrastructure, and behaviors such as p2p [peer-to-peer file sharing]." (2006e:13).

Developing a detailed understanding of precisely how distinctive contexts and relationships can alter the nature of power and the development of governance arrangements is therefore a critical undertaking. The next section considers some important aspects of these relationships in the context of studying infrastructure.

9 Excerpt from DBE book chapter entitled: Understanding the role of governance in the context of digital ecosystems

The digital ecosystems context

There are several key characteristics that have an important bearing on the underlying logics that shape the governance and coordination requirements of digital ecosystems. The most significant characteristic is the policy vision and focus of digital ecosystems, which is firmly centred on SMEs and regional development (Nachira, 2002). This emphasis acts as an organising principle in all decision-making processes relating to the DBE infrastructure. Similarly, the distributed and open source philosophies that are characteristic of DBE technology design and infrastructure development also play a significant role in the ecosystem vision. A further constitutional aspect of the DBE is the membership and participation conditions applied to stakeholders, each of whom have clear yet diverse interests in ensuring the sustainability of the DBE. Guaranteeing a balance of interest amongst diverse stakeholders – especially where those stakeholders are of varying size (i.e. a small company and a large corporation) - is of critical importance if digital ecosystems are to maintain their orientation towards supporting SMEs. For stakeholders to understand themselves as having a voice within governance and decision-making processes, an open, inclusive and transparent culture of meetings and communication needs to be established. Internet technologies and open communication forums offer an important vehicle for achieving such transparency (WGIG, 2005).

Aligning interests around common goals and ensuring that infrastructure development remains attuned to the needs of SMEs and regional development will have a fundamental impact on the level of trust and credibility associated with digital ecosystems. Trust, credibility and attunement were identified as fundamental to the specific e-business practices involved in using the DBE and in the continuing engagement of SMEs (Darking & Whitley, 2005; Gow et al., 2005). These attributes are particularly relevant given that use of the DBE involves a high degree of knowledge sharing with respect to business models and in terms of engagement in

open source development. In establishing credibility and ensuring that engagement strategies were attuned to the needs of regions and SMEs, results from DBE regional analysis highlighted the diversity that exists between regions. Identifying relevant sectors, communities and organisations with which to engage was a region-specific task from which individual strategies could be derived, but from which no single model for leadership could be defined (Passani, 2005).

In addition to the coordination of regional engagement, the developer community who are responsible for maintaining and developing the DBE code base also require a basic framework for carrying out their responsibilities. At present, the developers act as a distributed group working under the leadership of two individual 'synchronisers'. This lightweight level of coordination and integration was designed in order to keep organisational overheads to a minimum, thus enabling the sustained, voluntary engagement of developers beyond the end of the project (Darking 2006). The code base also requires the protection offered by licensing, in this case, the General Public and Creative Commons licensing that currently dictates the use of DBE knowledge and code. As well as licensing arrangements relating specifically to the code base, the DBE project also developed a regulatory framework, which aimed to provide basic legal resources necessary to enable SMEs to carry out business via the DBE infrastructure and included an automated process for contract generation. The significance of this framework in acting as a resource to support SME e-business interactions was such that its coordination and design constituted an area of governance research in and of itself.

The de-centralised, distributed design philosophy that underlies the way in which the DBE infrastructure is maintained and developed constitutes another defining characteristic. This 'meta' approach to infrastructure development is designed to reduce lock-in and dependency, pushing choice and decision-making power away from the centre. The role of open source development methodologies and modes of organisation is a central requirement with respect to attaining this end. Finally, one of the most innovative characteristics of digital ecosystems is its use of biologically-inspired algorithms to support the distribution and composition of business services

Dimensions of digital ecosystems governance

Drawing on the key characteristics of the digital ecosystems context outlined in the previous section and the observation that governance involves a spectrum of processes, rules and interactions made in the introductory section, six 'dimensions of digital ecosystem governance' are now outlined – as in this paper there is no room to develop them. Integrating key findings from social science research carried out as part of the DBE project, the table below links characteristics of the digital ecosystem context together with dimensions of governance. Cutting across organisational, regulatory and technological frameworks, these dimensions should be considered as inter-related and at times over-lapping concepts for organising further research and discussion on the topic of digital ecosystems governance.

Characteristic of digital ecosystems	**Dimension of digital ecosystem governance**

Shared values, common vision, participation and membership - constitutional documents such as manifesto, bill of rights or code of practice	Constitution and balance of interests
Transparency, inclusion, due process, policy, procedure and accountability	Culture of communication
Alliance forming and regional coordination, allowing for diverse governance models and diverse membership	Credibility, attunement and trust
Distributed template, lightweight organisation and synchronisation for aligning codebase infrastructure development; association and alliance forming	Organisation and synchronisation
Knowledge and technology licensing, regulatory framework for digital ecosystems e-business interactions and legal definitions relevant to DBE entity	Licensing and regulation
Choice of software development methodologies, technological directions and infrastructural standards; association and alliance forming	Technological dimension

In order to set in place the policy vision for digital ecosystem, the values and priorities encapsulated by that vision need to be embedded in constitutional documents such as a manifesto, bill of rights or other statement of common purpose. Defining the constituency to whom the bill or rights or common values apply is another important aspect of constitution building.

In terms of ensuring the operational viability of the infrastructure, there are a number of tangible areas toward which questions of governance can be applied. Questions surrounding the maintenance and development of the DBE code base constitutes one such area. Another tangible area is security; the extent to which identities can be trusted and data securely shared via the DBE infrastructure. Sharing business models is also a significant tangible area that requires constitutional support in the form of a code of practice for SMEs to ensure interests are protected. In addition to these operational questions, governance of the DBE regulatory framework is an extremely influential area of the ecosystems environment, which brings with it specific governance requirements. As a set of processes that involves consequences for the infrastructure as a whole, the evolutionary environment denotes another area that will require some form of governance or coordination.

The purpose of identifying the characteristics and dimensions above is to formulate the outline of a framework for considering issues associated with digital ecosystems governance. As more fully developed in deliverable D32.7, these characteristics and dimensions can be applied to tangible areas that arise as relevant to digital governance and coordination efforts. From a research perspective, this framework could act as a basis for formulating a taxonomical approach to exploring, setting the boundaries and assessing the relevance of issues associated with digital ecosystems governance.

The policy vision for digital ecosystems places specific demands on the creation of a template for governance. Creating organisational channels for participation and collaboration that allow SMEs to define a technological infrastructure and regulatory environment that serves their needs above all others is not straightforward. The diversity inherent in SME requirements and the regional variations as to what constitutes a credible framework for participation indicate that a distributed, de-centralised template would offer the highest degree of flexibility and attunement to local needs. Preserving the diversity of local needs and contexts has the potential to support and inspire innovation offering significant advantages to SMEs, regions and Europe as a whole.

10 Conclusions

> "The paramount key success factor for the DBE project is the establishment of a governance model for the ecosystem including social aspects like codes of conduct and software maintenance. Hence, it is vital to base this model on input from all parts of the project as well as from the Commission, the local regional authorities and other potential future users and supporters of the platform." (DBE 2nd annual review report: p.44)

This report and the research actions associated with it have gone some way towards answering the requirements set out by the DBE reviewers at the 2nd annual review regarding governance. Questions associated with DBE governance are far-reaching, which makes the need for a framework for organising discussion and debate all the more pressing. This framework is only partially outlined in this report, but it is hoped that it will be developed further as part of the programme of research being undertaken by the OPAALS Network of Excellence.

From a broader perspective, the DBE constitutes just one instance of an 'innovation ecosystem'. As such, it is important to bear in mind that the task at hand is not to develop 'the' framework for ecosystems governance but 'a' framework. What the DBE has to offer that is important and unique in both policy and business terms is the potential for SMEs to define their own business and technological environment. This is important not only in terms of widening access to technology markets and increasing opportunities for pan-European collaboration, but as a conduit for innovation. The diversity inherent across European SMEs in terms of the original, dynamic and creative ideas they realise as business models holds enormous promise for Europe. Allowing SMEs the opportunity to define their own technological infrastructure and business environment has the potential to preserve the grassroots conditions that bring about innovation and ensure that these ideas find an unimpeded route to market. This opportunity is not only important for the DBE to realise, but for Europe as a whole.

4

Appendices

Appendix 1 – Governance web log (entry 1)

The intricacies of governance discussions

Governance discussions are curious things. They suffer from the same issues that most political debates do. There is either complete apathy and lack of engagement or else they become volatile and all-consuming. This dynamic in itself presents a difficult decision-making climate. The tendency is to leap to conclusions or impose a model, simply to restore order or calm the situation, but this approach can create more problems than it solves.

One of the most perplexing things about governance discussions is that – all of a sudden - a political eye is cast upon *everything*. Coming up with a quick solution becomes an attempt to bump everyone into agreement without giving them time to read the small print. Delaying a decision and requesting more time for discussion becomes a deliberate stalling tactic designed to de-stabilise the group. This is not simple paranoia, nor is it the innocent plight of those who try and work for the common good. It is the harsh and sometimes bloody reality of group dynamics, when there are important decisions to be made by people who see things from radically different standpoints and wish to achieve very different ends. In emotional and psychological terms, the real-life toll of such battles on groups, organisations and individuals can be distressing to witness, and the slightly chaotic backdrop created can provide the perfect vehicle for narrow opportunism and self-interest.

Finding an alternative way forward is therefore an important consideration, especially in cases where governance discussions are inter-organisational and where those involved come from different sectors (i.e. government, business, civil society). In these cases, differences in priorities and desired ends are likely to be significant and firmly entrenched. In situations where the machineries of government and big business are placed in the same arena as small organizations or individual citizens, particular care needs to be taken to create a level playing field. Smaller players can easily find themselves worn out by political processes that have been overtaken by larger actors. They can lack both the time and energy to remain fully engaged, or worse still, find that they are being manipulated by the larger organisations, positioned to carry the brunt of political fallout. This is not to say that political contests always come down to straightforward questions of size or scale. Trust and credibility play a significant role and can have a tremendous impact on the amount to which an actor is allowed to influence a situation. As long as this is acknowledged and appropriate safeguards and norms instated, there is no reason why different kinds of actors should not interact peaceably with one another.

This leaves us with the following two questions: what kinds of mechanisms help to mitigate some of the potential problems that can arise over the course of governance discussions and; what measures can be introduced to help promote an atmosphere of trust and credibility?

An example that might offer some assistance in exploring these questions - which will also open up some more specific issues relating to the governance of large technology infrastructures - is the example of the Working Group on Internet Governance (WGIG) . A case study of the process that the WGIG went through in order to establish a cross-sectoral discussion forum on internet governance will be the subject of the following 3 blogs.

Appendix 2 - Governance web log (entry 2)

As a project that is attempting to create a large SOA infrastructure, the DBE project faces a number of significant challenges in addressing questions of governance, not least of which, is the challenge of how to establish an inclusive framework for carrying out governance discussions. A valuable case study that has the potential to assist the project in understanding the questions it faces is the case of the Working Group on Internet Governance (WGIG). In order to understand how the experience of this forum might help to support and structure discussions, I will provide some summary excerpts of the case taken from the 'Background report: the working group on internet governance' followed by some analysis. The analysis is organised around the question:

- What actions were considered necessary to enable the WGIG to carry out a structured discussion on governance?

The analysis will look at the ways in which this case both contrasts with and bears similarity to the circumstances facing the DBE. It will also point out some of the explicit challenges facing the DBE regarding the development of a process for considering questions of governance.

The summary excerpts taken from the WGIG background report and their analysis have been divided up into four separate blogs. Excerpts from the WGIG background report appear first with the analysis of each following directly after.

Summary Excerpt from the WGIG Background Report

The Working Group on Internet Governance (WGIG) was set up by the Secretary General of the United Nations on the basis of the mandate given to him by the World Summit on the Information Society (WSIS) in December 2003. The group was made up of 40 members from governments, private sector and civil society organisations who participated as equals and in their personal capacity as experts in their own fields. The group was asked, inter alia,

"to investigate and make proposals for action, as appropriate, on the governance of the Internet by 2005, dealing with the following issues:

- Develop a working definition of Internet governance
- Identify the public policy issues that are relevant to Internet governance
- Develop a common understanding of the respective roles and responsibilities of governments, existing international organizations and other forums as well as by the private sector and civil society from both developing and developed countries"

(WGIG Background report, section 1, paragraph 6)

These proposals were to be submitted in the form of a report and presented "for consideration and appropriate action at the second phase of WSIS.

Analysis: Mandate, membership and representation

In establishing the WGIG, there was first a question of mandate. Since, to some extent, governance is about process and the appointment of authority, the question of who should start a process and how it is organised becomes both a practical concern and a key question.

Questions of membership and representation were key to the formation of the WGIG because the forum had to be credible in the eyes of a diverse group of stakeholders. Stakeholders of the WGIG were defined in terms of three groups: governments, private sector and civil society. The discussion forum had to be representative of these groups and demonstrate a balance of interest in order to demonstrate shared ownership of the technology and of the governance process. Members if the WGIG were asked to participate in an individual capacity, requiring them to detach themselves, as far as possible, from any affiliation that might influence their role in the discussion.

The third issue was one of 'what to do'. One meaning of governance which is derived from its Greek etymological routes is 'to steer'. Setting the aims and objectives of a group is equivalent to steering it in a certain direction, therefore, this becomes an act that also requires an appropriate mandate. Whilst a clear outcome was prescribed (a report from the group) the aim of the WGIG at this stage emphasised discussion and proposal, rather than action. Before they could act, proof that the group could work in a credible, democratic way and produce outcomes meaningful to a range of different participants was required and this could only come from direct experience.

Contrasting aspects of this case and the DBE

A key difference between the internet and the DBE concerns the relative maturity of the two technologies. The DBE is a new technology, still in the early prototype phase, whereas the internet has been in existence sine the 1960s. Maturity is significant not only in terms of the technology itself, but also in terms of the interest groups that surround the technology. These groups are explicitly linked to the historical development of the technology. A shorter development history means that there has been less time for 'group formation' and for the expression of diverse standpoints.

Since the DBE is a new technology, the question of expertise is also more difficult to define. The WGIG were able to select its members from a pool of recognised experts, however, the question of DBE expertise is more complex. DBE interests and expertise relate to the respective scientific, technological and business areas that form the building blocks of the infrastructure. However, at this stage, expertise is also about the experiences of those who have built the infrastructure and taken part in early testing. This historical understanding of the technology's aims and purpose is extremely important, not only from an applied or technical standpoint, but also from the point of view of identity and community building.

In the case of the DBE, the basis for appointment and selection remains an important question as does the need to both expand and refine understandings of who the stakeholders of digital ecosystems are.

Working Group on Internet Governance: Case Study 2

This is the second part of a case study written on the Working Group on Internet Governance (WGIG). The summary excerpts and their analysis have been divided up into four separate blogs. In each blog, the summary excerpt from the WGIG background report appears first and the analysis follows directly after.

Summary excerpt from the WGIG Background Report

Prior to establishing the WGIG, consultations took place which addressed questions of membership, representation and scope. The WGIG was called upon by the WSIS to be "open and inclusive" in its work and design a "process that ensures a mechanism for the full and active participation". The consultations were therefore carried out in an 'open mode' allowing all actors involved in Internet issues to participate on an equal footing. The WGIG identified transparency as a key ingredient to ensure communication and members "worked extensively through e-mail, Internet Protocol (IP) based streaming video, bulletin boards and a discussion forum, and used the WGIG website to communicate with the public." The working group were commended on the openness of its process and reported that many factual elements and corrections had been received via this process.

In addition, the WGIG held online consultations, open to all stakeholders, in parallel to each of its formal face-to-face meetings, in order that contributions were not limited to formal members of the group. External comments and contributions were seen as an integral part of this work.

In terms of setting a scope for the consultation, the WGIG agreed to take a broad approach and therefore to not exclude any potentially relevant issue. Through the discussion process, the group set some of the basic issues and looked for clusters of issues arising from the open consultation. Out of these issues. four main clusters were identified.

- issues relating to infrastructural issues and the management of critical resources
- issues relating to use, including network security
- issues relevant to the internet but with impact much wider than the internet such as Intellectual Property
- issues relating to capacity building in developing countries

The group also looked at the respective roles and responsibilities of internet stakeholders and produced 16 working papers describing these which it made available on the WGIG website for public comment.

Analysis: Working in an 'open mode'

The 'open mode' of communication and consultation adopted by the working group became a form of 'due process' for internet governance. Due process is a term taken from legal settings to describe the rules and procedures relevant to a particular set of circumstances and based on a set of principles. In the case of the WGIG, the open mode became both a point of principle and a set of practical arrangements which successfully generated a sense of legitimacy, credibility and inclusion.

Contrasting aspects of this case and the DBE

Again, when compared to the DBE, the question of maturity comes up. The amount of people who know about or are interested in digital ecosystems is limited (although it is growing fast). The amount who are willing to take part in an open consultation is even more limited. The degree of engagement in DBE open forums has not been high so far and there are a number of reasons why working 'in the open' presents a challenge. Firstly, moving to an open mode of communicating constitutes a cultural shift for project participants. Norms associated with working in a closed or open way are difficult to change since they have an implicit relationship to political processes. Asking for the approval of everybody 'in the open' is very different to asking for the approval of a few people 'behind closed doors' and those who are unfamiliar with the former approach seem to revert automatically to the latter. Secondly, the different attitudes, standpoints and interests of stakeholders are currently still held within the confines of a single project making for a lively, if slightly tense, political and decision-making environment. As the project draws to a close, the diverse interests underlying the participation of stakeholders become more transparent. Influential project stakeholders are understandably trying to organise participants into 'camps' based on their interests and so in terms of an open debate, there is intense concern over 'speaking out of line'. At a management level, divisions inevitably exist and there have been moments when the project has felt as if it were being 'steered' in different directions at the same time.

A major challenge for DBE governance will be the management of this transition and the development of a governance approach that allows diverse interest groups to co-operate and co-exist with one another, without creating a structural bias toward one group over another.

Working Group on Internet Governance: Case Study 3

Working Group on Internet Governance: Case Study 3

This is the third part of a case study written on the Working Group on Internet Governance (WGIG). The summary excerpts of the WGIG Background Report on Internet Governance and their analysis have been divided up into four separate blogs. In each blog, a summary excerpt appears first and an analysis follows directly after.

Summary Excerpt from the Background Report on Internet Governance

One of the primary aims of the WGIG was to develop a working definition of internet governance and a considerable amount of time and effort was put into this task alone. In its description of the internet, the group decided that a history of the technology was both valuable and necessary. However, since a number of histories of the internet already existed, a reference was made to one of these instead of writing a new one. Nonetheless, some guiding principles and characteristics of the technology that emerged from the historical account were considered important to establish. The WGIG viewed the WSIS principle relating to the stable and secure functioning of the internet as of paramount importance and this influenced their priorities when considering characteristics of the technology.

The WGIG identified the following factors that any recommendation regarding arrangements for internet governance should take into consideration:

- the de-centralised and collaborative process of underlying technological development and core resource management
- the distributed / decentralised open architecture based on a 'network of networks'
- the open, non-proprietary nature of core Internet standards, protocol specifications available to anyone at no cost, reducing barriers to entry / enabling inter-operability
- the support of private sector competition in, by and large, enabling innovation and development
- the end-to-end principle or neutrality of the Internet which is chiefly concerned with the effective transportation of packets

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Analysis: 'Describing the technology'

Given the many and diverse ways in which the internet could be described, the group had to make a decision about what key characteristics of the technology were relevant to questions of governance. In their case, the process of describing the technology was organised around a particular point of principle relating to stability and security that was understood by both the WGIG and the WSIS to be of "paramount importance".

Contrasting aspects of the case

Describing the DBE infrastructure has been a challenge since the technology's inception. Looking at the example of the WGIG and its efforts to describe the internet it seems that taking a particular point of view or adopting an organising principle could provide a way of addressing this issue in the case of governance. The same organising principle of needing the infrastructure to be stable and secure could be as true for the DBE as it is for the internet.

A contrasting issue is perhaps rather subtle but it is nonetheless important when trying to arrive at a working definition. As a term of reference, 'the internet' refers primarily to 'the technology' in question (the 'network of networks') with government, business and social concerns lying, in a sense, outside the term. The term Digital Business Ecosystem was explicitly designed so that it encompassed these factors and so 'governance of the DBE' appears to carry broader implications. An added complication is that the commission has shifted its vocabulary and the DBE will now be merged into 'digital ecosystems' as both a term and a cluster of European funded projects. Again, this is to some extent a question of maturity. The names of technologies tend to shift and change at different points in their development history. Nevertheless, organising working definitions around 'digital ecosystems governance' will involve a process of naming the technologies concerned which may present some challenges for the DBE project. The identity and orientation of the project (e.g. towards industry or research objectives) will no doubt come into question during this

naming process, as the DBE is positioned as either a 'commodity' or a 'public good'.

Interestingly, most of the key characteristics the WGIG used to describe the internet could be said to apply to the DBE as well. The characteristic that contrasts most starkly is the last one concerning neutrality. Whilst the majority of the DBE infrastructure might fit with the WGIG description, the EvE component which facilitates the search for and composition of services, does not fit this description. As actions, 'searching' and 'composing' are necessarily political to some extent. How easily something is found is something that can be manipulated, as are suggestions for how a set of objects should be combined. The only way to overcome the potential for exploitation is through making the structures and algorithms underlying these actions public and the decision-making process for choosing one approach over another, transparent. A 'bill of rights' outlining the principle concerns would give the process a clear orientation but there would always be the need for debate. An alternative approach could be to appoint some kind of authority and make them responsible for these decisions but this suggests a centralised approach that is not in keeping with the core aims and characteristics of digital ecosystems.

Working Group on Internet Governance: Case Study 4

This is the fourth and final part of a case study written on the Working Group on Internet Governance (WGIG). The summary excerpts taken from the WGIG Background Report on Internet Governance and their analysis have been divided up into four separate blogs. In each blog, the summary excerpt appears first and the analysis follows directly after.

Summary excerpt from the Background Report on Internet Governance

One of the most pressing needs identified by both the WSIS and by the WGIG membership was the need to develop a shared understanding of governance before discussions could move forward. The scope of activities to which individual members understood governance to refer, varied. For some, it was only the internet's core resources that required special governance arrangements, for which contracts were considered to offer an appropriate governance mechanism. For others, the issues at stake were more wide-ranging requiring other kinds of governance mechanisms such as treaty instruments. For most, views on the appropriate scope and mechanisms of governance fell somewhere in between these two ends of the spectrum.

Differences in opinion were accentuated by a lack of common understanding about the meaning of the term governance and its relationship to government. Governance "influences political processes and public institutions by shaping the way people interact with government and how government interacts with them". However, the group recognised that governance occurs in other areas of social life. In the private sector, the notion of 'corporate governance' underlying the management and operation of private companies concerns the shaping or relationships and interactions between shareholders, directors, managers and where applicable, regulatory bodies. However, meanings of governance go beyond these two areas and as civil society organizations have demonstrated through their attempts to interact with both public and private organizations, there is a governance dimension to practically every area of economic and social life.

Even placing these distinctions to one side, the Working Group identified that there remained a tendency to see governance as either a top-down process modelled on government policy making and administration, or as a bottom-up process modelled on electoral mechanisms. By contrast, the experience of the group led them to conclude that:

"governance is primarily a horizontal process of interaction that influences the way in which hierarchical processes operate, both top-down and bottom-up. In this sense, governance is closely associated with the notion that all stakeholders should play a role in all Internet related decision making processes"

The eventual definition was arrived at deductively from 5 general principles that the group regarded it necessary to fulfill, which were: adequacy, generalisability, descriptiveness, conciseness and process-orientation. On the last point concerning process, the WGIG decided that the definition should remain neutral about who may be doing the steering, emphasising the act of governance , rather than equating

it with particular governors. In addition to this, the group resolved to work inductively, working from particular instances to general principles.

Analysis: Defining governance

Two apparently contrasting methods appeared to work well for the working group. The first method was to look at particular issues and derive general principles from them and the second was to agree on general principles and find a solution that satisfied those principles. Listing appeared to be an important process for the group. For example, the group listed issues relating to governance (and in fact began this work before it began the work of developing a definition) and then derived general principles from those lists. The process also worked the other way round, that is, working with a list a general principles and then focusing on particular instances or examples.

The process of listing may be useful to the DBE and it could be argued that the project could save time by building on the work done by the WGIG with respect to the definitions that the forum created. However, definitions themselves are agenda setting and the process of arriving at a common understanding is significant in itself.

The WGIG definition of internet governance

"Internet governance is the development and application by governments, the private sector, and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures and programmes, that shapes the evolution and utilisation of the internet".

The group surmised that governance is fundamentally a process that involves supplying and applying mechanisms that steer or give order to courses of action. From a logical standpoint, listing stakeholders was not seen as being necessary but from a political standpoint, it was considered important to underscore that any of the three societal sectors may play a role in governance, depending on the particular case at hand.

Appendix 3 - Computing domain consultation questions

- Are there any standards or technical areas of concern that you think should be considered in a sustainability/governance discussion?
- Is your organisation involved in any follow-on EU funded projects?
- On what conditions would you carry on contributing to maintaining and developing DBE code, after the end of the project?
- Will it be necessary to form a group of paid developers to maintain and develop DBE code at the end of the project?
- Are there alternatives to this?
- If a developer organisation is created, what form could this group take?
- What sources of income could it generate?
- Any other important questions/issues you would like to add to the discussion agenda?

Appendix 4 – Computing domain discussion agenda document

A discussion paper for the computing domain on governance, sustainability and the DBE codebase

This discussion paper is intended to support those who have contributed to the development of DBE code in a process of talking about and planning for the governance and sustainability of the DBE code at the end of the funded life of the DBE project. In order to write this paper, each of the 11 partners who are currently acting as either developers or users of the DBE codebase were asked to provide answers to two sets of questions. The first set of questions referred to the individual circumstances and conditions surrounding each individual organisations' continued commitment to the DBE codebase beyond the end of the project. The second set of questions asked each partner for suggestions regarding the kind of organisational and financial arrangements they felt would need to be in place for the maintenance and development of the DBE codebase to continue. Out of the 11 partners, 10 replied and their answers form the basis of this document. Before presenting their answers, a brief discussion of the current circumstances surrounding the DBE developer group is provided in order to set the scene.

The report from the DBE annual review which took place in January this year stipulated two actions that are significant to discussions concerning sustainability and the computing domain. These two stipulations were:

- to place responsibility for creating a plan for code sustainability with the Computing

Domain

- to request that the project management team develop a plan and manifesto to launch an 'Open Digital Ecosystem' open source community

Whilst the overall directive to move towards creating an open source community is clear in the report, what is not clear are the steps that need to be taken to reach this end. Sustainability planning in the business domain has adopted a 'short term', 'mid-term' and 'long term' approach to discussing sustainability arrangements and this approach might translate well to discussions on code sustainability. Firstly, however, it is important to recognise where DBE developers are now in relation to these aims.

The DBE partners who currently make up the DBE group of developers come from a diverse range of organisations, whose interests and motivations for taking part in DBE development activities are equally diverse. Maintaining collaboration between large technology companies, SMEs and research institutions beyond the end of the project constitutes a challenge. The business objectives that could potentially unite small and large private companies are in fact frequently at odds with one another in the context of systems development, and with little or no interest in the pursuit of business ends, research institutions can make interesting partners.

In this paper I refer to the DBE developers as 'the DBE developer group' rather than as a community. This distinction is designed to emphasise that there is a potential difference between a group of developers who work together because they are part of the same EU project and a group of developers who choose to form a community. If the DBE developers choose to form a community as the Commission would like them to, I would argue that an explicit process of community building needs to begin which, as well as tackling plans for governance and sustainability, needs to include:

- building a clear identity
- developing a common set of values or aims (including a 'bill of rights')
- creating a sense of shared ownership
- formulating organisational mechanisms for decision-making
- forging links with follow-on EU projects

- attributing roles to key individuals

In order to begin the process of identity building, it will be important for the developers concerned to start developing a common language for talking about the DBE beyond the end of the project. This can begin through simple tasks such as deciding on a name to describe the codebase 'as a whole' when it is no longer the 'DBE project' or collectively deciding on a name for the developer group as it will exist after the end of the project.

With these ideas in mind, responses to key questions on governance and sustainability that were asked of computing domain partners are presented below.

Imagining what the DBE developer group will look like in January 2007.

There was unanimous agreement from all computing partners that in the short term, i.e. for a period immediately after the end of the project a group of "highly skilled and dedicated" paid developers will be required in order to maintain and develop the DBE codebase. The number of paid developers that partners suggested ranged between 2 and 5.

Intel provided some interesting ideas on the potential roles that would be involved in maintaining and improving the DBE software. These included: users, developers, code owners and project administrators / integrators.

	Short term	Mid-term	Long term
Unpaid	• Users	• Users • Code owners • Developers	• Users • Code owners • Developers
Paid	• Developers • Code owners • Project administrators/ integrators	• Project administrators/ integrators	• Project administrators/ integrators

Beyond these roles, other partners saw the need to encourage the participation of the wider OSS community as an important aspect of the project administrator / core developer role.

What kind of organisation could the core group of developers exist within?

For good reason, answers to questions concerning 1.) funding, 2.) type of developer organisation and 3.) the aims or remit of that organisation, were almost inextricable from one another. It should be noted, however, that talking about the need for a small group of paid developers was not synonymous with forming a 'foundation' or other centralised organisation. However, there was recognition that a group of paid developers would have to organised somehow, even if it was only at the level of being able to receive funds and pay those in key roles.

Sensitivity over power and control within the potential core developer organisation was present in partners' responses particularly with respect to funding. As one partner put it, "the one who pays is the one who decides". Concern over who would 'control the platform' was also expressed in terms of who would occupy key roles. In order for companies to maintain government-based income streams and exploit routes to market that include national or regional governments, there would have to be a balance of interests amongst those in key roles. National governments may have reservations about entrusting key projects to an organisation that was clearly 'run' by a single large technology company. However, if revenue-based business models were sought then the bias would be need to be towards those with business acumen. Either way, a strong argument was made for the continuation of a development environment where a strict 'separation of concern' exists between software developers and business users. This argument was made on the basis that developers should be left to do the work of developing and not be forced to 'bring in' business users where this is not there specialism.

There was some difference of opinion on the potential of the developer group to attract voluntary contributors in the short term (i.e. immediately after the end of the project). The stability / usability of the platform at the end of the project was cited as a potential reason for this, as was the currently limited degree to which the DBE has attracted the attention of OSS developers worldwide. It was also noted that in terms of recruitment, there was the added difficulty of trying to convince potential contributors of the benefits inherent in an infrastructural technology, which was considered much more difficult than explaining, for example, the benefits of a new operating system or an alternative to Word..

Whilst acknowledging that the type of funding model agreed upon would directly affect the character of a DBE developer group, partners came up with a range of suggestions regarding what form that group should take. One suggestion was that the group could offer a mix of proprietary and non-proprietary development, like Argo UML (open source effort by Tigris) and Poseidon UML (commercial based software on Argo). Other suggestions supported the idea that a not-for-profit company would work best, set up specifically to meet the objectives of the DBE. In terms of funding, the point was made that at the moment, the EU does not provide close-to-market venture capital so a possibility could be for this organisation to be funded under FP7 as a collaborative project. Another suggestion was to offer the core developer team of 3-5 people the option of 'return on investment' when offering support to early business adopters. A further suggestion was that since the EC is becoming increasingly involved in open source projects, perhaps it could establish an organisation that could serve all EU funded open source projects, preventing them from each having to invent their own governance arrangements.

Ideas for attracting funding or voluntary contributions

Developers' often included a range of options in their answers to questions concerning potential funding models. These included models based on public finance, private finance and combinations of the two. Entrepreneurial ideas were suggested for generating revenue but there was some resistance to the idea of 'selling code'. In two cases it was felt that the public finance route was one that offered the DBE a unique advantage in relation to competitors and an opportunity to extend focus on the public or social value of the DBE.

Ideas for attracting funds and contribution that were given by the developers are listed below.

Ideas for public sector funds and contributions

- Funding obtained through taking part in national or regional projects based on the DBE technology
- Universities identified as an example of organisations who might choose to support the evolution of the code for free.

- EC funding for follow-on projects that include upgrade/maintenance of DBE software
- EC funding for a project dedicated to the upgrade/maintenance of DBE software
- Government funding – this is a source of funding the DBE can generate that other software communities may not be able to

Entrepreneurial ideas

- Current DBE developers form a virtual enterprise to create software solutions using the DBE where they become consultants.
- SME developers who use the DBE in their business might support it directly or as a sponsor
- Paid consultancy, commercial technical DBE publications – something along the lines of the JBoss business model
- Selling training material and providing training courses

Combined

- Create a DBE Foundation with enough funding to pay administrators and code owners - could receive income from industry, government (EC, Local), public donations
- Combine real business deployment which can generate its own revenues from a stable infrastructure with the less stable research part of the platform that can be supported through public funds

At this point in time it seems difficult to pinpoint to what extent existing computing partners will contribute voluntarily to the codebase. Some partners argued that regardless of follow-on funding, individual partners were likely to continue to look after their own codebases anyway in order to exploit them in future projects.

DBE Follow-on projects

The general impression from partners' responses was that follow-on EU funded projects that were intended to use or add functionality to the DBE platform would play a significant role in the immediate level of sustainability that the codebase would achieve. Beyond this 'safety net', anxiety was expressed at the 'process of natural selection' that DBE components would be subjected to by the open source community. However, on the same count it was argued that the potential for *self*-sustainability would only be visible once this process begins, "and we will know which components are interesting and which ones are irrelevant based on the people interested to contribute and engage with us".

Currently, 4 out of 5 of the core DBE projects are in the position of being supported by follow-on projects. Notably, the DBE studio is not supported and there appear to be no immediate plans in place to ensure its continued maintenance after the end of the project. However, the project partner concerned was clear that given appropriate funding they would continue their commitment.

[Please note: this table is incomplete. A more detailed overview of components and their status with regard to contributions after the end of the project would be desirable]

Partner	**Follow-on project**	**DBE component that will be maintained / developed**	**Added functionality**
Soluta	ONE		
WIT	OPAALS and	Open Service Accounting	

	ONE		
UNiS	OPAALS		
ISUFI	OPAALS	SBVR-based BML Editor	
STU	OPAALS	EveNet	
Sun/Techideas	OPAALS	Execution Environment	
	SEEMLESS		
	CONTRACT		

A key question here concerns 'horizontal issues' that are not covered by individual projects in their current form, yet are fundamental to the functioning infrastructure, such as, for example, security and identity.

Given the significance of follow-on projects, it would seem that any plan for short term sustainability should include consideration of how to create and maintain strong links to these projects through the developer group. To some extent, these projects will bring a new set of user/developers to the developer group shortly before the project ends.

However, the question of how to involve more users is also important. At the moment, one of the regional catalysts ITA in the Spanish region of Aragon is acting as a user/developer. Their feedback to the maintenance and debugging process has so far been very important to the development of the codebase. At a communication level they have played an invaluable role by acting as a 'live' user feedback loop ensuring that the developers have appropriate communication tools and response rates in place. If regional and SME engagement continue (and through projects such as PEARDROP it should do), then the number of users should increase. Again, however, this creates a heavy reliance on future projects and in the short term requires that strong relationships between the DBE developer group and significant projects are fostered.

Conditions for continuing to contribute to the DBE code base after funding ceases.

Each of the 11 computing partners were asked under what conditions they would continue to contribute to the codebase once the project ended. Answers feel into two categories. The first condition was where a customer had adopted a solution that uses DBE (interestingly this response was given by the two small technology companies but was not an option proposed by the larger technology companies). The second condition was where a partner was funded to carry out maintenance and development through a follow-on project.

Funding to pay developers was cited as being of central importance to the continued involvement of all developers. In general, only commitment to those components that partners had developed themselves was offered although support at the level of 'ideas' for other areas was described as potentially forthcoming. For research institutions, continued involvement in the DBE was discussed as potentially desirable where the platform was of strategic importance in the pursuit of particular research agendas and/or accessing further grants.

Standards or technical areas of concern with regard to sustainability and governance

[Please note: my understanding of these points is superficial compared to the audience of this paper, so I don't feel I can offer any analysis of these points. However, I include them here so that they can form the basis of discussion]

- FADA and the P2P architecture
- Compatibility with Web Services as an aid to sustainability and uptake from wider OSS community contributors

- Eve will require further development
- P2P architecture and support for long-term transactions also need additional work (the latter could impact on the requirements for messaging and appropriateness of standards currently supported in DBE
- Hosting - who will host the ExE (FADA nodes, Portal, accounting, Knowledge Base. Semantic Registry …) at the end of the project?

(1) Supporting Web Services

Currently, DBE uses object serialization over http, which implies no community support in terms of re-using existing middleware components, extension is difficult, and duplication of work.

(2) FADA and Java objects

A possible short-coming of FADA might be its dependency on Java object storage. Storing Java objects implies dependency on JDK that might cause compatibility issues, i.e., an object compiled with JSE 5 clashes with a JSE 4 runtime. Also, the strain on FADA is high because serialised objects might be large. An alternative approach might be text-based storage in which a textual description of a service (describing how to bind to a particular service) is likely to be small and can be internally compressed.

(3) SDL mapping to WSDL

Standard-compliance would require our middleware to deploy DBE services as Web Services while adhering to the MDA approach of DBE. Relevant issues include namespace support, SDL support for external data structures, and evolution of data structures.

Planning for sustainability

Thinking in terms of short term, mid-term and long term sustainability planning, it is important that the developer group does not overload itself with requirements in the short term. For example, it may take some time before a viable model of self-sustainability is reached. In general, when developers spoke in their answers about advanced capabilities such as training and certification, these were generally expressed as a mid term or long term goals and at present, there is no sense of whether these services would be provided by related SMEs or become a business model for the core developer organisation. Nevertheless, the groundwork for community building needs to begin as early as possible, if this is the route that is chosen, since trust in the viability of a DBE community that capable of continuing beyond the funded life of the project will take time to establish.

There will be a natural transition phase during the last 6 months of the DBE project when new follow-on projects start to become involved in the codebase and the developer group becomes a hybrid group, for the first time, consisting of developers from more than one project. Preparation for this step could include:

c) Identity building work where the codebase and ‘new group’ are named and discussions are started on sustainability

d) A discussion of roles viable organisational models

e) An analysis of potential funding models to cover the period immediately after the end of the project

Governance

Governance applies to the DBE in two senses. It applies in an organisational sense where it focuses attention on 'the way things are organised', and the political and ethical consequences of the organisational structures put in place. In this sense, unless there are serious rifts or disagreements within the group over common aims and objectives, then governance should take care of itself in the early stages of sustainability planning. It will effectively be the practical 'working arrangements' that the developer group put in place in order to carry out their work during this transition period.

A potentially more complex aspect of governance will be how the group chooses to construct relationships with those 'outside' the group. Deciding who is 'outside' and who is 'inside' the group is a political decision in itself but as long as a focus on practical arrangements is retained, this area of decision-making should not prove too testing.

The second sense in which governance applies to the DBE is in the more technological sense of how repositories, registries and other normally centralised components of an infrastructure are organised. In this sense the DBE architecture sets the benchmark for how centralised or de-centralised a particular configuration should be. However, there are still a range of possibilities and a measure of ethical consideration is required about how choices are structured into the DBE platform. It is in this sense that the DBE group of developers has been asked by the Commission to think about a 'bill of rights' that will set out, in a transparent manner, some of the potentially ethical implications of decisions taken regarding the DBE infrastructure. It is often difficult to envisage or invent scenarios where ethical considerations may need to be taken into account, but as use of the infrastructure grows, this is most certainly an area of discussion that the group will need to be aware of and begin giving serious thought to.

MLD 27.04.06

Appendix 5 - Computing domain meeting notes

Governance and Sustainability Planning and the Computing Domain

The following is a summary of a discussion on sustainability and governance that took place at a meeting of the computing domain in Zaragoza on 4th May 2006. The discussion was facilitated by Mary Darking (LSE) and Tim Romberg (FZI).

The main purpose of the discussion was to reach a common understanding of the following two recommendations that were made by the European Commission in the DBE Annual review report:

- to place responsibility for creating a plan for code sustainability with the Computing Domain

- to request that the project management team develop a plan and manifesto to launch an 'Open Digital Ecosystem' open source community

	On code base sustainability

1.	It was generally agreed that any decisions taken regarding the future of the DBE codebase should reflect the basic reality of open source development; that ***a project or codebase will only survive it is interesting to developers and has clear business potential***
2.	On this basis, it was agreed that the future of code sustainability should not be modelled around the presence of central funding, but that in the *short term* it should ***focus around the actions necessary to attract and sustain the interest of voluntary contributors***
3.	Following this line, it was recognised that ***communications surrounding code development and maintenance should be fully opened out.*** **ACTION:** Mailing lists currently held on Collabnet should be closed and all lists moved to SourceForge.
4.	It was also recognised that being 'fully open' would require ***a clear, transparent and openly accessible approach to decision-making*****,** particularly with respect to ***committing code*** to the codebase and organising ***software releases***
5.	There was a long discussion on whether to think in terms of the codebase as a *whole* or in terms of the *individual projects* make up the codebase. It was proposed that from a developer perspective**,** one view should not be given *automatic* priority over the other**,** instead it was decided that ***interest in individual projects should drive individual projects and interest in the codebase as a whole should drive integration***
6.	In the interest of integration, it was agreed that the codebase should be seen as consisting of 2 parts - ***the Execution Environment and the Service Factory*** – and that the role of '**Synchroniser'** should be created for each part. It was agreed that these positions would be unpaid and should be undertaken by individuals who are prepared to work in their own personal free time. **ACTION:** Nominate candidates for the role of **Execution Environment Synchroniser** and **Service Factory Synchroniser**
7.	Nominating candidates for the 2 synchroniser roles will be carried out via e-mail on the basis ***of one vote per developer***. Each developer will therefore propose 2 names: one name for the Exe role and one name for the Service Factory role. The aim is therefore that appointments will to these roles will be driven by the individual reputation of nominees within the developer group.

8.	The synchronisers will base their decisions on the *'ground-up' requirements of individual projects*, ***balancing*** these against the *integration requirements of the codebase as a whole*.
8.	It was agreed that the ***name for the codebase as a whole should remain as it is: 'Digital Business Ecosystem'***

	On launching a community
1.	The idea of trying to develop a 'DBE community' identity in the short term was resisted.
2.	The concept of a community identity was discussed and the question of community purpose was raised. The point was made that a community requires common ground and a common purpose. At this point in time and until the business potential of the technology is realised, the DBE lacks both, making real community building problematic.
3.	The basic assumption that the computing domain should create a single community of developers, as the Commission appears to request, was called into question. It was argued that to be truly open source, the Commission should allow for the fact that there may be multiple communities and that therefore the issue of a single community should not be forced.
4.	The proposal was made that the new arrangements for communication, decision-making and organisation should be put in place from June 2006 in order that they can be put to the test. It was agreed that these arrangements would stay in place for a period of 12 months, taking the developer group through the transition from funded to unfunded

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