CB-BUSINESS: Cross-Border Business Intermediation through Electronic Seamless Services

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Abstract. Business enterprises face significant obstacles in their quest to interact with public administrations and governments across Europe, such as bureaucracy, ambiguous procedures, functional disintegration, vague authority structures and information fragmentation. The recent trend towards the delivery of electronic services by governments ("*e-government*") and the development of integrated and customer-oriented mechanisms ("*one-stop government*") are efforts to overcome these problems. However, all related efforts focus on the national scene of each country and do not address the needs of businesses when they enter into cross-border processes. This paper presents the objectives, the overall approach and the architectural model of the CB-BUSINESS project, which aims to develop, test and validate an intermediation scheme that integrates the services offered by government, national and regional administration agencies as well as commerce and industry chambers of European Union and Enlargement countries in the context of cross-border processes.

1   Introduction

Business enterprises face significant obstacles in their quest to interact with public administrations and governments across Europe. The most common problems include bureaucracy, ambiguous procedures, functional disintegration, vague and/or overlapping authority structures and information fragmentation. The recent trend towards the delivery of electronic services by governments ("*e-government*") and the development of integrated and customer-oriented mechanisms ("*one-stop government*") are efforts to overcome these problems and radically revamp the services provided by European governments; see e.g. [1], [3], [5], [6] and [7].

At the European level, the *eEurope* initiative launched by the European Commission in December 1999 puts forward a concrete action plan for "Government On-Line (GOL)" with the aim to make public information more easily accessible and stimulate the development of new private sectors services based on the new data sources that become available; see [2].

However, related efforts both within and outside the European Union focus on the national scene of each country and do not address the needs of businesses when they

enter into cross-border processes. Certain initiatives such as EUREGIO (see [4]) have been set up in this direction, but their emphasis is rather on facilitating transactions between neighboring border regions and, in this context, supporting cross-border processes at the local level, than on explicitly providing support for "anywhere-to-anywhere" cross-border transactions. The critical need is to support, for instance, a company (possibly without core business competencies in exports) that occasionally enters into export procedures or has to pay foreign subcontractors, requiring information and/or needing to make transactions with the public administration and government organisations of another (any other, possibly non-neighbouring) country. In this area the problems of bureaucracy, ambiguity, vagueness and disintegration that business enterprises have to face when interacting with foreign governments, get more sharp than in the national setting. Such problems are insurmountable for SMEs with limited resources.

The CB-BUSINESS project presented in this paper addresses directly this situation as its primary objective is to develop, test and validate an intermediation scheme that integrates the services offered by public administrations as well as chambers of commerce and industry in the context of cross-border issues. The CB-BUSINESS project is a 24-month project co-funded by the European Commission under the 'Information Society Technologies' program and involves as partners Planet Ernst & Young SA, SchlumbergerSema, University of Athens, ComNetMedia, Greek Ministry of Economy and Finance, Instituto Tecnologico de Canarias, Bulgarian Chamber of Commerce and Industry, Paris Chamber of Commerce and Industry, Athens Chamber of Commerce and Industry and Chamber of Commerce and Industry of Romania and Bucharest Municipality.

2   CB-BUSINESS Objectives

The CB-BUSINESS project has three specific objectives.

Objective 1. Design a unified true "one-stop shop" service model for "Business-to-Government" interactions. CB-BUSINESS aims to develop a service model based on an intermediation scheme that:

- extends the "first-shop" (i.e. information counter) and "convenience store" (i.e. one location for different transactions) service models to develop a true one-stop government model (i.e. one location that integrates many services necessary to satisfy concerns of specific client groups in specific events) that is transparent to the end-user company;
- focuses on cross-border processes necessary for administrative support of cross-country business searches, contacts and transactions, falling under the general theme of "cross-border entrepreneurship" and mainly initiated by EU businesses targeted at Enlargement Country markets; and
- is structured around end-user needs (rather than provider services – i.e. governmental processes) by grouping services around "business life episodes".

Objective 2. Develop a WWW-based intermediation hub that implements this service model and will act as a pivotal point of contact for EU and enlargement country enterprises. CB-BUSINESS aims to develop a system that will:

- Have an "intermediation hub" technical infrastructure able to accept user requests, identify the cross-border processes that have to be enacted, trigger and dynamically coordinate process workflows of individual service providers (administrations and chambers) and integrate the final results for delivery to end-users.
- Be accessible over the Internet – but also open to future extensions, both for multi-channel service delivery (e.g. through mobile phones, digital TV, call centres, etc) and to complementary infrastructures (e.g. banking and postage services)
- Provide a "seamless service feeling" for end-users, who can have access to cross-border services through single-stop, single-session, single-sign-on procedures at a low cost and up to a standard quality, as well as to decrease operational costs and increase quality of service for both government/administration and chamber service providers.

Objective 3.Prove the validity of the service model and pilot-test the WWW-based intermediation hub in various specific cases that strengthen European integration and facilitate cross-border processes between EU-enterprises and businesses in enlargement countries.

3   CB-BUSINESS Approach

CB-BUSINESS establishes an intermediation scheme between service providers and end-users, with the aim of transforming the many-to-many service provider/end-user communication mesh (in which each end-user should communicate with as many service providers as are involved in serving his/her need) into a many-to-one-to-many star-like communication topology.

In this architectural scheme, an end-user communicates with the intermediation hub as a single point of reference, and the latter handles all complexity of triggering and co-ordinating service provider workflows. Therefore, end-users enjoy a "seamless service feeling" whereas service providers avoid the burden of inter-organisational communication, since the hub undertakes all co-ordination procedures. This results in more structured tasks for service providers, who are enabled to better define their operational interfaces towards the intermediation hub and concentrate on the establishment and improvement of quality and performance dimensions for their process workflows.

Upon submission of a user request (see Figure 1) the CB-BUSINESS intermediation hub shall identify involved services, competent service providers and user input requirements and ask for the latter as appropriate. Upon provision of required input data from end-users, the intermediation hub undertakes forwarding of user input, triggering and co-ordination of process workflows of individual service providers, rendering internal details regarding service execution procedures or workflows transparent for end-users; however, upon user demand, the processing status of end-users' requests may be monitored and presented. Therefore, the CB-BUSINESS intermediation hub employs overall workflows of cross-border processes to trigger and co-ordinate individual service provider workflows, thus being able to deduce the progress status of user requests and report it as appropriate.
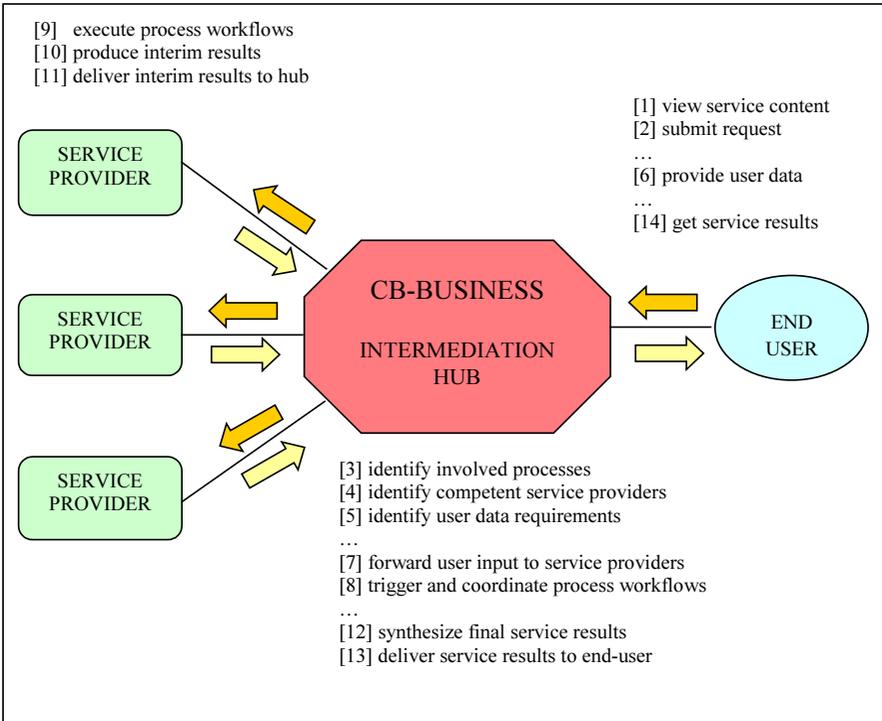
Fig. 1. CB-BUSINESS Intermediation Architecture

From a structural point of view, the CB-BUSINESS intermediation hub is deployed as an added layer on top of existing government and business service schemes (which indeed corresponds to the idea that the CB-BUSINESS service-mediary constitutes an added-value layer on top of existing service provision schemes). The intermediation hub employs standardized modules for interfacing with individual service schemes, and such standardized modules are also deployed in the latter as interfaces to the CB-BUSINESS hub. These modules (referred to as CB-BUSINESS interfaces) encompass all the technical infrastructures and specifications, functional conventions and operational arrangements which are necessary in order to establish information and control flows between the intermediation hub and individual service schemes. Two points should be made here:

- This structural architecture is based on the concept of standardized interfaces between the intermediation hub and individual service schemes, and is not dependent upon internal details of service scheme implementation. In other words, although the CB-BUSINESS intermediation hub itself and the CB-BUSINESS interfaces are ICT-based, CB-BUSINESS service providers may internally implement their service provision procedures with IT- and/or paper-based work schemes. This degree of independence allows even non-IT-enabled service providers to integrate their services with CB-BUSINESS, which is considered an important strength of the architecture.

- The star-like topology of the intermediation architecture described here, where there is a single central point of co-ordination, may also be generalized into a hierarchical-star topology without affecting the basic principles. In such a topology, individual service providers are grouped in clusters (according, for instance, with geographical, sectoral or mission level criteria), and each service provider cluster is coordinated by a corresponding low-level intermediation hub. Low-level intermediation hubs are then hierarchically coordinated by the central hub, which undertakes responsibility for global operation. In such a multiple-hub topology, end-users do not necessarily refer to the central hub but may access any hub of the hierarchy (the one most suited to their needs according to the service providers that it clusters); all hubs, however, are able to provide the same service content so that no complexity is created on the end-user side.

As far as the implementation architecture of the intermediation scheme is concerned, the following basic principles apply:

- the overall technical architecture of the intermediation hub is as much as possible compliant to current standards (with respect to information formats, communication protocols, etc) and open to emerging ones, while at the same time getting the most benefit out of technologies for e-service provision and delivery platforms
- the overall technical and functional architecture of the intermediation hub is modular with the aim of facilitating incorporation of alternative and complementary e-service platforms.

With these two principles in mind, CB-BUSINESS architecture employs the notion of a "**communication gateway**" for referring to the implementation of communication and co-ordination links between the CB-BUSINESS intermediation hub, end-users and service providers. A CB-BUSINESS communication gateway represents a specific communication channel (such as the Internet or WWW, fixed or mobile telephony etc) together with all technical standards (communication protocols, information content or information medium formats etc) necessary for exploitation of the channel, together with all associated operational dimensions (e.g. quality-of-service, security-of-service etc). It is clearly desirable to support as many different communication ways as possible, so that prospective user communities are broadened and accessibility constraints are relaxed. With this objective in mind, the CB-BUSINESS implementation architecture has been conceived as comprising of certain indispensable core modules, implementing the basic intermediation hub functionality, complemented by a number of optional pluggable peripheral modules, each implementing one specific communication gateway employed by end-users and/or service providers In this way, the core architectural design can ignore communication gateway details, which are handled by dedicated pluggable modules, and assume an **abstract communication model**; even more importantly, additional communication gateways may be incorporated into the system as new e-service provision and delivery platforms emerge, which is a fundamental prerequisite for keeping up with technological state-of-the-art and exploiting the benefits of technological advancements. Last but not least, this architectural modularity also allows for provision of non-IT-based communication gateways (such as voice telephony, facsimile or paper mail) which can be valuable for printed document transfer and non-IT-enabled end-users.

4   Current Project Status

As the CB-BUSINESS project started just a month ago (April 2002), the present paper is based on material from the project proposal. Currently, the CB-BUSINESS consortium is working on the analysis of service provider processes and end-user requirements, as well as on the specifications of the functional and technical architecture of the CB-BUSINESS system. It is expected that by September 2002 the service scenarios of the CB-BUSINESS intermediation hub will have been defined and analyzed in detail, and all functional and technical aspects of the system demonstrator will have been specified, so as to proceed with the technical design and solution development.

It should be stated that the next steps of the project implementation involve, also, the formulation of a set of architectural provisions on CB-BUSINESS service delivery platforms, process workflow ontology and operational interfaces. This is an important process in order to ensure the wide market acceptance and acceptability of the CB-BUSINESS system. The architectural provision shall be publicized in the form of Request for Comments, so as to acquire external feedback and promote awareness and consensus.

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