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Market Analysis and Initial Exploitation Plan

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Executive Summary:

Market Analysis and Initial Exploitation Plan

This document summarises deliverable D5.6 of project FP7-610582 (**Envisage**), a Collaborative Project supported by the 7th Framework Programme of the EC within the Information & Communication Technologies scheme. Full information on this project is available online at <http://www.envisage-project.eu>.

This document comprises the initial analysis of the Cloud Market targeted by ENVISAGE. It analyses the market and the competitive environment surrounding the project.

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Chapter 1

Introduction

This document comprises the initial analysis of the Cloud Market targeted by ENVISAGE. It analyses the market and the competitive environment surrounding the project. The rest of this document is structured as follows:

- Section 2 analyses the three major potential market segments for the ENVISAGE outcomes
- Section 3 summarizes the document in Conclusions

Appendix A provides an overview of the ENVISAGE assets.

Chapter 2

Market Analysis

We have identified three relevant customer segments for potential ENVISAGE business models: *Modeling and Simulation of Big Data Jobs*, *E-Commerce SaaS solutions*, *Cloud-enabled Managed hosting*. Each of the following three subsections describes them in terms of:

- Customers
- Value proposition
- Go-to-market
- Market size
- Market growth rate
- Industry cost structure

2.1 Modelling and Simulation of Big Data Jobs

2.1.1 Customers

1. developers of big data jobs - helps them develop, tune, maintain and run big data jobs in a more cost efficient way.
2. managers/system administrators - help them plan and forecasting for cloud resources and budgets
3. cloud infrastructure vendors - help their customers make it easier and safer to develop big data processing jobs
4. buyers of big data jobs - can use these tools as signoff criteria (e.g. using simulation as a requirement specification)

2.1.2 Value Proposition

Big data jobs requires lots of expensive resources (e.g. CPU and storage) to run, and by using the modelling and simulation tools from Envisage one can cheaply experiment, tune parameters and estimate costs for the various big data job outcomes before running the actual big data job.

This can lead to a more rapid and affordable way of getting to a good or optimal big data job configuration instead of having to run actual big data jobs potentially several times. As well as the opportunity to do more risky experiments through simulation with outlier configurations that you would not have done at larger scale.

Using modelling and simulation of big data jobs prior can reduce overall costs and also risks since one can learn about the jobs with actually running them at large scale.

2.1.3 Go-to-market

We will target the service towards the customer groups described in 2.1.1, and in particular towards developers of cloud services. The product offering will be a SaaS service where people can upload jobs and configurations - in similar manner as actually running the actual big data job, and allow for easy experimentation with models and configurations, simulate and finally analyze and visualize results.

Promotion of the product will be done using traditional Internet advertisement on select and relevant sites (e.g. reddit.com, stackoverflow.com and github.com to reach developers), as well as blogging about case studies. Presence at relevant conferences and events will also be done.

2.1.4 Market Size

The Hadoop technology stack is a significant subset of the Big Data market, so that can be used to estimate market size. The global Hadoop market is forecasted to reach \$50.24 billion in 2020 as shown below in the figure provided by Allied Market Research (Figure 2.1).

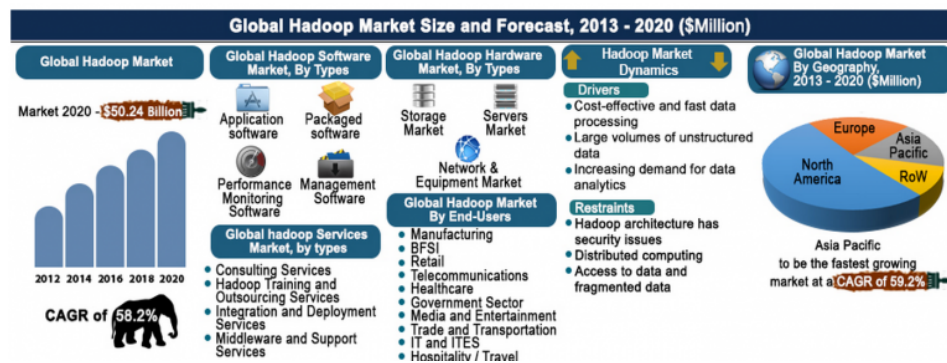


Figure 2.1: Hadoop Market Size, Adoption and Growth Through 2020 (Source:Allied Market Research)

2.1.5 Market Trends

A clear market trend is that the big data market is strongly connected to the cloud market, so that most adopters of big data is going to use it within cloud services.

2.1.6 Market Growth Rate

The Hadoop market is going to grow 58.2% in the period 2013-2020.

2.1.7 Industry Cost Structure

What are the most important costs inherent in our business model? The most important costs are cloud costs needed to run the simulator, as well as human resources (e.g. developers, system administrators, sales and marketing) need to develop and sell the service. The human resources are likely to be more expensive than the computational resources needed to run the simulator, with development and continuously fine-tune the modelling and simulation tools will be the key cost driver.

2.2 E-Commerce SaaS solutions Market Segment

2.2.1 Customers

ENVISAGE contributions provide value for customer-facing software as a service applications, and FRH industry partner in the ENVISAGE consortium is validating the value of the contributions in large scale eCommerce SaaS application capabilities.

In Forrester's Forrsights Software Survey, Q4 23, North American and European enterprise software decision-makers indicated that over the next two years, budgeted enterprise application spending will remain mostly for on-premises systems (53%) and licensed software that is externally hosted in a dedicated environment (25%). SaaS spending accounts for the remaining 23%. However, when considering the prior year's survey results, we see that there is movement away from on-premises systems and toward SaaS. The budget for on-premises applications is about 16% lower in 2013 than in 2012 (63% versus 53% in 2013), and SaaS spending budget is about 53% higher in 2013 than 2012 (15%, versus 23% in Q4 2013), with hosted spending holding fairly steady. Hence ENVISAGE target customer is getting more defined and become more prominent.

By drilling down into the types of applications being adopted as SaaS, we see that customer-facing activities have the highest levels of adoption. Sales force automation, marketing automation, commerce software (i.e., eCommerce), SCM, and customer service and support all show actual and planned adoption rates of 70% or higher for both hybrid and replacement scenarios. That also shows the relevance of the FRH industry use case that fits right into the eCommerce market segment.

2.2.2 Value Proposition

One of the key differentiators of ENVISAGE methodology is the fact that service-level guarantees are first class concepts and part of the design model of the application and also part of the deployment model. That ensures that Service Level guarantees are managed at design and at runtime. The ingredients for a comprehensive and transparent service-level agreement are therefore built-in and provide the basis for a comprehensive control of service level agreement. Market data confirms the relevance of ENVISAGE methodology in the value chain of any SaaS Application provider - a provider that can offer a comprehensive service level agreement has a 38% more chance of being chosen. According to Gartner's Forrsights Software Survey from Q4 2013, the key criteria clients use to select a SaaS solution are still security, comprehensive service-level agreements of the vendors, and compliance with local privacy laws. Vendors that adopt ENVISAGE toolset and methodology will have that value in their offering.

Another key differentiator of ENVISAGE toolset and methodology is the automated and less error prone methodology to monitor and manage changes of applications. The applications developed and deployed using ENVISAGE methodology yields autonomous dynamic configuration of computing resources which minimizes the cost related with changes or elastic usage patterns. Additionally the dynamic configuration capability means that it will respond adequately and guarantee business agility - the ability of the business unit's stakeholders to adjust the applications as requirements evolve (e.g., process flows, organizational structures, business rules, and terminology). Seventy-five percent of software decision-makers in enterprise companies that use or plan to use SaaS consider business agility important or very important. Seventy-two percent of these same respondents indicated that speed of implementation and deployment was a key benefit of SaaS. This expectation is justified based on numerous discussions with SaaS vendors and customers. With no infrastructure to assemble, SaaS customers can proceed more quickly through implementation stages. The ease of configurability in products built for SaaS benefits implementation agility as well as post-implementation business agility.

The Forrsights survey data indicates that 21% of survey respondents are very concerned that higher total cost is a potential barrier to adoption. Therefore, costs may either be a benefit or penalty to SaaS adoption, depending on a variety of factors specific to the customer.⁷ The software-as-a-service delivery model can offer fast deployment speeds, low upfront costs, and ongoing flexibility to scale up or down as needs change. Many of these benefits are part of ENVISAGE offering, whether applied to customer service applications, eCommerce platforms, or IT software management tools.

2.2.3 Go-to-market

Subscription-based pricing that lowers the cost to get in the game. For many firms, the key benefit of SaaS is its simple, subscription-based pricing model: Firms pay a subscription fee per month (or year) per user

that covers everything needed to operate, including support and maintenance. This model eliminates the capital investment required for on-premises hardware and software licenses.

Simple implementation and upgrades that minimize staff effort. A SaaS-delivered tool only requires a web browser and an Internet connection to function - there's no client to install, no hardware to support, and nothing to upgrade locally. SaaS also offers seamless, automatic upgrades, typically two to four times per year (but note that customizing your SaaS tool can cause problems with future upgrades). In contrast, on-premises upgrade cycles average between 18 and 24 months.

Reduced support needs. I&O pros can expect a far lower support burden for the ITSM SaaS platform itself than for a comparable on-premises deployment, because the SaaS provider typically includes support and maintenance in the subscription (the provider does patching and bug fixing).

Greater opportunity of use. A per-seat SaaS subscription will usually cover access to capabilities across multiple service management processes. Thus, I&O pros won't need to waste time arguing with the supplier about whether you need to pay more for multiple licenses across multiple ITSM products or modules (a common and costly annoyance in the on-premises mode). This gives I&O teams the freedom to continue their adoption of service management over time without additional costs other than those for additional users and seats.

2.2.4 Market Size

According to Gartner revenue for the worldwide software-as-a-service (SaaS) market will expand up to \$22.1 billion by 2015 from the \$14.5 billion market size it had in 2012.

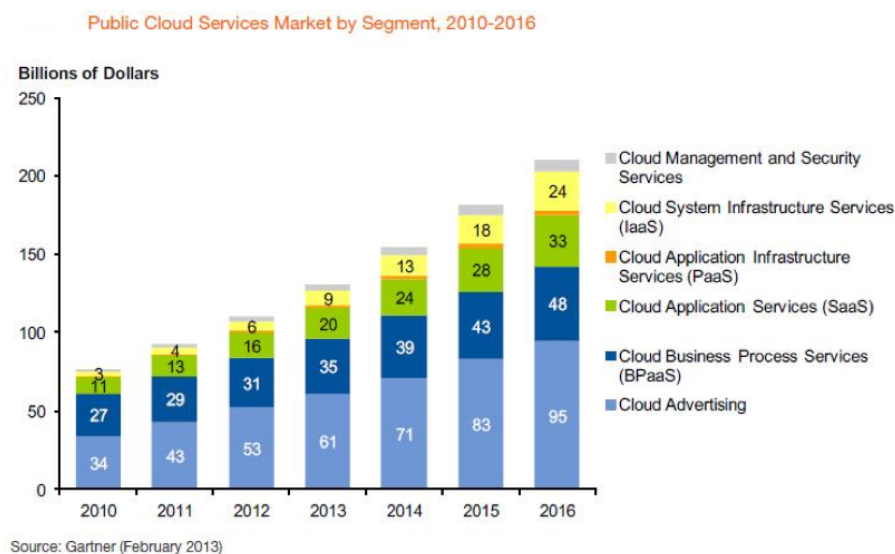


Figure 2.2: Market Segments for Public Cloud Services

2.2.5 Market Trends

The market will begin to focus more on applications in the cloud rather than infrastructure. This means the migration of enterprise applications as well as new development. Thus, both the PaaS and IaaS spaces will continue to expand to support this focus on cloud-based applications, as well as processes and tools to support this migration. In most instances, these applications will operate within multi-cloud environments, which will be a mix of private clouds and public cloud providers.

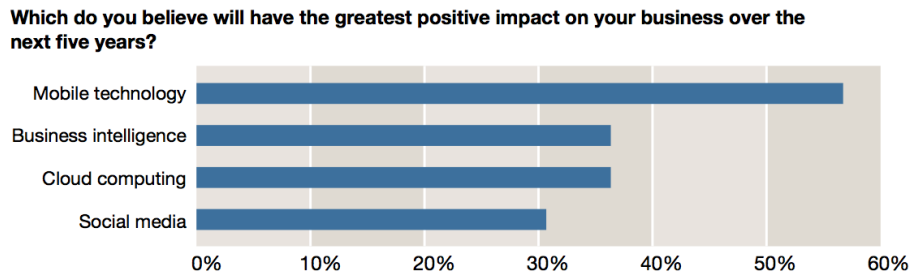
Figure 6: Greatest positive impact on business

Figure 2.3: Greatest Positive Impact on Business

Cloud management platforms will continue to dominate as the hot technologies as most enterprises move to complex multi-cloud deployments. Cloud performance management technology will come into focus as enterprises understand that they will get big cloud bills and need to monitor and manage performance of these clouds to find the value. Cloud financial systems will become more relevant. They include systems that monitor clouds for use-based accounting, financial projections and so on. It becomes important as we learn to live with clouds, and thus need to monitor and allocate costs within the enterprise.

1. Enterprise decision makers will no longer debate whether cloud services are reliable or secure enough to handle their corporate needs and will aggressively pursue strategic cloud initiatives that will transform the way they operate to better compete in an increasingly challenging business environment.
2. IT and in-house software development teams will attempt to work more closely together to help corporate business units select the right cloud service providers to satisfy their functional requirements.
3. ISVs and other technology vendors that don't offer a combination of public and private cloud solutions to respond to the varying needs of their corporate customers will be at a competitive disadvantage and quickly lose a significant share of the market.
4. Although horizontal cloud solutions will continue to experience significant growth, vertical market solutions aimed at specific industries will grow even more rapidly.
5. ISVs and other technology vendors that don't establish partner-friendly channel programs specifically designed to address the unique dynamics associated with cloud services will fail to extend their reach in the marketplace.
6. Best-of-breed cloud providers that don't offer clearly differentiated solutions that are strongly aligned with key SaaS, PaaS and IaaS market players won't survive.
7. Successful cloud solution providers will design their services to be delivered via mobile platforms, offer social networking capabilities and include analytics that provide key performance indicators (KPIs) and other industry benchmark statistics to their customers that help them maximize the value of their solutions.
8. Although business intelligence (BI) will be embedded into a widening array of business applications, a major cloud BI player will emerge from today's highly fragmented market.
9. Systems integrators and other professional services firms will continue to experience rapid growth in response to escalating demand for specialized skills to plan, design, develop, select, implement, integrate and manage cloud solutions.
10. Cloud solution provider consolidation will accelerate through a growing number of acquisitions, mergers and asset sales. And IPOs of cloud solutions providers will also broaden to include SaaS, PaaS and IaaS providers with both horizontal and vertical market orientations.

2.2.6 Market Growth Rate

Adoption SaaS adoption will be driven by the growth of the platform-as-a-service developer communities, Gartner said, as well as a growing interest in cloud computing. Organisations most commonly use SaaS for horizontal applications (i.e. applications that address business divisions, rather than specific industries) with common processes, Gartner said, but added that there was increasing interest in vertical-specific offerings.

Growth Rate Cloud-based infrastructure as a service (IaaS) and business process as a service (BPaaS) are the two fastest-growing segments, expanding 44.9 and 12.4 percent, respectively, in 2014. Agility, not cost, will be the primary reason that many organizations adopt cloud computing. Cloud-based services are cannibalizing more traditional models. This is most apparent in infrastructure outsourcing where infrastructure utility services (IUS), managed services based on IaaS technology, and cloud IaaS growth include workloads moving from more traditional data center managed services to IUS and IaaS, respectively. Hybrid IT environments will dominate client IT architectures over the next several years. This underscores the importance of skills in the old-world legacy environments, as well as the new-world as-a-service operating models.

IDC Forecasts Worldwide Public IT Cloud Services Spending to Reach Nearly \$108 Billion by 2017 as Focus Shifts from Savings to Innovation

Worldwide spending on public IT cloud services will reach \$47.4 billion in 2013 and is expected to be more than \$107 billion in 2017, according to a new forecast from International Data Corporation (IDC). Over the 2013-2017 forecast period, public IT cloud services will have a compound annual growth rate (CAGR) of 23.5%, five times that of the IT industry as a whole.

The growing focus on cloud services as a business innovation platform will help to drive spending on public IT cloud services to new levels throughout the forecast period. By 2017, IDC expects public IT cloud services will drive 17% of IT product spending and nearly half of all growth across five technology categories: applications, system infrastructure software, platform as a service (PaaS), servers, and basic storage. Software as a service (SaaS) will remain the largest public IT cloud services category throughout the forecast, capturing 59.7% of revenues in 2017. The fastest growing categories will be PaaS and Infrastructure as a service (IaaS), with CAGRs of 29.7% and 27.2%, respectively.

The coming year promises to be another substantial growth year for PaaS, with the technology more than tripling worldwide revenues from about \$4 billion in 2013 to \$15 billion in 2017, according to IDC. Value will migrate from Infrastructure as a Service (IaaS) to Platform as a Service – and from generic PaaS to data-optimized PaaS.

Over the 2013 to 2017 forecast period, public IT cloud services will have a compound annual growth rate [CAGR] of 23.5%, five times that of the IT industry as a whole, IDC said, and PaaS will lead IaaS and SaaS with a CAGR of 29.7%.

Risks Sharon Mertz, a Gartner research director, said the issues holding back SaaS deployments varied strongly by region. “Limited flexibility of customisation and limited integration to existing systems are the primary reasons in North America,” she said. “In EMEA, network instability is the issue most frequently encountered, whereas longer-than-expected deployments are the top issue in Asia/Pacific.”

2.3 Cloud-enabled Managed Hosting

2.3.1 Customers

Within the Cloud-Enabled Managed Hosting market the ENVISAGE offer targets the Cloud-Enabled Managed Hosting service providers.

This customer segment is represented within the ENVISAGE Consortium by the Engineering Group (ENG). The Engineering Group is present in the IT outsourcing market with a network of data centers (Pont Saint Martin, Turin, Padua) adopting advanced technologies to ensure high service quality and security. The services offered through the data centers cover all the needs of Business processes, ranging from Application and Information Systems management; Business process outsourcing, including remote desktop management,

server consolidation, virtualization and disaster recovery; consultancy services. Nowadays, the IT operation division is servicing more than 200 customers with 5000 servers, 40000 remote desktops and 1000 remote connections. The data center of Pont Saint Martin is heavily investing in green technologies, including geothermal solutions for cooling the resources.

2.3.2 Value Proposition

In general within the Cloud-Enabled Managed Hosting market the service providers offers to their customers:

- management of servers Operating Systems (OS) and middleware software (e.g. application servers, databases) housed in the service provider's facilities
- managed services such as security services, backup, load balancing
- professional services such as architecture consultation, capacity planning, performance testing, security auditing and data center migration
- short-term subscriptions intervals (e.g. hours, days) no longer than the term commitment for the underlying computing resources
- ability to change the amount of capacity in use without any contract additions or modifications
- alternative delivery models: Multitenant (hardware is shared among many customers) or Single-tenant (hardware is dedicated to one customer)
- self-servicing interfaces and rapid automated provisioning processes

The ENVISAGE solutions allow to make to service providers the following value propositions:

- Reduce the provisioning time of new services thanks to the increased automation degree of the provisioning process achieved by means of the ENVISAGE Resource Analysis Framework. (Example) Increased automation of the application deployment process will significantly reduce the time to operate services. This not only reduces personnel costs for operating the service, it enables ENG to change the current business model to also offer fine-grained and short-time capabilities (cloud resources).
- Improve Customers satisfaction thanks to increased compliance with SLAs. The ENVISAGE Resource Analysis Framework allows to better cope with the resourcing challenges posed by SLA requirements coming from different customers. (Example) Improved SLA management through formalization, analysis and test techniques, will enable ENG to better satisfy customers demand and to mitigate the risk of SLA violation. This directly impacts on reducing penalty costs. Indirectly it also impacts the quality of service perceived by ENG customers, empowering ENG to attract more customers.
- Offer discounted prices whilst allowing customised solutions. Traditionally discounted prices are offered thanks to the reduction of costs achieved by means of automation. However automation often is enabled by means of standardisation (i.e. reduction of variability). The ENVISAGE Resource Analysis Framework enables automation of the delivery process whilst allowing customisation options (to be better investigated) (Example) Optimizing the allocation of computational resources to satisfy customers demand, ENG will be able to increase the revenue by serving more customers without necessarily increasing the computational resources.

2.3.3 Market Size

- The cloud-enabled managed hosting represents around 10% of traditional hosting revenue [Source: Gartner, "Magic Quadrant for Cloud-Enabled Managed Hosting, Europe", July 2014]
- The market of Software as a Service (SaaS) and cloud-based business application services is expected to achieve a size of \$32.2 billion in 2016 [Source: Gartner, "Market Trends: Platform as a Service, Worldwide, 2012-2016", October 2012]

2.3.4 Market Trends

The market of Cloud-enabled Managed Hosting is growing:

- Over time, providers will begin to automate their processes to quickly provision managed service capabilities for customers, and will allow them to subscribe to those services in much shorter intervals [Source: Gartner, “Magic Quadrant for Cloud-Enabled Managed Hosting, Europe”, July 2014]
- From an IDC survey it results that 43% of the interviewed companies NOT offering managed services plan to at some point in 2015 [Source: IDC, “Successful Cloud Partners 2.0”, 2014]
- A survey conducted by IBM in 2013 showed that two-thirds CIOs (on a total of 1,656 CIOs from 62 countries) see cloud computing and social networking tools as better ways to develop and deliver what their customers want. In 2009 the percentage was just 30%. [Source: IBM, “Moving from the back office to the front lines”, 2013]
- Cisco is forecasting cloud traffic as a percent of total data center traffic will grow from 46% in 2012 to 69% in 2017 [Source: CISCO “The Cisco Global Cloud Index (2012 - 2017)”, 2012]
- cloud grow is slower in Europe than in North America, because of four key factors [Source: Gartner, “In a Diverse Europe, Cloud Adoption Will Be Slower”, 2012]:

2.3.5 Market Growth Rate

- The enterprise cloud application revenues are projected to reach \$67.3 by 2016 and the cloud-based software and infrastructure expenditure to amount to the 20% of IT budgets. [Source: IDC, “Worldwide SaaS and Cloud Software 2012-2016 Forecast”, 2011]
- Corporate spending on cloud-computing services, software and resources will reach \$191 billion in 2020 as companies replace older equipment and programs with Internet-based systems. The biggest contributor to the total will be software-as-a-service. By 2020, 25 percent of the total of \$523 billion of software applications purchased will be software-as-a-service [Source: Forrester, “The Public Cloud Market Is Now In Hypergrowth”, April 2014]

2.3.6 Industry Cost Structure

Cloud computing relies on the pay-as-you-go cost model: customers pay only for actual resource used throughout the lifetime of the application. The pay-as-you-go pricing mechanisms has key advantages over traditional mechanisms (e.g. asset sale):

- Little investment is required upfront
- Innovation fostering: because little investment is at risk, innovative applications can be deployed with less concern about predicting outcomes.
- It can enhance agility, because no lengthy capital investment decision processes are needed prior to beginning work.

However Cloud computing approach has drawbacks as well. In particular when cloud resources are not actually used, but continue running, they continue to generate costs.

Chapter 3

Conclusions

The current deliverable is a first attempt to provide a survey of the Cloud market segments that appear more promising for the success of the ENVISAGE outcomes exploitations.

These market segments comprise: *Modeling and Simulation of Big Data Jobs, E-Commerce SaaS solutions, Cloud-enabled Managed hosting.*

For each market segment we gave an overview of the targeted customers, offer, size, and trends.

This analysis presented in this document is not finalised yet and it will be evolved during the project life-time as the ENVISAGE tools approach their final shape.

A more complete analysis of the ENVISAGE market in combination with the ENVISAGE developments potential will be reported in the further coming deliverable D5.6 - “Business Strategy & Revised Exploitation Plan”.

Appendix A

Identification of ENVISAGE assets

The main objective of the current section is to identify and to provide a short but clear description of the ENVISAGE functional modules and methodologies to be produced during the project lifetime.

A.1 Simulation Tool

A simulation environment for the abstract modeling language, addressing work package objective O1.4. The simulation environment combines system level descriptions with resource and deployment models to allow rapid prototyping. The simulation environment will allow the rapid prototyping of models in different deployment scenarios and with different load balancing strategies. The simulation environment will integrate state of the art tools for development of formal languages and execution platforms for operational semantics with compiler generation and type checking in an IDE with editing and visualization support (such as Eclipse).

Pointer to the deliverable intended to describe the result: This result is described in deliverable D1.4.1 and D1.4.2

Intended user: A modeler using the ABS language

A.2 Deductive Verification Framework

KeY-ABS is a deductive verification system for ABS. It is based on the verification system KeY which verifies sequential Java programs and a variant of dynamic logic called ABS Dynamic Logic. KeY-ABS deals with concurrent ABS programs and uses history-based functional specification of ABS models in terms of method contracts, class invariants and interface invariants. The calculus of the program logic of KeY-ABS has been carefully designed to be compositional, even for concurrent and distributed ABS programs.

Innovative features We intend to extend the current history-based specification system to specify SLAs in terms of the restriction between resource consumption, resource provision and load balancing. KeY-ABS will be extended correspondingly to verify this type of specification.

Pointer to the deliverable intended to describe the result: Detailed information about history-based specification and verification will be contained in Deliverables D2.1 and D3.2.

Intended user: Verification in KeY-ABS is semi-automatic and requires non-trivial annotations in the form of auxiliary specifications. Therefore, KeY-ABS requires expert knowledge from the users with respect for specification and verification.

A.3 A test case generation framework for ABS

The aPET test case generation framework receives as input an ABS program, a selection of methods to be tested, and a set of parameters that include a selection of a coverage criterion. It yields as output a set of test cases which guarantee that the selected coverage criterion is achieved. aPET will be integrated within

the ABS Eclipse IDE, and also within the Envisage's virtual collaboratory. The generated test cases will be displayed in textual mode and, besides, it will be possible to generate automatically ABSUnit test cases. The information yield by aPET can be relevant to spot bugs during program development and also to perform regression testing.

Innovative features The obtained set of test cases guarantee the selected coverage criterion. Examples of available coverage criteria are: path coverage and top-level path coverage (combined with a look-k bound). Additionally, the system will make use of new strategies and heuristics for pruning redundant state-exploration.

Pointer to the deliverable intended to describe the result: D3.5

Intended user: Programmers and testers making use of the ABS modelling language.

A.4 Resource Analysis Framework

The ENVISAGE resource analysis framework allows us to determine at early stages of software development the resource consumption of abstract behavioral specification models (ABS). The information gathered focuses on concrete components of the system (like number of executed instructions or memory consumption at each location) but also in system-level properties (like the number of spawned tasks or the amount of data transmitted among the locations of a virtual system). This will allow the users to anticipate potential bottlenecks in the locations of the system and to optimally distribute the load of work in order to fulfil the service contracts of the components services.

Innovative features The main innovation of the framework is that it takes into account the system level and the deployment descriptions contained in the models. Thus, the framework obtains more precise results for each component and also information involving several components like data transmission and spawned tasks.

Pointer to the deliverable intended to describe the result: This result is described in deliverable D3.3.

Intended user: Developers can use the resource analysis framework to check that the resource consumption of each component fulfils the service contracts, and system designers can use the framework's results to better deploy the system and avoid potential bottlenecks.

A.5 Envisage Virtual Collaboratory

The Envisage Virtual Collaboratory is a (virtual) place where tools developed in the context of Envisage are made available for use in different forms, e.g., as services, through a web-interface, download and use locally, etc. Moreover, it allows users to share their experience and provide feedback. To facilitate the integration of Envisage tools in the virtual collaboratory, we will develop a methodology in which tools output their results in some predefined text-based language several interfaces that are able to interpret this language and view it graphically in several development environment (e.g., web-interface, Eclipse plugin).

Innovative features The main innovation is the development of a text-based language that can be used in programs to output results, and a set of generic interfaces that are able to interpret this language and view it graphically in several development environment.

Pointer to the deliverable intended to describe the result: D5.2.1 (month 24), D5.2.2 (month 36)

Intended user: The technology developed will be used by programmers in the Envisage project to easily integrate their tools in the collaboratory. The collaboratory itself will be then available for internal and external users in order to easily experiment with the developed tools.