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Market Analysis and Business Models Matching First Version

WP 500

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The Flspace Project

Leveraging on outcomes of two complementary Phase 1 use case projects (Flnest & SmartAgriFood), the aim of Flspace is to develop a novel services platform that implements fundamental changes in how collaborative business networks will work in the future. Flspace will develop a multi-domain Business Collaboration Space (short: Flspace) that employs FI technologies for enabling seamless collaboration in open, cross-organizational business networks, establish eight working Experimentation Sites in Europe where Pilot Applications are tested in Early Trials for Agri-Food, Transport & Logistics and prepare for industrial uptake by engaging with players & associations from relevant industry sectors and the IT industry.

Project Summary

As a use case project in Phase 2 of the FI PPP, Flspace aims at developing and validating novel Future-Internet-enabled solutions to address the pressing challenges arising in collaborative business networks, focusing on use cases from the Agri-Food, Transport and Logistics industries. Flspace will focus on exploiting, incorporating and validating the Generic Enablers provided by the FI PPP Core Platform with the aim of realising an extensible collaboration service for business networks together with a set of innovative test applications that allow for radical improvements in how networked businesses can work in the future. These solutions will be demonstrated and tested through early trials at experimentation sites across Europe. The project results will be open to the FI PPP program and the general public, and the pro-active engagement of larger user communities and external solution providers will foster innovation and industrial uptake planned for Phase 3 of the FI PPP.

Project Consortium

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Dissemination Level

PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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006	Market Evolution	30.08.2013
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Abbreviations

App	Software Application	i.e.	id est = that is to say
AWS	Amazon Web Services	IP	Intellectual Property
CAP	Common Agriculture Policy	IPR	Intellectual Property Rights
CRM	Customer Relationship Manager	KPI	Key Performance Indicator
D	Deliverable	M	Month
DoW	Description of Work	PAO	Proposal for Automatic Order (Shop Orders Manager)
EAGF	European Agricultural Guarantee Fund	PoC	Power of Customers
EAFRD	European Agricultural Fund for Rural Development	POS	Point Of Sale
EBM	Exploitation and Business Models	PoS	Power of Suppliers
EC	European Commission	RTD	Research and Technological Development
EDI	Electronic Data Interchange	R&F	Replenishment & forecasting
e.g.	Exempli gratia = for example	SAP	Stock Manager
ERP	Enterprise Resource Planning	SE	Specific Enabler
EU	European Union	SME	Small and Medium Sized Enterprise
FIA	Future Internet Assembly	ST	Sub-Task
FI PPP	Future Internet Public Private Partnership	T	Task
FP7	Framework Programme 7	UAA	Utilized Agricultural Area
GA	Grant Agreement	WG	Working Group
GE	Generic Enabler	WP	Work Package
ICT	Information and Communication Technology		

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1 Introduction

1.1 This Document

This document addresses the Market Analysis and Business Models Matching task for the Flspace Project. It is a result of task 550 in Work package 500 and describes the possible real market applications we can find for Flspace.

1.2 Objective

This document aims to describe the current market situation for collaborative business-to-business services. We have to assume a number of things in order to perform an analysis. This first deliverable is focused on the “Market Analysis” (Point 4), but we address the rest of the points required by this task by the end of month 24. As it is a living document, these are the main sections and time frames for each:

1. Identify market needs - M6
2. Matching with the expected results - M12, M16
3. Individual Exploitation plans - M12
4. Overall exploitation plan - M24

1.3 Main Audience

The Flspace consortium and exploitation leaders from the other FI PPP Phase II projects.

2 Business Model Matching

2.1 Business Canvas

The business model is a relatively new concept that is primarily associated with the ‘Internet era’. The context in which the term business model is often used is ‘how the web changes traditional business models’ (Chesbrough and Rosenbloom, 2002). Until the start of the 21st century a minimal amount of research was done to investigate the concept. Eventually the rise of e-commerce boosted the attention it was given in the academic world. Chesbrough and Rosenbloom (2002) were some of the first scholars who proposed what elements belong in a business model which led to a refinement of the definition of the concept. The definition is given in terms of functions of the business model:

- Articulate the value proposition;
- Identify a market segment;
- Define the structure of the value chain within the firm required to create and distribute the offering, and determine the complementary assets needed to support the firm’s position in this chain;
- Describe the position of the firm within the value network linking suppliers and customers, including identification of potential complementors and competitors;
- Formulate the competitive strategy by which the innovating firm will gain and hold advantage over rivals; and
- Estimate the cost structure and profit potential of producing the offering, given the value proposition and value chain structure chosen.

2.2 Matching

The market analysis, in task T550, and business modelling, in task T520, are two facets in the development of the Flspace platform that, when aligned, can have a major impact on its success. Matching the two tasks basically means the synchronization between (1) evaluating market gaps and demand for a new technological solution (the Flspace platform) on the one hand and (2) the design of an architecture for how different actors in a value network can, based on that solution, create and capture value from filling the market gap.

The market analysis in Flspace draws on market needs identified in the FI-PPP Phase I projects SAF (SmartAgriFood) and Flnest. These projects, anchored in the agriculture food production and logistics and transportation domains, naturally interact. Common for both domains is that establishment and execution of business collaboration processes could be substantially

improved by the use of the Future Internet. While the market analysis task of Flspace will further elaborate this, the business development task needs to match the outcome of this analysis with key technical design choices taken in the project.

In linking a technological solution with a market the Task 520 of the project aims to design a business model not only for one firm but for networks of actors. While, until recently, it was common to use the term business modelling to define processes within single businesses [1], this view is too limited when considering the evolvement of networks and collaborations between businesses and industries. A main driver of a broader view is the development of new ICT (Information and Communication Technology), a field in which the Flspace platform is situated. Consequently, business modelling demands a shift in focus from “the single firm to networks of firms, and from simple concepts of interaction or revenue models to extensive concepts”. [1] In other words, requirements of a network based business model need to reflect collective innovation processes and assess the relationships between the stakeholders involved.

When analysing the Flspace platform T520 therefore considers a broader set of parameters defined to be able to depict characteristics of network settings. These parameters can refer to the business architecture and technical architecture, both dealing with control, as well as the financial architecture and the service architecture, both dealing with value¹. These parameters explain (i) the way in which the value network is constructed and how roles and actors are distributed in the value network, (ii) how technical elements play a role in the value creation process, (iii) the financial model and how revenue streams run between the actors and the existence of revenue sharing deals, and (iv) the perceived value that the platform offers. While these parameters delineate a static configuration of the business model, market developments and changes will naturally require reconfiguration, constant realignment and iterative adjustments. T520 aims to take some steps in making such alignment by testing the overall Flspace business model in a selected number of trials.

The task of business modelling is thus not a one-off undertaking, but an iterative process strongly dependent and driven by management decisions and repetitive revisions of whether the current settings meet the given demands. In the current stage of the project, an initial concept of a business model (or several possible business models) will be developed in Task T520 based on experiences from parent projects, desk research and interviews with key project participants. However, this process does not promise a finished or complete model as it will be continually revised throughout the development of the project as information on external markets and internal developments is incorporated. These dynamics will, together with input from the project's trials, feed into the model and revisions and fine-tuning of the model will occur.

¹ P. Ballon, “Business modelling revisited: the configuration of control and value,” *info*, vol. 9, no. 5, pp. 6–19, 2007.

3 Business Cases – One step ahead of Use Case Trials

(this would be deliver in M24, when we have clearer view of the apps)

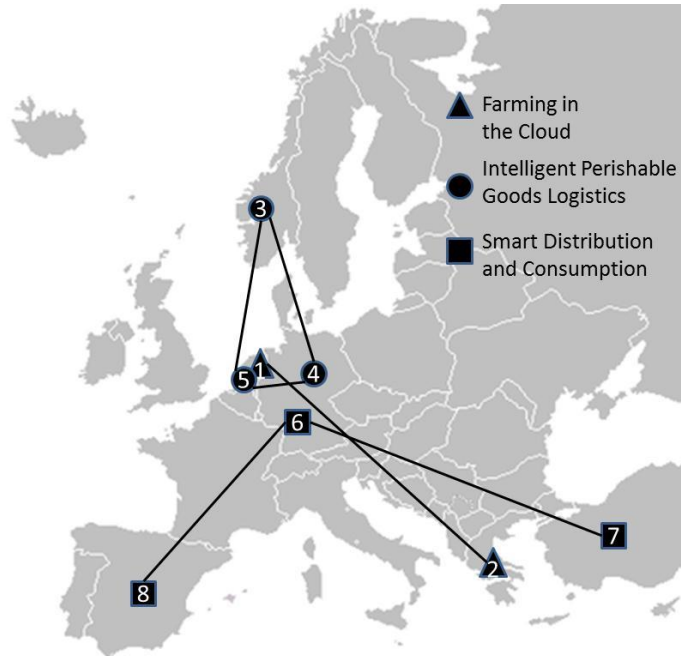


Figure 1: Versus Business Cases

3.1 Farming in the cloud²

This task is concerned with the actual planning and execution of two use case trials focused on the use of the Flspace to improve product yields through the use of sensor based technologies to measure environmental factors that have an impact on yield and feed this information back to management systems to take action that improves plant growth factors.

The use case trials that will be conducted are:

- **Crop Protection Information Sharing** – use of field sensor and satellite data to intelligently manage the application of pesticides for maximum protection.
- **Greenhouse Management & Control** – use of sensors to monitor key growth factors (UV radiation, moisture and humidity, soil conditions, etc.) and to feedback data to control systems to modify the growth environment for maximum yield.

The primary outcomes of this task are:

A detailed definition of the specific trials experiments to be conducted along

² Inputs obtained from D400.1

- Identification and setup of appropriate trial sites for the experiments on “Farming in the Cloud”.
- Definition of **requirements towards baseline and domain Apps** that must be developed to support “Smart Food Production” use cases.

Analysis of trial experiment results on “Smart Food Production” along with analysis of performance of Flspace and Core Platform GEs.

3.1.1 Crop protection Information Sharing

- To be provided in an iteration of this document with deadline M24, see introduction for timeline overview.

3.1.2 Greenhouse Management & Control

- To be provided in an iteration of this document with deadline M24, see introduction for timeline overview.

3.2 Intelligent perishable goods logistics

This set of use case trials addresses monitoring and environmental management issues of perishable goods as they flow through their supply chains so that waste is minimized and shelf life maximized covering three use case trials:

- **Fish Distribution and (Re-)Planning** – focuses on the planning of logistics and transport activities, including transport order creation, transport demand (re)planning and distribution (re)scheduling
- **Fresh Fruit and Vegetables Quality Assurance** – looks at the management of deviations (transports, products) that affect the distribution process for fresh fruit and vegetables (transport plan, food quality issues), either deviation from the plan or other external events requiring re-planning.
- **Flowers and Plants Supply Chain Monitoring** – the monitoring and communication of transport and logistics activities focusing on tracking and tracing of shipments, assets and cargo, including quality conditions and simulated shelf life. Focus is with Cargo and Asset Quality Tracking (“intelligent cargo”), Shipment Tracking (“intelligent shipment”) and lifecycle information tracking of cargo characteristics/Cargo Integration along the chain.

3.2.1 Fish Distribution (Re)Planning

- To be provided in an iteration of this document with deadline M24, see introduction for timeline overview.

3.2.2 Fresh Fruit & Vegetables Quality Assurance

- To be provided in an iteration of this document with deadline M24, see introduction for timeline overview.

3.2.3 Flowers & Plants Chain Monitoring

- To be provided in an iteration of this document with deadline M24, see introduction for timeline overview.

3.3 Smart distribution and consumption

This task is concerned with the actual planning and conduct of three use case trials focused on the use of the Flspace to improve the flow of goods to consumers and the experience that the consumer receives by being better informed about the goods that they are purchasing. The use case trials that will be conducted are:

- **Meat Information Provenance** – assuring consumers and supply chain participants that meat quality is maintained throughout the supply chain.
- **Import and Export of Consumer Goods** – better management of inbound materials so that only the right material is available at the right time based on consumer demands; management of outbound distribution operations to ensure that the finished product is properly positioned to meet consumer demands.
- **Tailored Information for Consumers** – provisioning of accurate information to consumers concerning products they are interested in purchasing and that they have purchased.

The primary outcomes of this task are:

- A detailed **definition of the specific trials experiments** to be conducted along with **identification and setup of appropriate trial sites** for the experiments on “Smart Distribution & Consumption”.
- Definition of **requirements towards baseline and domain Apps** that must be developed to support “Smart Distribution & Consumption” use cases.

Analysis of trial experiment results on “Smart Distribution & Consumption” along with analysis of performance of Flspace and Core Platform GEs.

3.3.1 Meat Information Provenance

- To be provided in an iteration of this document with deadline M24, see introduction for timeline overview.

3.3.2 Import and Export of Consumer Goods

- To be provided in an iteration of this document with deadline M24, see introduction for timeline overview.

3.3.3 Tailored Information for Consumers

- To be provided in an iteration of this document with deadline M24, see introduction for timeline overview.

4 Market Analysis

4.1 Product description

In the particular case of the Flspace project it is difficult to identify only one product to potentially sell. As we have described before in point 3, we have 8 trials in which we are going to be able to identify several potential services, apps and cross domain services and apps that may form the basis of saleable services. We can directly identify certain domain and cross domain apps as potential “products” that could be sold, but the Flspace service is not an application. The Flspace collaboration service extends the concept of B2B collaboration and incorporates the platform itself where business seek partners, develop relationships, and manage inter-business collaboration activities and apps that provide granular functionalities that can be incorporated in the execution activities to enhance the value of these activities.

The Flspace platform concept was initially conceived in the FI PPP Phase 1 project FInest. The concept developed in that project has been extended in Phase 2, in conjunction with work done in the Phase 1 SmartAgriFoods project, to include:

- Provisioning of the Flspace service will follow the Software-as-a-Service delivery model, which means that Flspace services can be accessed anywhere at any time via any device; **cloud**.
- The Flspace service is an **open service** that can be extended and customized for specific stakeholder demands by integrating domain apps (similar to the iPhone and Android business models).
- A domain app store facilitates the marketing of targeted applications that take advantage of the collaboration and mash up services of the Flspace and its underlying FI-WARE generic enablers. **Marketplace**.
- A collaboration manager for business-to-business networks that supports the planning and execution of business operations from a global perspective with message-based coordination among the involved business partners;
- Integrated techniques for **monitoring and tracking** on the basis of data integration from the Internet of Things, including sensor systems and smart item technologies accessible via FI-WARE generic enablers;
- Information integration from **legacy and third party systems** enabled through a service-based integration layer that is enabled and supported by FI-WARE generic enablers.

- Role-based views for the individual participants in the business networks along with integrated **security and privacy management** for fine-grained access control to confidential information;

4.1.1 Cloud

There are several signs of the increased adoption of cloud technologies in industry, especially in the logistics field:

- Following a recent announcement by ERP Consultancy firm Panorama, we find that the cloud ERP market has grown between 6% to 16% over the last two years.³
- Analysts report that cloud based adoption increased 40% this year.
- On a global scale, the worldwide public cloud services market—where services are provided “as a service” via the web with users having little or no control over the technology infrastructure—is on track to grow by 19.6 percent in 2012 to \$109 billion, up from \$91.4 billion in 2011, according to recent Gartner research.⁴

Cloud computing offers your business many benefits. It allows you to set up what is essentially a virtual office to give you the flexibility of connecting to your business anywhere, any time. With the growing number of web-enabled devices used in today's business environment (e.g. smartphones, tablets), access to your data is even easier. There are many benefits to moving your business to the cloud:

Reduced IT costs

Moving to cloud computing may reduce the cost of managing and maintaining IT systems. Rather than purchasing expensive systems and equipment for business, reduce costs by using the resources of cloud computing service provider. Then be able to reduce operating costs because:

- The cost of system upgrades, new hardware and software may be included in the contract
- No longer need to pay wages for expert staff
- Energy consumption costs may be reduced
- There are fewer time delays,

Scalability

Business can scale up or scale down of operation and storage needs quickly to suit to situation, allowing flexibility as it needs change. Rather than purchasing and installing expensive upgrades, cloud computer service provider can handle these. Using the cloud frees up time so business can get on with running own activities.

³ Logistics Business IT (Magazine). July 2013.

⁴http://www.supplychain247.com/article/analysts_report_that_cloud_based_adoption_increased_40_percent_this_year/cloud

Business continuity

Protecting data and systems is an important part of business continuity planning. Whether an experience a natural disaster, power failure or other crisis, having business data stored in the cloud ensures it is backed up and protected in a secure and safe location. Being able to access data again quickly allows conduct business as usual, minimizing any downtime and loss of productivity.

Collaboration efficiency

Collaboration in a cloud environment gives to business the ability to communicate and share more easily outside of the traditional methods. If clients are working on a project across different locations, enterprises could use cloud computing to give employees, contractors and third parties access to the same files. They could also choose a cloud computing model that makes it easy for you to share the records with their advisers (e.g. a quick and secure way to share accounting records with an accountant or financial adviser).

Flexibility of work practices

Cloud computing allows employees to be more flexible in their work practices. For example, the ability to access data from home, on holiday, or via the commute to and from work (providing to have an internet connection). If needs access to data while from off-site, can connect to virtual office, quickly and easily.

Access to automatic updates

Access to automatic updates for IT requirements may be included in the service fee. Depending on cloud computing service provider, systems will regularly be updated with the latest technology. This could include up-to-date versions of software, as well as upgrades to servers and computer processing power.

All above advantages and benefits are the perfect fit for Flspace project goals; leverage the business to Transport & Logistics and Smart-Agrifood, while synchronize business processes to build on-line cooperation between partners and stack holders as well as to all related industries.

4.1.2 Open Service

Henry Chesbrough, a business professor at UC Berkeley, spearheads the Open Services Innovation⁵ movement through the Centre for Open Innovation. Open Services provide an integrated approach and framework that explains much of what is happening today in the software and services market. Chesbrough clearly demonstrates through real-world case studies that services are not just something that is done after selling a product anymore. Services are trans-

⁵ Open Services Innovation: Rethinking Your Business to Grow and Compete in a New Era Hardcover by Henry Chesbrough, published by Jossey-Bass, January 18, 2011.

forming industries by redefining the competitive playing field in historically product-driven markets.

Services based business activities are increasingly influencing the world economy. In fact, much of the economic activity in the top 40 economies in the world is based on services, not products and technology; Moreover, many leading companies are finding that their business is shifting towards services as well. While we usually discuss services in the context of end – users, the principles apply to the business to business world as well.

In the current market situation enterprises find it harder and harder to stay competitive while doing their R&D in complete isolation (the traditional approach). The cost of innovations often exceeds the capacity of a single enterprise to deliver. We therefore find more often that companies are forced out of the old "prisoner's dilemma" and collaborate on major initiatives. This fact was recognized even earlier by small businesses. The advent of open innovation processes and open services has allowed small businesses to compete by benefiting from the results that are created through collaboration.

An important reason for the emergence of open services is a desire to escape the commodity trap; a situation where working on making products faster, cheaper, higher quality, etc. no longer brings much, if any, profit. Various market forces make it harder and harder to sustain differentiation in a product business. Among these are: the rise of the emerging economies, the spread of TQM and Six Sigma, the globalization of manufacturing and R&D. The escape route out of the commodity trap is services, and openness is a very effective way to attain competitive advantage.

The advent of the cloud, together with the emergence of open services, is now making it attractive for use even by companies that traditionally were happy with a commodity business (e.g., companies selling raw materials like metals or petroleum). The adoption of open services by other businesses that are finding their margins shrinking, despite their continued investments in R&D and innovation, is self-evident.

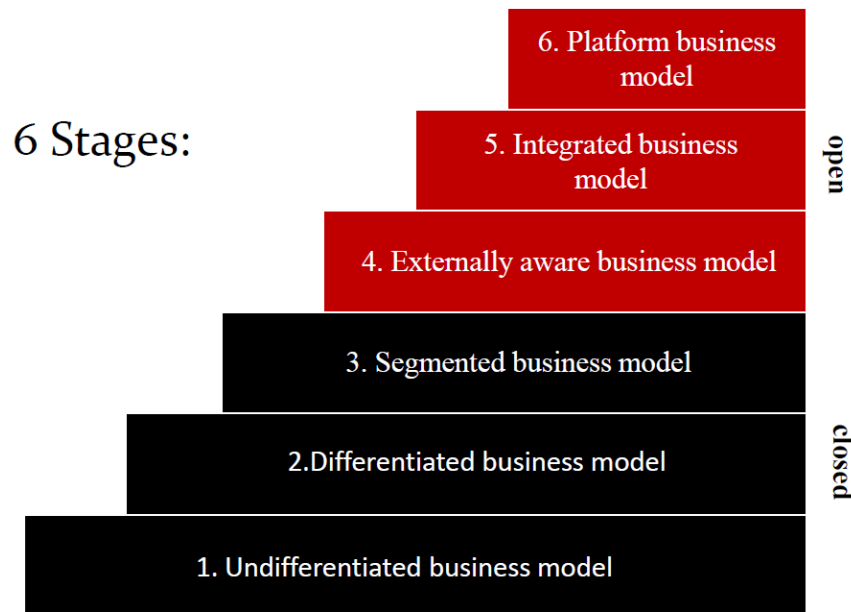


Figure 2 Business model maturity stages according to Henry Chesbrough⁶

It is important to note the role of the prosumer⁷ in such an ecosystem. In the past, businesses conducted market research before embarking on a new product or service. The prosumer sat on the side while this market research was conducted. In open services the prosumer is intimately involved in the process. We thus see the MVP (Minimal Viable Product) philosophy in product production and the interaction with the prosumer during service development.

Traditionally, the customer sits at the very end of the value chain. Thus in Michael Porter's famous value chain⁸, the competitive advantage arises from products of higher quality, lower cost, or unique differentiation. In the services value chain, the prosumer engages with multiple parts of the value chain throughout the process, not just at the end of the chain. Because services are fundamentally intangible, it is tricky to specify services in advance. Often we cannot tell what we need until we experience it. This requires very simple creation of new services (minimal cost to realization). We invite the prosumer to be part of a creation process, precisely to unlock that tacit knowledge of what the prosumer really wants. The prosumer usually has a hard time to articulate what he wants and therefore her involvement in the process of the service creation is mandatory. An open service platform should make it very easy to launch a new service and get prosumer feedback while solidifying the service.

For a platform that supports open services to succeed, we need a new business model that supports a model with very low initial cost, perhaps lower gross margins, but greater ongoing revenues. This business model will involve tracking metrics like consumer acquisition cost, consumer retention rates, and lifetime value of a consumer. A key element in this model is the support of consumers using their social network know how. Another concept that this business

⁶ Henry Chesbrough, Open Service Innovation, 2010

⁷ Prosumer is both a customer of some services and a producer of other services. Part of the B2B chain.

⁸ Michael Porter, Competitive Advantage, 1985

model should support is the API economy. Namely the consumption of services by other services through the use of APIs and the generation of services through the activation of APIs.

Consider for example the open services of the Amazon Webstore. Amazon allows third party merchants to use its tools and create Amazon web pages to sell their merchandise. Fulfilment of the purchased product is provided by the third party while billing and collection are done by Amazon. It gives the customer a uniform shopping experience; including all the ranking, statistics reviews and social touches. Amazon does a quality check and scrutinizes the quality of third party merchants that want to use their platform and provides the regular Amazon user experience. In return it gets a share of the profit without having to invest in the merchandise. This makes Amazon an attractive destination for shopping and provides Amazon with the economy of scope.

The Flspace platform has a design that is based on Open Services (see Figure 1). It actually represents a stage 6 in the business model maturity. In the past there were some attempts to produce similar platforms, however all these attempts were proprietary and mainly advocating a particular supplier. In that sense Flspace is fulfilling two main ambitions. The first is the democratization of this space and the second is opening this space to new innovations ("Open Innovations").

4.1.2.1 Flspace as a Democratization Engine

If we take, for example, the use case of a Farmer that requires a service. Today a small farmer cannot afford the type of services that will make him competitive with the big farm companies that develop and build custom IT to automate their work. He has the choice of selling out to one of the big farm companies or resorting to grow very specialized crops with a hope that the big farm industries will not find the niche lucrative. With Flspace this small Farmer will have access to the same level of services as the big company without having to build a custom infrastructure for it. Moreover, on the Flspace open services platform he will have the choice of engaging with any supplier or service provider that he likes without locking himself in to a specific provider. This will allow the small farmers in Europe to get the best services without having to make major investments. This will allow them to be competitive. An added benefit to the Farmer (or generally a small business) is the social network of similar users with related experiences.

4.1.2.2 Flspace as an Innovation Engine

Flspace is designed to provide a foundation for the development of new services. Through its open services architecture it should facilitate the creation of new services. Some of these services will only use the Flspace base services in their construction while the others will be composite services that will build on, and consume, other services to produce new innovation. One key requirement for facilitating this is the ability of the platform to provide services that allow the consumption of particular APIs in other service and at the same time will self-expose external APIs that can be used by new services. This together with the diverse community of consumers will make Flspace an innovation engine.

4.1.3 Marketplace

The Flspace platform collaboration service is based on the concept of a cloud based service in which business partners can find collaboration partners that, working in the collaborative structure of the Flspace service, manage and execute collaborative (inter-organizational) business activities in a cost effective and efficient manner. To enable such a vision requires that activities between business partners be tracked and managed through platform services. However, as no designer of a platform like Flspace cannot possibly imagine all of the business-to-business processes that potential Flspace users will require, the Flspace needs to provide a means for third parties to develop granular services that can be incorporated in any collaboration activity carried out through the platform. These services are incorporated in what the Flspace project calls apps and they are hosted in a marketplace called the Flspace App Store.

The Flspace App Store operates like the more familiar consumer app stores used for mobile telephone apps (Apple's App Store, Google's Play app store, Microsoft's Marketplace, etc.). Developers wishing to publish an app to the App Store must utilize a Flspace App Development SDK to construct their app. The app is tested by the Flspace collaboration service for conformance to API, security, monetization, usability and platform criteria to ensure that it will function properly if employed in a Flspace B2B collaboration. If the app is certified by the Flspace for use, it is then uploaded into the Flspace App Store where it can be downloaded by Flspace business partners to operate in one of their collaboration activities.

App developers receive compensation for the use of their apps by selecting an allowed payment model from the Flspace SDK. Common payment models that are envisioned include, transaction based models, volume based models, value based models, time based models, etc. The Flspace platform identifies the type of monetization model the app instantiates and keeps track of the relevant variables so that the app user is properly invoiced for the use of the app and the app developer is properly paid.

The Flspace collaboration service advances the concept of app usage beyond that found in consumer focused apps in that apps developed for use in the Flspace collaboration service can be "mashed up." This means that apps must adhere to strict API standards and message protocols. These standards allow apps to invoke the services of other apps and use the results of the app invocation to create value that is greater than the simple sum of individual app services. This mash up capability of the Flspace service enables business to manage complex execution activities at substantially less cost than they would incur by using custom developed applications and complex integration services required for the execution of these same services without the intermediation of the Flspace platform.

It should be noted that, like Apple, Google and Microsoft, the Flspace collaboration platform "owner" will be compensated for the use of apps by obtaining a percentage of the revenue generated by the app. Whether this figure will be the 30% of revenue that is currently the standard model for consumer apps or something else remains to be determined.

4.1.4 Collaboration Objects

One of the main aims of the Flspace platforms is to create, manage, execute, and monitor collaborative processes between stakeholders. The Business Collaboration Objects are key conceptual entities that are central to guiding the above-mentioned operations. The business processes between different stakeholders are, thus, orchestrated by Collaboration Objects (aka business entities, artifacts, or dynamic artifacts). In order to structure as well as manage business operations, specific technologies including Business Process Management, workflows and case management are needed.

Within Flspace, such Business Collaboration Object or Entities are managed using the *Business Entities with Lifecycle* approach. Such an approach includes both an *information model* that captures all the business-relevant data about entities of that type, as well as a *lifecycle model*, which specifies the possible ways an entity can progress through the business by responding to events, invoking services etc⁹.

Initially, specific test cases will be executed within Flspace. Eight different trials from various domains (logistics, agriculture etc.) will carry out business processes, all of which will take advantage of the Business Entity with Lifecycle approach, in order to facilitate the management of their collaboration objects. The framework which will be used to support this approach is the Guard – Stage – Milestone (GSM) modeling. A GSM model mainly focuses on the design of the business operation models. A GSM models uses the notion of stage, which is based on a) milestones, which refer to business objectives - conditions possibly accompanied by a triggering event), b) the stage body, which contains activities or even sub-stages in order to accomplish a milestone, and c) guards, conditions which enable the entry into a stage.

Below an example of such a GSM model is presented. The particular GSM model describes the collaboration object (business entity) “*Advice*”, in the context of the *Advice Request* scenario of the Greenhouse Management & Control trial. In the particular scenario, the conditions (based on sensor values) of the Greenhouse are constantly monitored, and an Expert (Advisory System) sends Advice to the user of the Advice app (farmer) to take particular actions based on these conditions. Whenever there is a sensor value threshold violation (based on pre-defined rules, e.g. temperature high when above 35 degrees), the Expert System is notified and generates an advice, which is being sent back to the Greenhouse:

⁹ *Introducing the Guard-Stage-Milestone Approach for Specifying Business Entity Lifecycles – Hull, Damaggio, Fournier et. al.*

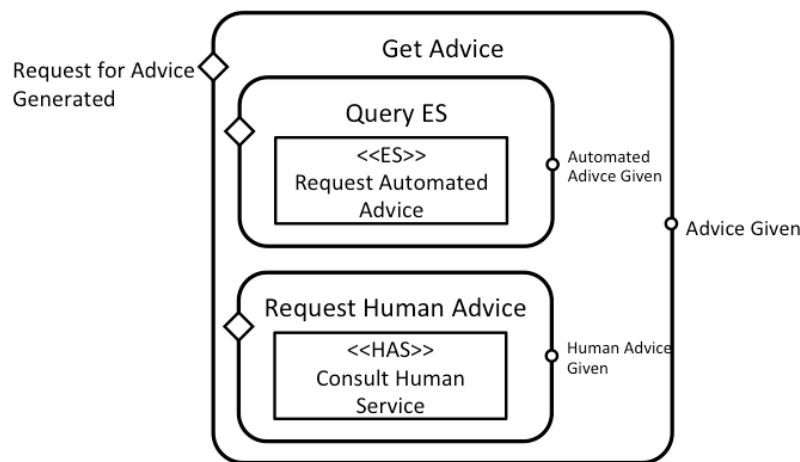


Figure 3. GSM model for the Advice business entity

Two components will support the collaboration objects inside the Flspace platform. The Business Collaboration Module (BCM) and the Event Processing Module (EPM). The BCM component is responsible for orchestrating the different processes from different stakeholders and assuring the correct sequence of task execution. The BCM is based on the entity-centric approach. The Event Processing Module (EPM) component monitors events and detects situations of interest, i.e. situations that require appropriate reactions. The events' producer can be the actual execution of the collaboration activity, i.e. the Business Collaboration Module.

4.1.5 Integration with legacy systems

In this part, we are going to use a trial as a clear example of what we mean to say when we talk about legacy systems. We are going to use the PlusFresc organization's current software systems:

The aim of the TIC trial is to test and present how we can use all the potential of Future Internet and the Flspace platform to improve food awareness among consumers. For this experimentation, we will focus on developing a trial system that will help consumers to be more aware of the food they buy in the supermarket and that they eat.

Plusfresc is a food retail organization and, as a final agent of the supply chain, has a direct contact with the final consumer. Therefore, as a retail store and distribution platform Plusfresc is a platform where test applications can be implemented together with a direct analysis of the results and its impacts on customers. In this sense, and in order to test TIC Apps, it will be necessary to link with Plusfresc legacy systems to provide the necessary information and capabilities for the planned collaborative services.

CURRENT SOFTWARE SYSTEMS AT PLUSFRESC ORGANIZATION

Plusfresc has developed legacy systems to manage all the operations between suppliers and customers. Plusfresc software systems at corporate office and points of sale are the following:

- The main software is the **ERP** (Enterprise Resource Planning) system: Microsoft Dynamics (former Axampta) with MS-SQLdata base. This management tool includes several modules: accountability, sales, articles, warehouse management, etc..

Some applications are integrated with the ERP system:

- **R&F, replenishment & forecasting:** SAP module to manage provisioning stock at warehouse and from providers (real time and forecasting). It is integrated in Microsoft Dynamics (ERP) at PlusFresc.. A Voice control system to prepare orders for shops is integrated in it.
- **EDI:** Electronic data exchange between PlusFresc and suppliers. It's a communication channel. Basically used for e-invoices and e-orders, mainly with EUROMADI. It does not provide delivery notes. With EDI, a centralized payment to the suppliers can be done through EUROMADI. Orders to suppliers can be done by EDI, but also by e-mail or fax.
- **PAO, proposal for automatic order (Shop orders manager):** Own created software to manage demands from shops to central warehouse). It controls shop stock and replacements.
- Own created software for **shop management** (installed in a local PC at **shop-backoffice**)-> Responsible for prices and changes, articles references, price labels, scales... It is connected to Microsoft Dynamics to get the information and transfers it to **Point of Sale Computer (POS)**. The shop management software is being replaced by an intranet tool to communicate directly ERP and POS. It is based in MS-SQL server and asp.net.
- **Intranet:** Among other functions, is responsible of the **shop stock information**.
- The own created **software for POS** creates sales tickets (including individual discount promotion voucher). It includes the costumer data base.
- **CRM, Customers Relationship Manager.** Own created software. It is placed in central servers and includes data such as: costumers contact data, individual vouchers, products bought by each consumer.

All own created software runs on the Linux OS

Software	Relation with TIC pilot
ERP	Product attributes Supplier

	Internal codification
	Stock management
Point of Sales software	Ticket information
Fidelity card management tool	Costumers data
Intranet	Shop stock information
	PCA

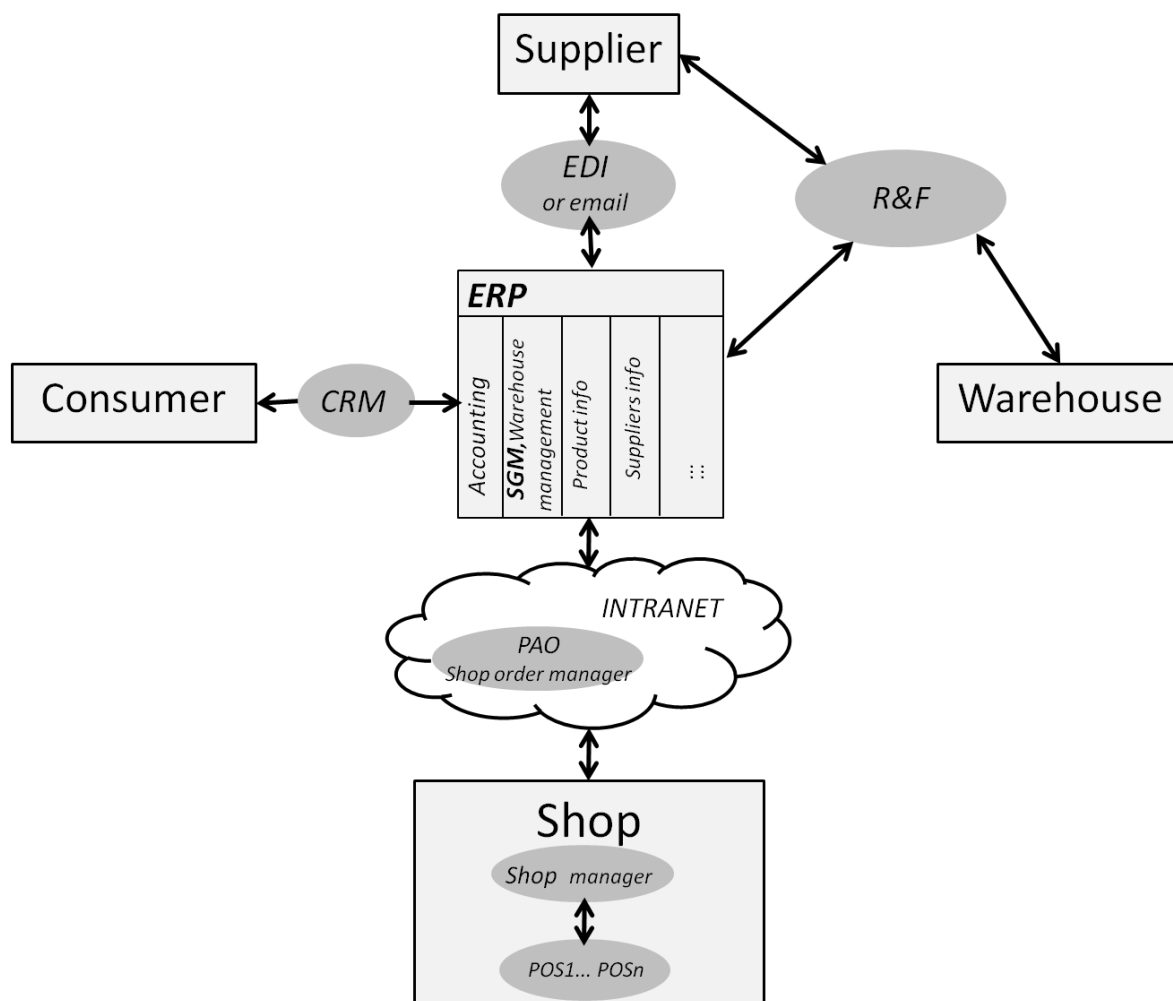


Figure 4: Legacy Systems

Flspace facilitates exchange of information and communication across organizations to conduct business.

The development of applications for the TIC trial covers different scenarios in the shopping experience of consumers at the supermarket:

- **PRODUCT INFO App and FOOD TRAFFIC LIGHT App;**
 - Product tailored info/knowledge gathering: is initiated by a customer who wishes to obtain information related to a product tailored to his/her personal preferences stored in the user profile (allergies, favourite food, etc.).
 - Customers complaints and feedback
- **SHOPPING LIST & RECIPE App:**
 - Shopping list & recipes management: customers want to manage their shopping list and receive product recommendations according to recipes.
- **AUGEMENTED REALITY and PUSH INFO App:**
 - Augmented reality & push information: Information of products is displayed with augmented reality technologies by using capabilities of customer's mobile phones.
- **ALERT NOTIFICATION provided by Flspace:**
 - Alerts: The TIC trial supports food alert notification to users who bought certain products and can deliver notification globally, individually or to groups.

For the shopping experience using Flspace, customers will have to log into the Flspace platform, access the store and download the apps they want to use. These apps will provide information to consumers that have been provided by all the agents in the food supply chain, such as farmers, producers, suppliers, transport and logistics companies, etc.

As an example, all these functionalities of Flspace and Apps are represented in Diagram 2, and have been connected to software relationships of Plusfresc legacy systems. This is a preliminary situation that will be updated in the course of TIC trial according to software developments.

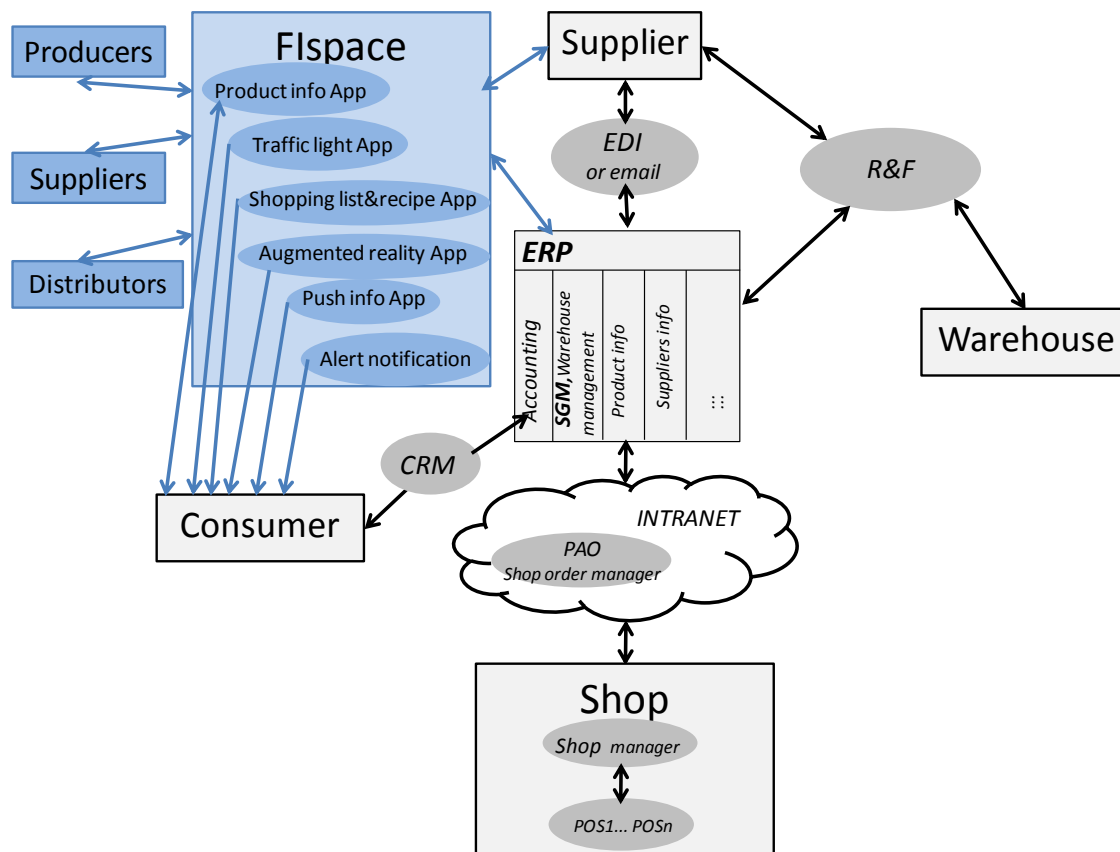


Figure 5: Legacy Systems. Flspace included

Fig 2. Diagram of software relationships (Flspace included)

4.2 Market evolution

The ICT industry has become more and more competitive. Hardware gets cheaper and infrastructure does as well. What has been increasing in cost has been the software due to the increasing complexity of the problems being addressed, the intellectual property embedded in the software and the value that software delivers to the business. In the graphic below we show some support to this theory.

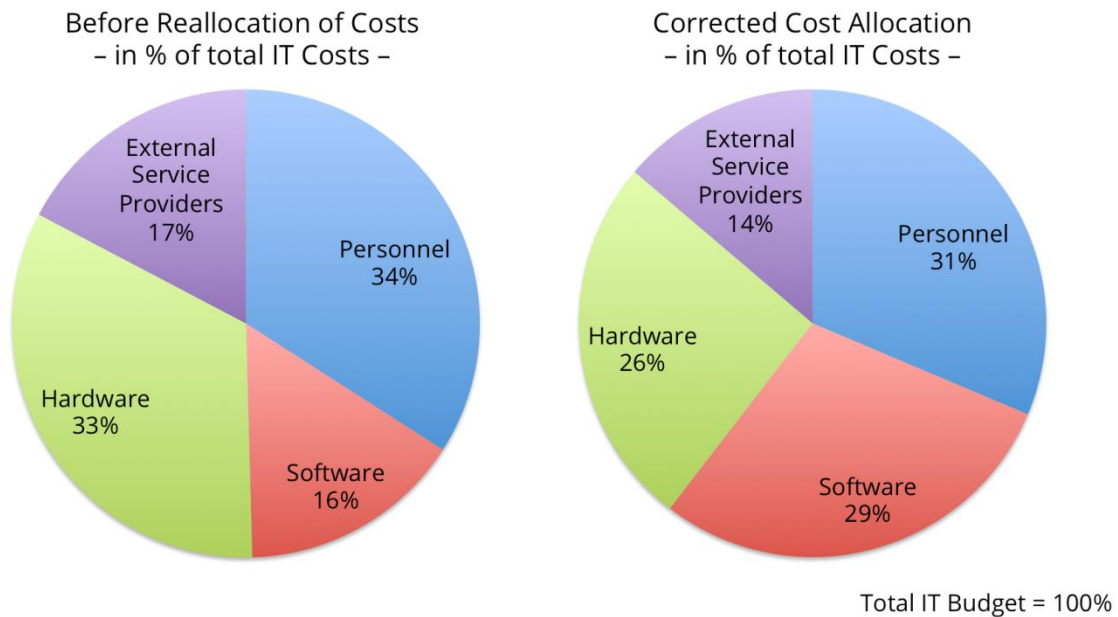


Figure 6: IT Cost Breakdown And Hidden Software Asset Costs (by OMTCO)

As we see, researchers from McKinsey and the Sand-Hill Group estimate as well that, all-in-all, 30% of the average IT budget is consumed by software assets, putting this cost category in the top league of IT costs.

In fact, to enhance the importance of ICT, we should take into account that the total money spent on IT worldwide has been most recently estimated (beginning 2013) as US \$3.5 trillion, and is currently growing at 5% p.a. – doubling every 15 years. IT costs, as a percentage of corporate revenue, have grown 50% since 2002, putting a strain on IT budgets. Today, when looking at a company’s IT budget, 75% are recurrent costs, used to “keep the lights on” in the IT department, and 25% are cost of new initiatives for technology development.¹⁰

In addition to the considerations above about the current volume of software asset costs, even more important is their growth – their absolute growth (in EUR) and relative growth (relative to growth of other costs in the IT budget). Software asset costs are growing, endogenously and exogenously:

- Endogenous growth – Recent technology shifts and IT cost reduction initiatives, e.g. server virtualization, remote desktops and cloud computing, have delivered flexibility and security in operations and a cost advantage on the hardware/infrastructure side – but have generated increased software demand, and thus supplementary costs, on the software asset side.
- Exogenous growth – Software vendors have transformed the process of discovering in-compliance into a business model. The technology shift to virtualized/cloud environments has provided the right platform. Nowadays, most vendors have increased the complexity licensing requirements, taking into account more attributes for more licensing metrics. They have accelerated the pace of change and created more pitfalls, thus in-

¹⁰ <http://omtco.eu/references/sam/it-costs-the-costs-growth-and-financial-risk-of-software-assets/>

creasing the level of software licensing expertise required in order to remain compliant. For the purpose of forecasting and budgeting, the specificities of each organization's infrastructure should be considered. However, should your software cost trend analysis not yet be available, we suggest that you cast a first draft version relating to your own business case with the following hypothesis: We forecast an average of 9% year-to-year growth of software asset costs for the period 2013-2016 (estimated from our market experience):

- Endogenous growth – 4% per year (2% inflation + 2% demand increase)
 - Exogenous growth – 5% per year, strongly depending however on your product portfolio and compliance profile (see more detailed explanations in the next chapter¹¹ – contact OMTCO for a customized calculation).

This 9% growth takes into account endogenous and exogenous growth, and is to be accounted for in planned budgets and budget overrun.

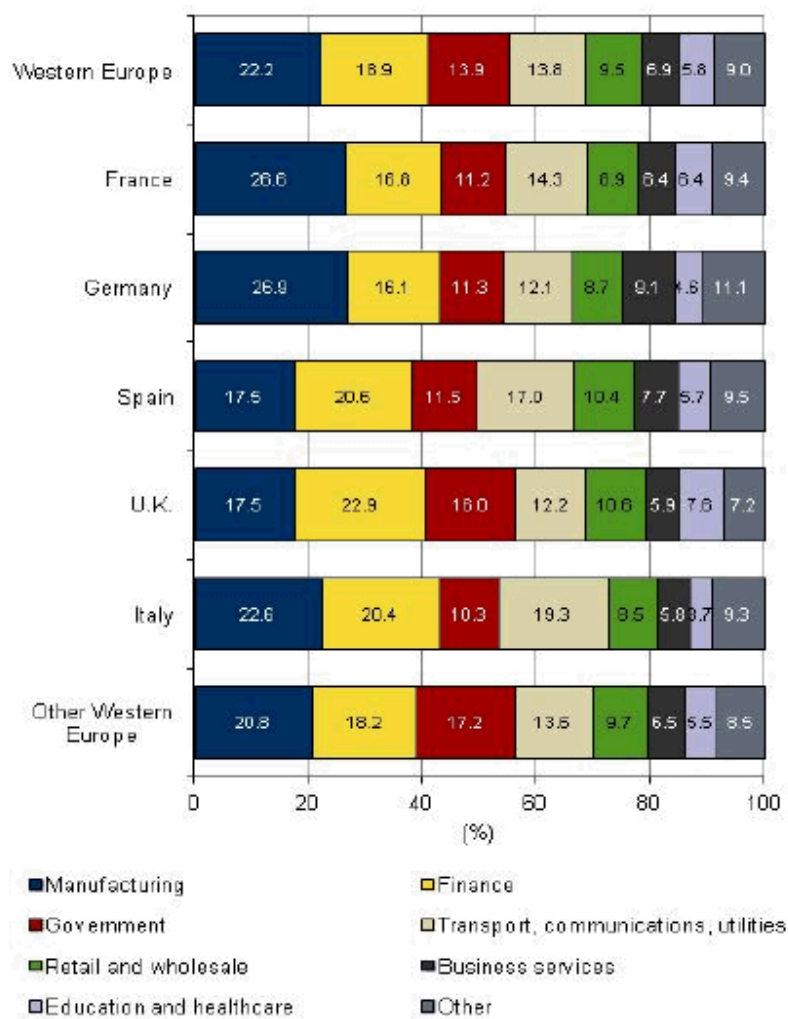
Reinforcing this theory we have found in an OECD report that software revenue has grown a bit more than 300% from 2000 to 2011, the biggest grown in comparison with the rest of the industry, even Telecommunications keep the global lead in revenue with \$USD 1.617.381¹².

But where do we use all that money spent in IT? Here we have an illustrating graphic about how much some countries in Europe spend in IT:

¹¹ <http://omtco.eu/wp-content/uploads/OMTCO-IT-Costs-The-Costs-Growth-And-Financial-Risk-Of-Software-Assets.pdf>

¹² OECD Internet Economy Outlook 2012 (electronic version available here: http://www.oecd-ilibrary.org/science-and-technology/oecd-internet-economy-outlook-2012_9789264086463-en)

Western Europe IT Spending Breakdown by Vertical Market, 2011



Source: IDC European Vertical Markets, 2012

13

Figure 7: Western Europe. ICT spend in vertical markets.

As we can see, about a 20% average of the total money spend in IT goes from manufacturing, about 10% for retail and wholesale, if we add the percentage of transport included in the grey color, we obtained about 35% of total IT spending in topics related with what we are doing in FIspace.

¹³ Western European Vertical Markets IT Spending 2012 – 2016 Forecast (Author: Nina Bonagura from IDC). September 2012.

4.3 The 5 Porter Forces Analysis

4.3.1 Overview

Porter forces are a well-known market analysis base on the idea that each market is represented in 5 key forces that determine the competitive intensity and the market attractiveness. We have chosen this analysis because of their easy understanding when you see the graphic we have below:

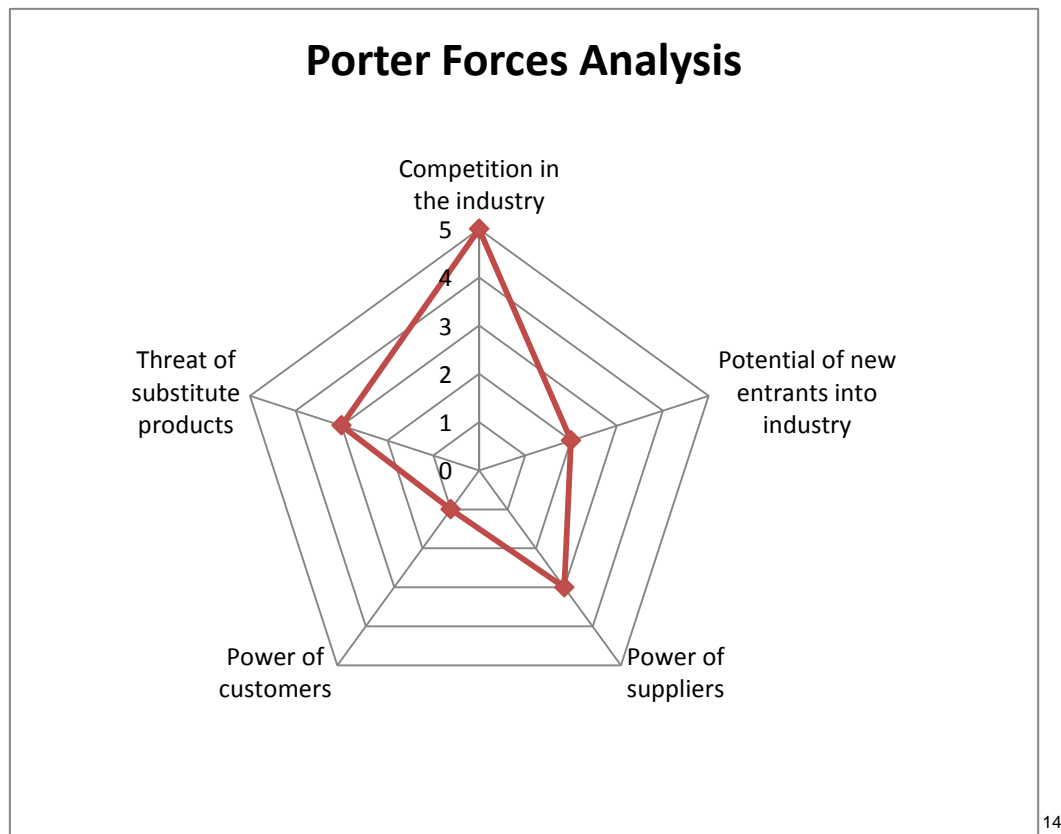


Figure 8: 5 Porter Forces Analysis.

As we can see, our major difficulty to get into the market would be the already existing competition in it. Even though our product is not finalized yet we can compare it with Google Play, AppStore or Amazon Web Services, as we are going to detail in the first point, and we will realize that **competition in the market** is already intense. Nevertheless there are some “easy” points of possible entrance, so we see the **power of customers** reduce to almost the minimum, how come? At some point if you are an industrial company that looks for a specific application only located in our platform is going to be difficult to “bargain down” because the demand for that is going to be big and the impact of one single company isolated will not affect the prices of the product, but, there is always a but, we have a real **threat of substitute products**, meaning that if we are able to find several applications or

¹⁴ Own elaboration

several services in different platforms, which is highly possible, we, as platform owners, are going to have a problem when we try to foster our customers loyalty or to establish ourselves as the first platform chosen for all apps or services search. Just in case, we find a quite low **potential of new entrants into industry** due to the high barriers of knowledge and investment that a company or group of companies are going to have if they want to develop a platform as Flspace or any platform similar. To finalize this overview, we consider the **power of suppliers** as quite high 3 over 5, understanding “power” as the capacity of suppliers of keeping the services and servers alive and what will cost the replacement. If we picture the idea of one single supplier providing the cloud service for the whole platform and that supplier decides to turn off their servers (if this was legally possible), the rest of services and applications will really suffer so the negotiation power is high, but limited to the legal terms and conditions.

4.3.2 Competition inside the industry

As we have shown previously, competition in the industry is 5 of 5. Flspace is going to be a collaborative and integration service, we have mention that earlier but here, when we talk about competition in the industry we have to identify market niches. For that, we are going to create a 3 areas approach:

First Area: Flspace as a place to compose services and use services and infrastructures to create new services and applications. From this perspective, we can take a look at the Amazon Web Services (AWS)¹⁵.

AWS is a collection of remote computing services (also called web services) that together make up a cloud computing platform, offered over the Internet by Amazon.com. The most central and well-known of these services are Amazon EC2 and Amazon S3. The service is advertised as providing a large computing capacity (potentially many servers) much faster and cheaper than building a physical server farm.¹⁶ They are totally focused on Compute & Networking, Storage, Database, Application Services and Deployment Management¹⁷.

The AWS Marketplace is an online store that provides an easy way for sellers to market and sell their software to developers and IT Professionals. AWS Marketplace users can find, compare, and immediately start using the software they need to build their products and run their businesses¹⁸.

We find a clear and simple competition here, not just regarding Flspace but also Flware and other FI-PPP projects. If we compare, GEs are the services that AWS are also providing, to say it in a simple way, and Amazon has already a network of influence well extended. Just in case, we rely on our trials to add that spark that could make the difference. If Flspace, as it is in

¹⁵ <http://aws.amazon.com/>

¹⁶ <http://aws.amazon.com/what-is-cloud-computing/> 07/17/2013

¹⁷ <http://www.youtube.com/watch?v=iOhbTAU4OPI#at=50>

¹⁸ <https://aws.amazon.com/marketplace/help/200899830>

other FI PPP projects, we work together between technicians and operational people, there, we should find the added value.

Second Area: Flspace platform as repository of applications. Right now, the biggest application repositories in the world are the App Store¹⁹, the Google Play²⁰ and a bit far away the Windows store and Windows Phone Store²¹, the BlackBerry World²² and the Ovi store²³, developed by Nokia and one of the main marketplaces develop within Europe.

- The Apple App Store is a digital application distribution platform for iOS developed and maintained by Apple Inc. The service allows users to browse and download applications that were developed with Apple's iOS SDK. The apps can be downloaded directly to an iOS device, or onto a personal computer via iTunes²⁴. It has around 800.000 apps available²⁵.

- The Google Play is a digital application distribution platform for Android and an online electronics and digital media store developed and maintained by Google. The service allows users to browse and download music, magazines, books, movies, television programs, and applications published through Google. Users can also purchase Chromebooks, Google Nexus-branded mobile devices, other Google-branded hardware, and accessories through Google Play²⁶. It has more than 700.000 apps²⁷.

- The BlackBerryWorld is an application distribution service and application by BlackBerry, formerly Research In Motion Limited, for a majority of BlackBerry devices. The service provides BlackBerry users with an environment to browse, download, and update third-party applications²⁸. It has about 250.000 apps available²⁹.

- The Windows Store is a digital distribution platform in Microsoft's Windows 8 and Windows RT operating systems. The platform can be used to provide listings for desktop applications certified to run on Windows 8, but are also the primary distribution platform for a new type of app called "Windows Store apps"³⁰. Windows Store has 111.056 apps available³¹

- The OVI Store is a platform where customers can download mobile games, applications, videos, images, and ringing tones to their Nokia devices. Some of the items are free of charge; others can be purchased using credit card or through operator billing in selected operators³². It has 120.000 to be used by 150.000.000 of registered users³³.

¹⁹ <http://store.apple.com/us>

²⁰ <https://play.google.com/store>

²¹ <http://www.windowsstore.com/>

²² <http://appworld.blackberry.com/webstore>

²³ <http://store.ovi.com/>

²⁴ [https://en.wikipedia.org/wiki/App_Store_\(iOS\)](https://en.wikipedia.org/wiki/App_Store_(iOS))

²⁵ <http://www.apple.com/pr/library/2013/01/07App-Store-Tops-40-Billion-Downloads-with-Almost-Half-in-2012.html> 01/07/2013

²⁶ http://en.wikipedia.org/wiki/Google_Play

²⁷ https://play.google.com/intl/ALL_es/about/apps/index.html 08/05/2013

²⁸ http://en.wikipedia.org/wiki/BlackBerry_World

²⁹ <http://www.pocketberry.com/2013/05/14/blackberry-is-jammin-hope-you-like-jammin-to/> 05/14/2013

³⁰ <http://arstechnica.com/information-technology/2011/12/win-8-app-store-revealed-more-money-for-devs-beta-in-late-february/>

³¹ <http://www.metrostorescanner.com/> 08/05/2013

³² [https://en.wikipedia.org/wiki/Ovi_\(Nokia\)#Ovi_Store](https://en.wikipedia.org/wiki/Ovi_(Nokia)#Ovi_Store)

³³ <http://developer.nokia.com/Distribute/Statistics.xhtml>

Google surpassed the 50.000.000 download apps in July 2013, while the App store did it in May same year³⁴. And they keep growing³⁵

This is telling us that if what Flspace is going to create is a repository of applications, we should create a huge competitive advance somehow somewhere; otherwise, the vast experience of our competitors and the amount of people already reached is going to create an infrastructural impossibility to solve, at least in the first five years.

Third Area: Flspace as a competitor with other FI-PPP initiatives.

Are FITMAN, FI-CONTENT 2, FINESCE and FISTAR competing against Flspace? At a quick look, it seems not, not at all, because of the different domains of each, but if we look carefully at the different technologies and basic functionalities of those other platforms, we could find competition. Just in case, this is a question to discuss in the EBM WG.

4.3.3 Potential of new entrants into industry

As we mention previously, potential entrants into this particular industry are very low, we could even say it is about 1-1.5, instead of 2, the mark depends on the take into account of other FI initiatives or not. This project has cost 20.006.437, 00€ and there are 29 partners involved, certainly it is not an easy thing to do, even at a global level. If we dig a little more we will realize that there are pure technical companies, pure operational companies, universities and one European lab. So it is not even a matter of numbers, budget and companies involved but a matter of who and what. Certainly we identify highly initial cost barriers and a very strong barrier of knowledge that really difficult the entrance of any other possible potential competitor. This kind of analysis could be beneficial for the companies involved and pernicious for the market users, the final consumers, but as we seen, there is a really high level of competition in the market so, suddenly, we find a well-balanced market with high competition despite of their initial huge barriers of entrance

4.3.4 Power of suppliers

PoS is relatively high, 3/5. We consider a possible risk of oligopoly, at least in theory, due to the limited number of providers. This means, suppliers could easily fix prices according to competency and this could impact negatively the consumers and the market health. Nevertheless, competency in this market is so strong and there are so “insurmountable” barriers between some of the suppliers. Just in case, we think is logical to give a 3 out of 5 due to the limited number of suppliers and the huge need and demand of users.

³⁴ http://www.larazon.es/detalle_normal_apps/noticias/3060604/sociedad+apps/google-play-sobrepasa-los-50-000-millones-de-a#.Uf94GpKSLMN 07/20/2013

³⁵ <http://www.theguardian.com/technology/2013/may/16/apple-google-app-downloads-smartphone>

4.3.5 Power of customers

We consider a 1/5 score due to a very low capacity of customers to influence providers capacity to change prices or services. We consider customers as the end-users. Of course, this mark will vary a little bit depending on the different customers we find in the different areas we have mention in [4.4.2. Competition inside the Industry](#), meaning, customers will have more importance in the service composition area than in the marketplace area. In the marketplace there is a huge number of consumers then, their capacities of negotiation are limited while in the services composition we could have one small consumer that needs a lot of services so he can try to push somehow the prices. Nevertheless, their power is limited, but this should not be a problem for the market health because of their high competition.

4.3.6 Threat of substitute products

Our score here is 3 out of 5 but we have some doubts about it. If we think in Flspace as a services composition site: On one hand it is true that when we think about a platform composed for different partners, providing different services, is very risky to keep the platform alive because all possible changes of commercial strategy or mistrust between partners in a commercial and real territory. On the other hand, this “atomization” is the one that also helps the providers to find new companies and new ways of substitute the services provided.

If we think of Flspace as a marketplace, there are limited ways of having substitute products, but as we said previously, there is a really high competition that could keep the market in good shape for all end-users and for the companies involved as well.

In any case, we would be enclosed by the IPRs or terms & conditions previously established.

We do not count Fiware as a substitute product.

4.4 Project Sustainability



Definitely this is one of the main challenges we have in the WP500 and at a project level. Just in case, what we propose from this deliverable and WP at this period of time is what follows:

1 – One single company takes over. This could have also 2 different options:

- a) A company from inside the consortium decides to take the lead and make Flspace a commercial product. That company should, somehow compensate the rest of the consortium
- b) An outside company buys Flspace or some modules from Flspace and creates his own. That option could be valid as well for a venture capitalist. It should be discussed the way that money is shared.

2 – A spin-off made by some companies involved in Flspace: This option is viable if we think that one or two trial have a particular high success, so the members or the people involved in those trials want to keep developing things on their own.

3 – Last but definitely not least option is to create a foundation. The country should not be a problem, but we will create the Flspace Foundation so all the knowledge remains within consortium members. This option could, maybe add a clause saying that if any of the individual members wants to leave the foundation, then they will have to “deliver” all the source code needed for the rest of the partners to maintain the platform and applications around alive.

4.5 Individual Exploitation Plans

This exploitation plan is an example of what we want to get from all partners for the next document iteration.



a. Exploitable products/services in your country and/or company
<p>Atos finds interesting the hosting services to provide to the platform as well as any other further development of the TIC pilot.</p> <p>Integration with legacy systems.</p> <p>Further exploitation of the marketplace or the store.</p> <p>Further developments, implementation and adaptation of the SDK</p>
b. Related Initiatives
<p>SAF</p> <p>iCargo: aims at advancing and extending the use of ICT to support new logistics services that: (i) synchronize vehicle movements and logistics operations across various modes and actors to lower CO2 emissions, (ii) adapt to changing conditions through dynamic planning methods involving intelligent cargo, vehicle and infrastructure systems and (iii) combine services, resources and information from different stakeholders, taking part in an open freight management ecosystem. To achieve these targets, iCargo will design and implement a decentralized ICT infrastructure allowing real world objects, new planning services including CO2 calculation capabilities and existing systems to co-exist and efficiently co-operate at an affordable cost for logistics stakeholders. http://i-cargo.eu/</p> <p>ItChain: IT systems for decision making at collaborative process in the supply chain. The objective of this project is to develop an infrastructure to catalog, publish, discover, perform and compose services dynamically in a mobile and context-dependent environment, to facilitate the interoperability of existing systems in a supply chain and to provide the various actors that compose global information to make decisions collaboratively. From the industrial point of view, this platform will be implemented in three stages within the mass distribution of food products to facilitate decision making at all stages of procurement, distribution and transportation, so that the integration of services should produce information on the temporal axis: prediction (oriented joint planning), impact (for making decisions in real time) and monitoring (continuous improvement aimed at learning from experience.) http://sigma.ita.es/itchain/index.php/en.html</p> <p>They successfully demonstrate our commitment to execute, our desire to be proactive in addressing our clients' needs and how we help enterprises to gain a significant competitive edge.</p>
c. Exploitation Strategy:
i. Communication Strategy

Atos leverages research activities on new technologies inside and outside Atos group and takes the research outcomes to customers, introducing innovative elements in their business processes

Atos has defined six dimensional axes in order to classify the different types of Smart City services, endowments and activities for and from self-decisive, independent and aware citizens. Atos is participating in European R&D collaborative projects targeting almost every market applications area. As a result, over the last few years, we have developed a network of public stakeholders and technological partners. Smart City dimensional axes are



SMART BEING: Identity, Healthcare, Learning

SMART LIVING: Leisure, Media, Tourism, Efficient Consumption

SMART WORKING: Business & Administration, Innovation & Competitiveness

SMART CONSUMING: Energy, Food, Environment

SMART MOVING: Transport, Logistics, Mobility

SMART GOVERNANCE: City Services, Public Participation & Co-creation, Safety

ii. Exploitation Activities

SmartAgriFood has been included in the axis of Smart Consuming. The following projects are in the same axis:

OPEN NODE focuses on the research and development of an open Secondary Substation Node (SSN), which is seen as an essential control component of the future smart distribution grid, a middleware to couple the SSN operation with the utility systems for grid and utility operation and a modular communication architecture based on standardized communication protocols to grant the flexibility required by the stakeholder diversification and to cope with massively distributed embedded systems in the distribution grid. www.opennode.eu

The PEARL project delivered a monitoring platform able to integrate different types of geo-referenced information including near real time monitoring and alerts generation. It provides Port Authorities with a monitoring platform able to integrate diverse sources of information, including in-situ sensors and space data. It improves the understanding of port environment phenomena, anticipating risk situation and enhancing environmental protection. www.pearl-project.eu

Together to the previous strategy other steps are being taken Atos has applied innovative solutions to improve efficiency, maximize performance and harmonize our clients' business operations to increase enterprise agility.

Atos relevant presence in FI-PPP projects is due to the extreme importance that the company has given to the development of this area. Through this presence Atos is looking for a privileged position in the Future Internet limelight. The projects are providing Atos with a unique expertise in the area. The acquired knowledge provides the capacity of playing with very innovative roles as FI-WARE provider, FI-WARE consultant and it also gives the expertise in relevant domain such as logistic, agriculture, Smart Awareness, environment, Smart City Services and Smart Energy.

These activities ensure the presence of ATOS in the Future Internet Arena , pursuing not only preserving the current business but extending it and providing our clients with the cutting edge technology that impulses their business.

5 Conclusions

Final conclusions would be written in M24. Right now, this report is a first look and the 'real market analysis' is still going on. We have different markets, a software development market, and various application markets (farming, greenhouse, chain communication, and consumer interaction). The least developed one is the 'consumer interaction' market where not much has been going on in the past. It is different with the other markets.

E.g.: Chain communication which is linked to the fish, flowers, fruits, and meat trials. There are solutions implemented all over Europe which were basically implemented in response to strict tracking and tracing requirements or policies. However, these solutions are either implemented in relatively small regional enterprise clusters (at least 20+ in Europe in different countries) or in closely integrated chains such as those in organic production. A quite famous cluster solution was the one offered by 'tracetracker' (linked to various European projects) which started with fish but entered other product markets as well (also outside food). However, they were never broadly accepted mainly (according to our understanding) because some or all of the requirements formulated in our requirement list set up for Flspace were not fulfilled. This is where the potential of our project comes in.

