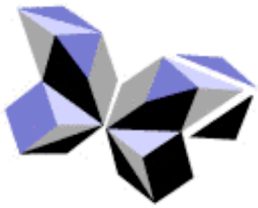

Digital Business Ecosystem

Contract n° 507953

Workpackage 34

Exploitation and Sustainability

Deliverables D34.3

List of critical topics for Market Watch releases

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1. Introduction

The list presented in this deliverable relates closely to D34.4.1 – the first in a series of Market Watches for Self Sustainability. This document can be understood best with a preliminary reading of D34.4.1.

In the second half of the project, an important change was made to the Market Watch concept : with the growing number of first DBE application cases, future Market Watches will contribute to deriving a roadmap on the development directions of the real DBE deployment in relation to underlying DBE technological development trends. From that we will help to define a sustainable position of the DBE in the context of related open standards and competing proprietary technologies. We also want to support a better alignment of technological evolution and emerging business deployment of the DBE.

D34.4.1 discusses first Driver SME cases and the DBE technological context in more detail – that shall not be repeated here. In addition D5.1.1/.2 as well as the DBE Sustainability Plan D34.5.1 provide the context on how that relates to a wider Business Vision of the DBE.

Some central points of that:

1) First of all the DBE is an *infrastructure* for software developers that needs to be combined with existing software solutions or application services in order to construct meaningful business solutions.

2) In that sense, it is to be complemented by an emerging *business solution layer* . The business value of the DBE as a whole emerges from the *individual utility* of each of these business solutions for the subgroup that uses them. The DBE infrastructure is a *shared asset* in all these solutions that provides a faster and standardized means for all sorts of *electronic interactions*. In addition, it fosters the *discovery* and *integration* of these individual solutions.

3) In the sense of an « *interactionware* « and a developers toolkit it still contains many *lose ends*. That means that not all components of the DBE are fully integrated and have necessarily to be applied in one solution. In other words : the DBE is an open ended solution (it does not solve a particular problem but it can be applied to many different specific areas). From a developers perspective , it takes a lot of « creativity » and knowledge to come out with ideas/areas where the DBE infrastructure is a « natural » solution and where it can provide more powerful innovations than just using it for connection legacy systems.

4) In that sense, the DBE infrastructure does *not prescribe a specific way of deployment* or specific type of business solution. Instead it is determined by the bottum-up emergence of these solutions in the same way as by the top-down architectural design.

The management of the co-evolution of the DBE application areas and the underlying fundamental technology directions is a main task for the DBE foundation as later governance organization.

In the following we will describe several of the areas that can be assumed to determine that co-evolution. This provides our list of critical topics for future Market Watch releases.

The actual distribution of these areas and their sub points on the Market Watch releases is still subject to discussion and will also depend on the further emergence of more DBE application cases in the next phases of engagement.

But it can be considered a « watch list » that needs to be regularly checked and updated according to issues arising from the new DBE application cases.

The P2P Execution environment		
	Distinct features compared to *Web Service* or *Middleware* technologies	The DBE enables networked business opportunities that are easier to implement than what current web services or semantic web technologies allow. In that sense, Web Services as well as Middleware technologies provide an ongoing reference point for the DBE to compare with. Several of the current Driver SMEs had considered using or did already use such technologies before they became aware of the DBE.
	The emerging network topology	We have seen in first cases that the DBE is mainly used to *network enable existing applications*. As the applications differ very much in interaction and data intensity as well as (potential) number of users , the DBE network growth is difficult to predict. We need to examine careful its possibilities but also probable limitations. That includes the questions of stability and resilience to failure without a central control.

	Secure Transaction Handling	In the first application cases, rather simple and instant transactions have been carried out over the DBE. It needs to be understood what types of transaction are best suited to be carried out over the DBE and where limitations exist (e.g. on longer, multi-step transactions). In the same way it needs to be understood how the possibilities for more complex transactions will emerge with future DBE technology developments. Several limitations of the DBE have been reported already by Driver SMEs such as difficulties to integrate remote reference calls.
	Security and Identity management	Security and identity management are on top of the list of reported missing features from first Driver cases. These issues must be solved before DBE can be used in real business cases by the SMEs. There are current developments in the project but this is also the area were most probably code will have to be added from other Open Source activities – e.g. other FP-6 projects such as PRIME or TRUSTCOM. We need to understand what are the demands and how do they relate to market standards.
Semantics and the DBE		
	The integration of Semantics and Syntax	The integration of semantics with the service execution is a central aim of the DBE. This has already been made the primary topic of the D34.4.1 market watch. The following points relate to the continuous observation of the three roles of semantics . A perhaps critical point in that context is to investigate the current use of semantics by SMEs Such as : - Use of RDF - Dublin core (i.e. XHTML)

		- Microformats While Dublin Core is not the same/has not the same purpose of BML1.0/BML 2.0, it could be useful technology to compare to in terms of « semantics« adoption.
	Semantics for Service Discovery	Semantics for service discovery relates to the necessary semantic information to identify other DBE service both from a business relevance as well as from a technical compatibility and availability viewpoint. That relates to the main application area of the current BML : findability.
	Semantics for Service Integration	Semantics for service integration relates to the necessary semantic information to identify a cluster of possible services that could be integrated. This is a rather unique feature of the DBE.
	Semantics and shared transaction rules	Semantics and transaction logic relates to the necessary semantic information in order for a cluster of services to share a ruleset on how transactions in the cluster are carried out. This would allow to gradually transfer business logic into the DBE and simplify applications.
The Service Factory		
	Shared architecture of all DBE solutions	D21.3 has layed out the technical architecture of the DBE and the open standards or methodologies that it refers to such as OMG's MDA. It is an ongoing task to relate that architecture to the emerging DBE application cases. Most early cases have e.g. not yet used central architecture elements such as the Service Manifest. As stated above, a constant balance between the emerging bottum up as well as the architectural top-down design process is a continuous object on our watch list. In terms of the semantics, we need to also watch what other standards are emerging

		from OMG and also the ones that are used by SMEs (i.e. microformats)
	The integration of the Service Factory into SME software development	Driver SMEs have reported that they initially missunderstood the Service Factory as a proper development environment for applications. That is also based on the missunderstanding of the role of MDA in the technical architecture and of possibilities for code generation. Whereas the DBE does indeed offer to a limited extend such possibilities for interface generation, the Service Factory is also largely a specification environment that needs to be combined with other means of development and exploitation. The DBE Studio should be viewed as an integration tool. From this prespective we need to watch how the DBE Studio allows the integration with the platforms that SME use (Ruby/Phyton/Php) and make good cases around that. We need to be aware in that context, that the Service Factory had not been available for the development of first Driver cases.
The Evolutionary Environment		
	The role of evolutionary computing in the emerging DBE	Evolutionary thinking has always been a cornerstone of the DBE concept. However, the role of a direct translation of that into evolutionary algorithms has decreased with the DBE infrastructure becoming more concrete. In the recent solution the only place for such algorithms is in the evolutionary environment. With a growing number of networked DBE users as well as related business solutions, evolutionary computing might increase in importance as it is usually applied for large data sets and networks. It is a central watch point to examine that growing relevance and understand the

		implications on business solutions. We have derived two early areas of closer observation given below . Finally, the role of evolutionary computing wont be very relevant as long as there is no data. How can we encourage to have simple data from SMEs in the DBE to start doing some real testing ?
	Individual Fitness	Fitness relates to a support of the manual service discovery process by algorithms that scan DBE semantic information but also runtime usage to propose best fitted services for a specific application / request.
	Collective fitness	Collective fitness relates to the task to apply the fitness quest from above to a full aggregation of services. That is provided through the habitat networked deployed in the context of the evolutionary environment. That will lift the support to determine best fitted services on another level towards the proposal of a full set of compatible services for a more complex request.