Dynamic and Distributed Outsourcing

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The goal of this dissertation is to analyze and define a methodology that is able to support dynamic and distributed outsourcing: allowing a part of a service to be designed in-house while the remainder is delegated to one or more external suppliers (through load-balancing techniques). As such, a process was designed to identify and implement the necessary requisites to ubiquitously support the integration and interaction of outsourcing between the entities that are part of a supply chain. Additionally, pre-requisites of a number of mechanisms were defined to allow disaster recovery situations on a service-on-demand business environment. This study should lead to a methodology defined and established in order to highlight what best practices in classic outsourcing exists that supports the services delivery model. As a result we obtain the dynamic and distributed outsourcing, an adaptive and strategic solution for organizations that receive a service or a commodity to design a service for consumers. It's through this union of paradigms between outsourcing and service delivery that allows bringing an "added value" with the adoption of this model of services in organizational environment. This inter-organizational flow, in current solutions is a complex and with low meaning in a cost/benefit relation. With an unified services model, this practice is liable to be executed with simplicity and emphasis not only on the suppliers point of view, but as well as on the Client (Consumer of the Final-Service) and the Outsourcer entity (entity that relies on outsourcing to produce the Final-Service).

Keywords — Dynamic and Distributed Outsourcing, Unified Services Implementation Language (uSIL), Risk, Reference Model, Capacity, Availability, Inter-organizational Relationships, Service-Oriented Architecture (SOA).

I. INTRODUCTION AND MOTIVATION

Regardless of the political tendency of a country, cultural and personal conviction of an organization, or even an economic opportunity that involves outsourcing, is constantly succeeding and growing rapidly over the industrial sectors. Initially, despite the outsourcing concept, which has been introduced radically in companies for services such as Help Desk and Call Center, the application of outsourcing may be seen in several areas, such as the extraction of raw materials, financing and even in the health industry. However, technology entities have opened doors for outsourcing to be treated as an integral component of the business of a company. It is therefore not surprising that outsourcing affects the routines and methods applied in organizations and which has become a popular topic since the early 90's.

However, one of the majors ambiguities that exist around the organizational strategy and issues for the practice of outsourcing, is the premise of using it to reduce costs. According to international statistics [10],[12], the guarantees in practices of outsourcing are a economic growth, not really stressing that there will be a reduction in operating costs.

With this argument, it is implied that the main objective that will lead a business entity to practice outsourcing should not be focused on achieving cost savings, but to tailor and improve the service that is provided to customers, thus bringing a degree of recognition for competence and a further increase in levels of loyalty between those customers, with the consequent 'added value'. Additionally, in a long term basis, it may be possible to reduce costs, but this should not be the motto that decides the practice of dynamic and distributed outsourcing.

As for the real essence of the services, according to Jobber [7], we can and must define a service as "Any act or performance that one entity can offer to another, which is essentially intangible and does not result in ownership of something, making therefore impossible to bind their production to a physical product". The core of this definition is that "an output is a service", regardless of how the output is generated. This implies that the means of production of services can change flexibly since the final result is satisfactory.

1) Objectives

As a first step, the existence of a niche of enterprises that use a unified services model should be considered, both for the development of applications that enable the delivery of services to customers (low-level) and for the establishment of business processes and intra/inter-organizational workflows (high level).

The strategy of outsourcing should prompt the strengths of an organization to sharpen their core competencies. Each component should enhance the other and if any of these components is provided externally, there should be a model capable of supporting the performance and communication between organizations. Therefore, as organizations seek to improve this performance, they should also consider what are their true and essential powers and then decide how and when to expand its capabilities through partnerships in areas that are not their specialties.
This vision is the main objective of this work, a definition of a methodology capable of supporting outsourcing practices, a model of integrated services. It is considered that this kind of outsourcing has the capacity to be distributed, since it allows the design of parts of the Final-Service through several suppliers. The ability is has to become dynamic can be translated in the inclusion of services in the supply chain of inter-organizational flows allowing load balancing among the stakeholders available. Following this, a simulated scenario will be presented, where this type of outsourcing may work in a really dynamic and distributed way, with the requirements of both functional and non-functional taken into account, in order to consider plausible the existence of these niche organizations capable of assimilating and resorting to dynamic and distributed outsourcing.

2) Contribution

The main contribution of this work focuses on the combination of two concepts that are nowadays considered as unrelated, Outsourcing and Services Delivery. In terms of the outsourcing currently practiced, named in this paper as classic outsourcing, a study of the risks inherent in the inclusion of external entities in the business flow of an organization is performed, and a analysis of the main models used by organizations is presented. Case studies were analyzed, showing many success stories as well as cases where the method of outsourcing has been a failure. In both these situations conclusions are made about the main risks to be taken into consideration in organizational environments.

The Service Management and Delivery level models, were analyzed, in other words, best practices and technologies that support this concept of a service delivery along a value chain of an organization are taken into account. Both the Service Management and Service Delivery have models and practices that only make sense when used locally (i.e., intra-organizational). When trying to extend those solutions and technologies to an inter-organizational paradigm, the result is a complex and a poor quality/cost/risk relation. It is precisely within this inter-organizational paradigm that pervasive services arise, a service model known as the USIL (Unified Service Implementation Language), developed by Professor José Delgado[1], is presented.

Based on knowing where is the risk in the practice of outsourcing and how organizations operates at the services management and provision layer, it is intended to demonstrate how, in general terms, a dynamic and distributed approach to outsourcing should be defined and established to act in situations of service provision.

II. PROBLEMS (SCENARIO REQUIREMENTS)

In order for the organizational world to be able to support this dynamic level of outsourcing, it is necessary to establish the requirements needed to make the solution of dynamic and distributed outsourcing feasible. Knowing that there is freedom to manipulate the interface on both the client and the supplier side, the main problems will be named, and how these should be solved or avoided.

Therefore, this organizational environment in which it takes or performs a service fit to the circumstances may be dubbed as Service-on-Demand (SoD). In this regime an environment for design, assembly and orchestration of dynamic services is required, with an integration framework between the outsourcer and their potential suppliers. The main requirements crucial to resolve and to ensure a constant dynamism and flexibility in the process of outsourcing, are:

1) Integration

Knowing that something is wanted to be obtained by outsourcing, it is necessary to implement an Application Programming Interface (API) capable of being unquestionably usable on both sides - supplier and the outsourcer - that handles the creation of the final service. Additionally, the customer must also get the final service without the need to question which provider is functional and if is only one supplier or several. It is therefore necessary to assume that it is possible to automate much of the organizational processes in this ideal situation, it only goes in favour for the act of outsourcing in a dynamic and distributed way.

2) Plan-B (Disaster-Recovery)

One of the main factors resulting in failure of the practice of outsourcing, (creating some scepticism from companies in the delivery of a part of the business to another entity with tools and/or personnel for such tasks), is due to the lack of mechanisms that the classic outsourcing model possesses, in order to be activated in situations of disaster. This problem has to be carefully analyzed and resolved by all parties involved. It should not be only the outsourcer entity to establish a comprehensive and dynamic approach that can bring a steady alignment and synchronization to the design of services, but this method belonging to a unified service - shared between all entities.

3) Relationship Management between Outsourcing entities

It is important that there is a continuous management of the relationship developed in the process of outsourcing among the various suppliers and the outsourcer. This is as a means of balancing the level of dependency between the various entities. To do this, an open participation among all stakeholders regarding organizational perspectives and priorities of all entities is required and it is vital to maintain the communication between them. It is also necessary to ensure that the commitment to the agreed targets is not affected by the emergence of problems in one or more entities involved in the process. An open mindset with total transparency and communication between the outsourcer and the supplier should be adopted in order to ensure success in the outsourcing process. This relationship management is also important to ensure that they can assimilate all the intellectual property obtained in the practices of outsourcing.
4) Outsourcing through multiple suppliers

This approach states that an organization can get services through multiple suppliers should be considered as a fundamental and practical business solution. The outsourcer should maintain a strong relationship with each supplier, dividing the risk by different entities. The real challenge in this approach is the way that the management of providers should be handled and managed. With the outsourcing of multiple suppliers, the benefits are clear, however, there are certain aspects that should be evaluated with caution.

III. RELATED WORK

To establish precisely this concept of dynamic and distributed outsourcing is necessary to focus the scope of the research in two main areas of application of information systems. The aim of this chapter is to bring a global understanding of how classic outsourcing has been evolving and how the concept of service in a paradigm of models and service-oriented architecture has grown in the business world.

A) Classic Outsourcing

A.1. Strategic Management in Outsourcing:

In order for the Level of Strategic Management to opt for outsourcing, certain assumptions have to be established immediately and the most relevant are the following [14]:

"Ensuring that the client and the service provider have the ability to convey expertise and know-how to the organizational core of the companies". Since it is not enough to just accept the advertisement of the supplier, who claims to have the required capabilities, even if it is close to making the contractual commitment, it is very important that tests are carried out to ascertain whether the vendor has or has not necessary skills to provide the service expected, both in the specified timeframe and in the future.

"Ensure that the organizational culture and methods and working practices are consistent with the outsourcing partners". The need to pay attention to the particularity that the businesses of working entities have common goals is of utmost importance for a fruitful business relationship.

"Providing an active continuity in the design and development of contracts between businesses relationships in order to anticipate change." As the technology evolves, also the contracts and business conditions have to reflect these changes.

A.2. Risk Management in Outsourcing:

Although a vast reference of literature on this chapter exists [6], [8], [9], [11], [14], [15], [16], Jerome [20] its extensive and unique study and research on risk management, is highlighted in this chapter. The aim is to explicitly point out and define what "Refine and Avoid" is, using Risk Management and Relationship Management for the practice of outsourcing. These aspects will be numbered as the "7 deadly sins in the practice of outsourcing organizations":

1st Deadly Sin: The practice of outsourcing activities that should not be Outsourced. Knowing which activities can be fulfilled by outside vendors requires a good understanding of the competitive advantages from the suppliers.

2nd Deadly Sin: The Selection of a Wrong Supplier. A useful distinction supplier can be made between hard and soft skills.

3rd Deadly Sin: Writing a Poor Contract. Regarding the specific terms of the contract, the contracts must be: Accurate (poorly defined contracts often result in high costs and poor service levels), Full (write a contract that is as complete as possible), Incentives (the contract must be written to encourage the correct behaviour of suppliers), Flexible (due to changing technology and a evolving business environment, the activation of outsourcing practices should not be defined in a inflexible way).

4th Deadly Sin: Neglecting personal issues. Effective management of personal issues is crucial because employees often come to outsourcing as a devaluation of their skills.

5th Deadly Sin: Losing control over the activity in outsourcing. If the poor performance of a service is attributed to factors such as insufficient economic scale or lack of expertise, the practice of outsourcing makes sense.

6th Deadly Sin: Neglecting the indirect costs of outsourcing. The indirect costs of outsourcing are a major issue for the layer of management.

7th Deadly Sin: The absence of Plan-B (Disaster Recovery) strategy as an alternative or emergency. Entities who engage outsourcing become dependent parts of their investments to meet certain contracts or maintain a certain level of service standard in the services it offers.

B) Service Management and Delivery

B.1. Best-Practices and Models:

To bring some uniformity with regard to business management and service delivery, the main models and set of best practices that are currently used by organizations are presented:

Six Sigma - Six Sigma is a set of best practices for quality management processes, through continuous improvement by eliminating defects / inefficiencies in processes.

ISO / IEC 17799:2005 - Because information happens in a transversal flow to organizations, it is important that this is managed in accordance with the standard of data security and information ISO 17999.

Control Objectives for Information and related Technology (CobIT) - The IT Governance Institute [19] developed a set of best practices for IT Governance and control, called CobIT, which provides a set of indicators, metrics, processes and best practices to maximize the benefits of IT in organizations.

Enhanced Telecom Operations Map (eTOM) - The eTOM [13] is a standard used for business processes in the telecommunications industry. Describes the full range required by the service provider, defining the key elements and how they should act.
B.3. Service-Oriented Architecture (SOA):

The concept of SOA is widely used today by many organizations [17]. However, in most cases it is applied correctly, because the concept itself describes two very distinct words: “Service-Oriented” express a methodology for software development, the word “Architecture” is an overview of the components of a software system. It is the representation of all parts that together form a building.

Service-Oriented Architecture is a strategy that embraces the creation of all the software components of a company, following the methodology-oriented programming services. The SOA vision [18] has as its fundamental component building systems from autonomous services. With this philosophy, integration is a prediction, where the final solution will probably be composed of services developed in different programming languages, hosted on various platforms, with separate business processes and models of security.

Impact of SOA on Outsourcing. With the success of SOA, the number of debates in relation to changes in business practices increased. Many professionals, experts and researchers began to argue about the impact of SOA on outsourcing of information systems [5]. Given a huge emphasis on growth that the industry has put forward, new areas of outsourcing information systems have appeared; and over the years, outsourcing has faced constant evolution.

B.4. Cloud Computing:

Cloud computing becomes clear that one way to increase and add capacity in a practical way without any need to invest in new infrastructure, train new staff or licensing new software is through any subscription service or pay-per-use style that extends the existing capabilities of real-time IT and the Internet. The various branches of cloud known are presented:

SaaS (Software as a Service) - This kind of cloud computing delivers a single application through the browser to millions of customers. (salesforce.com).

Utility Computing - Used by Amazon, Sun and other enterprises that provide space and virtual servers that can be accessed by request.

Web-Services (WS) - Web service providers offer APIs that enable developers to exploit functionality over the Internet without the need to provide complete applications.

Managed Service Providers (MSP) - One of the more old-fashioned ways of cloud computing is a managed service which basically is an application exposed to IT rather than the end user, such as services such as: scanning of e-mail viruses.

Cloud computing becomes therefore an interesting concept to put into a perspective of how this utopian model of integrated services is likely to be treated in a pretty solid reality in the form of doing business.

C) Conclusions

The analysis and research undertaken for the development of this chapter highlights the diversity in terms of technologies, frameworks and models that are currently available and in use, in which each player stands for it as the best solution for all the explained reasons.

Increasingly moving towards a convergence of philosophies and methodologies in the broad sense, interoperability between different applications in organizations and with business partners will be facilitated. The methodologies, models, best-practices and technologies presented will do just that, get closer to the SOA philosophy. A trend towards the big sellers in the market is shown, where a common basis is established, standards are set, which promote interoperability between applications. We achieved significant progress in several areas, such as SOAP (which is the protocol for excellence in Web-Services).

REST because of its simplicity for supporting the network structure on the HTTP protocol has a concept based on resources and does not need an interface for description; and does not occupy large quantities of bandwidth (which will increase the performance of large systems).

Next, in Table 1 presents a comparison between the technologies of Web-Services with the REST technology.

<table>
<thead>
<tr>
<th></th>
<th>W-S</th>
<th>REST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paradigm</td>
<td>Document-Driven</td>
<td>Protocol-Driven</td>
</tr>
<tr>
<td>Vision</td>
<td>A service produces a document; Data binding;</td>
<td>It breaks the universe as simple as resources required to support only reading and writing;</td>
</tr>
<tr>
<td>Emphasis</td>
<td>Format of data representation;</td>
<td>Protocol connection;</td>
</tr>
<tr>
<td>Problems</td>
<td>Complexity; Granularity; Performance; Customer needs to know in advance the existing operations and semantics;</td>
<td>Low level; Fits little to services; Lack of semantics vision;</td>
</tr>
<tr>
<td>Advantages</td>
<td>Enterprise Integration; Simplicity; Performance;</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 - comparison between the technologies of Web-Services with the REST technology
Thus in this context there is a model of integrated services, called USIL [1], which is a model to support dynamic outsourcing methodology developed and distributed in this work. The main benefits are:

(1) Its paradigm is centred services;
(2) Presents an emphasis on direct interaction service-to-service;
(3) Includes as main advantages, a unified model that supports any kind of services and is truly service-oriented.

C.1. Vision

The vision that underpins the described solution corresponds to a company focused on the service concept, understood as universal and not just in a given context. In other words, the traditional infrastructures of business support (IT, logistics, distribution, etc.) must be part of the business and their service is regarded as business services like any other. Management must be comprehensive, unified and dynamic. The traditional organizational silos should be viewed primarily on a single expansive and dynamic reality and does not correspond to real divisions, tight and static [1].

C.2. Principles

With this solution, we intend to have:

(1) The ability to analyze and evaluate the changing market environment;
(2) The ability of the outsourcer and the providers to adapt to what the customer wants;
(3) If the vendors are to be accompanied by a constant monitoring of load balancing and supported by mechanisms to support disaster recovery.

It is assumed that the behaviour of any system can be modelled by a service company implemented based on resources that interact by exchanging messages with each other and the transformation of other resources and assets. The services referred in this model are quite generic and involve all areas such as computer-based services, logistics, financial, etc.

C.3. Contribution

We can thus conclude that the main contribution of this solution is reflected in the implementation, definition and management modules to interpret policies pre-defined within the services and middleware to support the different phases and stages of life cycle services, to:

(1) Manage relationships between entities.
(2) Assess costs by having the reserved service that the suppliers may provide.
(3) Manage load balancing between the suppliers and possible production in-house, in a complementary manner with the structure of the model and framework, thus supporting practices of Outsourcing genuinely dynamic and distributed.

Figure 1 – Reference Model

This reference model aims to demonstrate the inter-organizational flow that exists between the various suppliers and contracting outsourcer. Additionally there is also the contact with the Final Client, but this is only from the outsourcer. This generic situation will consider the various action points that highlights the advantages of using this model for the practice of dynamic and distributed outsourcing.

Throughout this chapter the modules in this methodology in terms of the various phases of the life cycle of the service shall be identified and defined. Each of these modules will contain:

(1) The objectives and reasons for their implementation at various stages of services lifecycle;
(2) Definition of the characteristics and components of these modules.
(3) The risks that need to be investigated during the operation and simulation of this model.
(4) A simulation of the implementation of these modules.

IV. METHODOLOGY

With an investigation about the current practices in managing and developing services through outsourcing, it is possible to notice how classic outsourcing lacks a risk management and monitoring inherent in the way it crosses the lifecycle of services and organizational entities.

The best-practices for service management have many interdependencies and do not cover all stages of the life cycle of services. Cases such as ITIL, eTOM and SCOR, contribute to a consolidation of concepts, which are to be taken into account but cannot be considered as perfect solutions.

The Services Delivery offers a range of solutions and tools that aim to cover more sectors of the market with a vast level of abstraction and application layers in order to support the concept of Cloud Computing and SOA. However, only contribution to an increasing reliance on outdated methodologies and frameworks (such as the Web-Services and REST) for this new paradigm of services.

It is assumed the initiative to develop a reference model and a methodology of integrated services for the practice and conception of services for dynamic and distributed outsourcing pratices. Throughout the different stages of the life cycle of the service, the main modules that should be included in this methodology are identified. Initially, the reference model used to support the methodology that is proposed in this work is taken into account, as is illustrated in Figure 1.
with their pre-defined policies in different scenarios of the Reference Model.

These scenarios of application of the reference model designed to demonstrate how the problems initially identified at the beginning of this work can be solved with this methodology and model of integrated services USIL. This synergy results in a Methodology Outsourcing and Dynamic Distributed Services in a unified model, the main areas and stages of intervention in the life cycle of services for inclusion in this model are:

• **Stage Design** – Stage Strategy and Design (Figure 2);

This being the Initial Phase of the of services lifecycle, it focuses on strategic and tactical concepts in the management of services and organizational entities. Listed below are the main focus to consider the stage of strategy services:

**At the Strategy level:**
• Definition of strategy;
• Demand Management;
• Risk Management.

The Design of a service is important in this paradigm because it is a point of hatching that requires the spread of its activities to all modules to ensure the provision of services throughout its value chain. When designing or changing a service, it is important that all players in the life cycle of the service are involved from the beginning.

It is common and likely that the possibility of a newly designed service has to be implemented and be operating in situations of "last minute" to the Customer. This translates into the need for advanced knowledge of suppliers on the service requests, and Availability which may be asked to these by the Outsourcer.

The management modules that are considered essential to be included (which are described in more detail below) to support the practice of outsourcing at this stage are:

**At the Design level:**
• Management of Service Agreements;
• Management Capacity;
• Supplier Management;
• Risk Management;

**Implementation Phase** – Stage Pre-production and implementation (Figure 3);

In the Implementation Phase, it is intended to focus on all aspects of running a service in the life cycle of integrated services.

It is necessary to ensure that a service can work in many circumstances of extreme predictability as well as in abnormal situations.

In the case of transition and setup of services between the entities of outsourcing practices, the main targets (during the execution of a service or in production in-house or through outsourcing) are:
• Ensure that the service can be used in accordance with the requirements and thresholds specified in the service;
• Reduce known errors and minimize the risks during the transition of new or changed services for production;
• Increase customer satisfaction, the user with the inclusion of new services, communications, documentation, training and knowledge transfer between the various stakeholders;
• Improve communication and inter-team work. Between outsourcer, customers, users and suppliers.

**Production Phase** – considered the stage of Operation which will therefore influence the Transition Phase (Figure 4).

The stage of production life-cycle services is focused into more attention the stage of production, since it is in this state that there must exist a well balanced decision that allows certain factors to bring some volatility during the practice of outsourcing. These factors are:
• **Vision Internal vs. External Vision Business**

An organizational entity (whether an outsourcer or a supplier) should not only focus on an internal vision. A view can only lead to internal focus on streams and modules that are most important to the business. On the other hand, concerned only with the flow with the other entities can take to settle contracts and commitments that are not achievable. The business requirements depend on the capacity that the organizational infrastructures support in this capacity and not a future event, requiring the balance of this factor;

• **Stability vs. Response Time**

The business requirements are constantly changing over time. This requires changes in services and/or the entities. If an organizational entity only thinks of stability, it becomes rigid and slow to adapt to business needs. If only one organization focuses on agility, it may lose quality in the planning of changes and therefore lose stability;

• **Quality of Service vs. Cost of Service**

Although there is a constant pressure to the increase of services quality, it can’t always guarantee high quality at low cost. It is against this background that the outsourcer and its suppliers will have to establish a usability of resources optimal;

• **Reactive vs. proactive activities,**

A reactive entity sees something when it is subjected to external pressure, i.e., only develops the procedures for the production of a new service, when the business environment triggers the service.

A pro-active organizational entity should have the possibility and mechanisms to integrate new opportunities and continuous improvement of its services. However, if the enterprise only focuses on pro-activity, it creates the possibility of generating excessive costs that are not recoverable by the outsourcer and their respective suppliers.

From the services design phase to its production it is necessary to obtain information from the metrics gathered and shared by suppliers. The contracting outsourcer maintains contact with customers also should have access to a real-time monitoring of state of the services it provides. In Appendix A, the methodology with all modules of the different phases aggregates is presented.

This chapter explained thoroughly how to integrate practice of outsourcing in the dynamic and distributed method of standardized services USIL, with the adaptation of some of the modules in the stages and phases of the services lifecycle. Is also explained how scaling up predefined policies for both the design and distribution services as well as risk management inherent to this whole process of inter-organizational flow.

V. **Proof of Concept (Case Study)**

Before purchasing a travel package by a consumer, he will examine how different developments of providing the service – “Set a Travel Trip Planner”. The provision of this service marking Travel Trip Planner, will have as the main bodies involved, the suppliers, the travel agency (which will be an Outsourcer) and client. Note that in this scenario, the IT infrastructure of this agency is delivered by outsourcing to a provider of IT - &.

A) **Entity Client**

The Client makes a reservation of a Flight to London. During the interval until the day he boards the plane to London, he can monitor whether all services are up to date, reserved and available. The specifications initially provided by him, were as follows (Figure 5):

1. The arrival time in London;
2. A Luxury Suite in a Hotel;
3. One Car E Class.

![Figure 5 – Overview of the Entity Client](image)

B) **Entity Outsourcer**

The Travel Agency will have to rely on a number of requests for services transmitted by suppliers A, 1, X and &. Through pre-defined policies based on the requirements, the service model should be able to perform load balancing and integration with all these suppliers. Additionally, in the case of problems, disaster, or lack of resources, you must activate the Plan-B in advance for each of these outsourcing contracts.

The outsourcer has defined an agency of the aviation agency, the hotel accommodation and a service Rent-a-Car Supplier X. The client does not need to have the perception that the various services that is going to benefit are from different entities, but to be assured that he has a trip to London on the given day, a hotel room booked and means of transport according to his needs. So for the client, it does not matter if he travelled by plane from agency A, B or C, stayed in the Hotel 1, 2 or 3 and travelled in a transport medium supplied by the Rent-a-Car X, Y or Z, since the cost and the specifications for these services are proportionate to what was pre-defined by him.

First, a priority of services to be requested must be made. It does not make sense that the service for Rent-a-Car or accommodation is guaranteed if it is not possible to book the first plane trip to London at that day, as illustrated in Figure 6.
After selecting the alternative supplier Hotel, it announced the recovery of the possibility of providing the service with the requirements fully met to the contracting outsourcer.

However Provider Rent-a-Car has, due to a disaster, lost all owned cars. In this situation, as shown in Figure 8, the outsourcer will have to evaluate the alternative of a secondary supplier for this type of service.

Figure 6 – Scenario Fault Supplier Rent-A-Car X

Given the details of the service to the outsourcer, the listing of SCD had recommended that the Provider Plan-B - Rent-a-Car Y. With this situation recovery of quality of service initially established is possible, as is the continuity of the availability of the Final Service without alarming the customer.

C) Entity Provider

To maintain this kind of dynamism and flexibility to the overall level of provision of a service, it is imperative that the supplier is not only able to handle all cargo and demand raised by the outsourcer, as well as support the integration of data between this entity and other providers. This Supplier may have a plan for disaster-recovery procedures like the case of the hotels 2/3, and also define the entity outsourcer as a possible secondary supplier similar to the case of Plan-B of the Rent-a-Car Y.

Even in these situations taken as examples, the possibility of the Supplier to have its own Plan-B should be included. A list of suppliers that provision alternative services for his Plan-B also fails (or do not have enough capacity to provide).
Existing pre-defined policies that handle and balances this type of situations, the “Plan-B Supplier” becomes another supplier that the outsourcer owned as secondary supplier of other types of service, but were able to provide this additional service. It’s shown this situation in Figure 9.

<table>
<thead>
<tr>
<th>Outsourcer</th>
<th>Excursion Agency @</th>
<th>Taxi Company Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmation and Information of Sub-Services Status</td>
<td>[Timer] Final-Client Status Actualization</td>
<td></td>
</tr>
</tbody>
</table>

Figure 8 – Scenario Fault Provider Agency Tours @

This could be applied if the client had also booked a tour bus to Manchester. Before the start of the tour, the client found that one of the points of interest would be Oxford Street, the site of Manchester Metropolitan University and the Royal College of Music North. Although he also has a Rent-a-Car service available and own a vehicle he does not feel safe to make such a long journey driving and therefore, decides to use a service pack provided by “Mark Plan Travel Tourism”. In the days before the tour, the entity Supplier Tours Excursions @ suffers a strike by drivers of vehicles and tour is scheduled to delay the customers stay in London. As the strike affected the entire industry, the outsourcer or even of the Supplier @ could not intervene effectively to resolve this problem. The outsourcer, in this situation should assess which suppliers of other different business areas can counter this situation. In this case the outsourcer could resolve the situation with the activation of a Supplier Private Taxis Fleet Ω, and reserve a taxi to transport the client to the Oxford Street in Manchester. Only then will the customers requirements be fulfilled without prolonging his stay in London.

D) Conclusions

In this hypothetical case study we conclude that this methodology will increase the success rate in providing a service for the practice of distributed dynamic outsourcing and therefore increase the Final customer satisfaction.

These situations show how this methodology allows a solution to maintain the survival of these services to be found. These solutions arise with the existence of sub-suppliers, both employed by the outsourcer as by the main supplier, thus demonstrating the added value of a heterogeneous system, unified, easy inter-organizational integration.

VI. CONCLUSIONS AND FUTURE WORK

A) CONCLUSIONS

This document, through the work submitted is in response to an emerging need in the service management and delivery provided by organizations that seek to complement the frameworks used. It is worth the effort to reveal the enormous effort that has currently been done around the question of weight, benefits and risks underlying the contracts of outsourcing these days, which has led to a huge range of literature quite innovative in its approaches.

As described in chapters dealing with the state of the art, there are many frameworks for IT management that, although directing in different objectives, in essence, all share the same model - the Services Management and Delivery. Some of the frameworks discussed during this work have undergone several changes, translated into new versions that come in the future to further strengthen a quality management in its themes.

Outsourcing is certainly a concept that in future will no longer exist due to an automatic and simplistic integration between organizations and trading resources between them.

These findings emphasize the diversity of user systems that appear to facilitate the outsourcing relationships, however, they can only really demonstrate added value from constant monitoring at different stages of an outsourcing contract from the analysis of suppliers and their contractual definition, until the service reach the end consumer.

The proposed methodology explores the nature of service-oriented architectures, as well as the scope of applicability is in the field of Engineering Services and a vision of Unified Services. This vision of Unified Services should be crucially supported by USIL as a means to bring uniformity and simplicity to the process of information between different systems.
Thus, it is concluded that this method of dynamic and distributed outsourcing supports the premise that organizations should model information and not data.

In Summary, this solution aims to contribute to the enrichment of the search for ways to encourage the decentralization of organizations that produce a wide range of services and thereby obtain a better expertise on a particular service, bringing differentiation in the.

B) FUTURE WORK

Despite the unified Framework already includes a considerable number of aspects to be considered for the management of any service, a large and diverse number of services can be found in everyday life. areas such as Health, Banking, Insurance, Education, are certainly associated with a set of procedures and standards that, if analyzed, can contribute positively to strengthen and complete the methodology of unified services [3], [4].

To complement this vision of Unified Service Model is presented still under investigation, accompanied by Professor José Delgado [1] and developed by students of the Instituto Superior Técnico, Technical University of Lisbon [2], [3], [4].

To conclude this work, this chapter provides guidelines for future investigation regarding the provision of services by dynamic and distributed outsourcing:

- Investigate a possible Module for Financial Management and Legal issues;
- Specify how to optimize functions such as Service Desk, Operations Management and Facilities Management for the treatment of services during the operational phase;
- Implementation of practical testing environments in organizations with this model.
- Include the management of outsourcing services in a structure of continuous improvement of integrated services (Maturity Plan - shaft versions);
- The definition of templates for the management of SA's, validation and replacement of suppliers together with the templates defined for each organizational domain to be applied;

REFERENCES