

# Business Register Interoperability Throughout Europe: The BRITE Project

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## Abstract

In this paper, we will introduce BRITE, an Integrated Project sponsored by the European Union starting in 2006. The aim of BRITE is to exploit Semantic Web technologies in order to enable interoperation in a transnational scenario, namely processes between institutions that concern the registration of businesses in the European Union. While technically the scope of work of BRITE comprises research in process and knowledge modeling, novel ICT engineering/prototyping, design and piloting of intelligent new cross-border and cross-domain services, in this paper we will—according to the early state of the project—mainly concentrate on the BRITE scenario and the service cases envisioned.

## Motivation and Prerequisites

One goal of the European Union (EU) is to establish Europe as a dynamic business ecosystem. Therefore, EU directives have been and are being issued that shape the company landscape in the EU. The emerging 'EU Company Law' provides added flexibility and new options to the entrepreneur whilst guaranteeing the protection of the economic actors that deal with companies. Also in other domains than company law, EU legislation is being set up to facilitate business and reduce business risks. So, the actual procedures have to balance two, potentially conflicting goals: Facilitating the free movement of companies and services on the one hand whilst preventing financial crime, combating money laundering, and ensuring transparency of the financial market on the other. The EC (European Commission) has adopted a fully integrated approach to achieve these objectives and many coordinated initiatives are underway, covering legal and organizational as well as technical aspects of the problem.

In BRITE, we focus on the problem of *cross border business registration*: In the EU, companies and businesses must register with a so called *Business Register* (BR) in the country where their seat is established. These BRs are public bodies whose territorial competence may be local or

national. The legal status of a BR, its position in a public body, its structure and its competencies are determined by the law of its country. Company-registration information maintained by the BRs is accessible to the public (under conditions set by the member states). Hence the BRs play a key role on the market since they ensure business transparency – a prerequisite to market trust – and contribute to protecting the rights of all market actors.

The BRs, in an enlarged EU where companies will move freely, need to interact across borders, to exchange company-registration information and to do so despite possible administrative, technical, cultural and language barriers. Simply put, to be effective, each BR needs to be able to 'talk' to at least 24 other BRs, and to interpret company-registration information coming from all the other countries. Eventually, all BRs need to integrate their operational processes and systems so as to perform efficiently.

The BRITE Project will set out to develop the Business Registers' response to these challenging requirements at all levels: abstract, organisational, technical, legal, strategic and managerial. It will also address interoperability across 'domains', i.e. interoperability between the BRs and the public agencies that operate in the selected sub-domains of e-Government.

The pan-European perspective shows the high complexity of the BR scenario with respect to the various actors with different rights and obligations, but also with respect to the dynamics of the underlying processes: Business registration law/regulation is a competence of the Member States (MS); yet, it is EU law that ensures that the principles of free movement of persons, services and capital set forth by the Treaty of Rome are safeguarded. The EU Company Law that is emerging increases the degree of harmonisation of company laws across the MS. EU Company Law has opened (or is about to open) new options for companies that are established in a MS: entrepreneurs may now freely create a European Company (Societas Europaea, SE), transfer a company seat to

another MS, open in a simplified way company branches in other MS, merge their company with companies in other MS, etc.

These new opportunities bring about new requirements and services obligations on the BRs. The BRs are now poised to adapt to the changes in EU legislation and must respond within a matter of years. The BRs must be ready to take on the challenges that face them in the new legal landscape. Fortunately, the BRs are, amongst the Administrations, those where Information and Communications Technology (ICT) penetration is the highest: there is much ongoing activity in the BRs regarding electronic filing, digital signatures, data access and data security. At the trans-national level, the European BRs have been collaborating since the early nineties. They have established the European Business Register, a network that allows the public to securely access the company-data stored in the participating BRs through the Internet, using a multi-language user interface. In summary it may be said that the domain of business registration is especially suitable and well prepared for advanced, semantics-based approaches as they will be carried out by BRITE.

The remainder of the paper is organized as follows: According to the early state of the project, we will only briefly sketch the technical approach of BRITE. A major contribution will be the description of the service cases envisioned. We will conclude with a short summary.

### **BRITE Approach: Ontologies for Interoperability and Process-oriented Information Support**

BRITE's scientific and technical objectives are to develop, implement and demonstrate an advanced, innovative interoperability model, ICT service platform and management instrument for Business Registers to interact across the EU. The BRITE model, platform and instrument will be extended to the interoperability between the BRs and organizations in connected domains of activity.

Technically, the scope of work of BRITE comprises research in process and knowledge modelling, novel ICT engineering/prototyping, design and piloting of intelligent new cross-border and cross-domain services. The organizational challenges include ensuring consortium cohesion, maintaining project direction and ensuring that the Project does not operate 'in a vacuum' but liaises with other initiatives and non-BRITE actors through useful 'concertation' and cooperation instruments.

In order to achieve these goals, BRITE will pursue three objectives:

- **Objective 1:** Enable semantic and technical interoperability;

- **Objective 2:** Enable organizational and service interoperability;
- **Objective 3:** Enable effective deployment & sustainability.

The overall approach in BRITE is to take conceptual frameworks from Knowledge Management, especially for Distributed Organizational Memories as a starting point. Such approaches typically address several points which are also essential to the BRITE domain (see, e.g., [2, 4, 7]): They are *process-oriented*, especially they use process knowledge to guide Knowledge Management activities (e.g., as context for proactive information delivery); they cope with *multiple levels of formality* on the information and data level; they use *ontologies* to mitigate semantic heterogeneity (with respect to information and data as well as with respect to processes); they provide *mechanisms for coordination* in distributed scenarios; they are supplemented with *methodological guidelines* for introducing and maintaining such systems.

In general, the BRITE architecture will comprise:

- **Ontology Tools**, especially for creating and maintaining the BRITE ontologies, but also for ontology mapping.
- **A Knowledge repository**, providing the capabilities for storing, maintaining and inferencing on various forms of data and metadata.
- **An Interoperability Layer** as a basic technical level for data, process and service integration across national and technological borders.
- **A High-level Workflow**, encompassing run-time support, for service orchestration.
- **A Dashboard** for high-level monitoring of patterns of service and platform usage..

The solution approach pursued in BRITE will heavily build on semantic technology, especially ontologies, to facilitate interoperability and process-oriented information support. In the following sections we fetch those aspects of the architecture which are more closely related to semantic technologies.

### **BRITE Domain Ontology**

From experiences in Knowledge Management, especially in larger organizations, ontologies are seen as a promising means for comprehensive information utilization and service interoperability in e-government (see, e.g., [1, 5, 6]). In BRITE, we follow this line of research.

The BRITE Domain Ontology (BDO) aims at facilitating information integration, e.g., for BR-spanning queries or formal policy rule checking, enabling communication between multiple business registers, and easing the implementation of BR, e.g., in new EU countries. The main focus of the BDO development is the proper balance

between local perspectives taken by the various National Business Registers and the more global perspective required to enact the cross-border directives imposed by the EC. Another objective of the BDO is to provide a reference framework for assessment of local registry information structure.

To establish the BDO, the domain expertise of National Business Registers and the EBR together with the modelling work already performed by these institutions is taken as seed for a minimum agreement on relevant

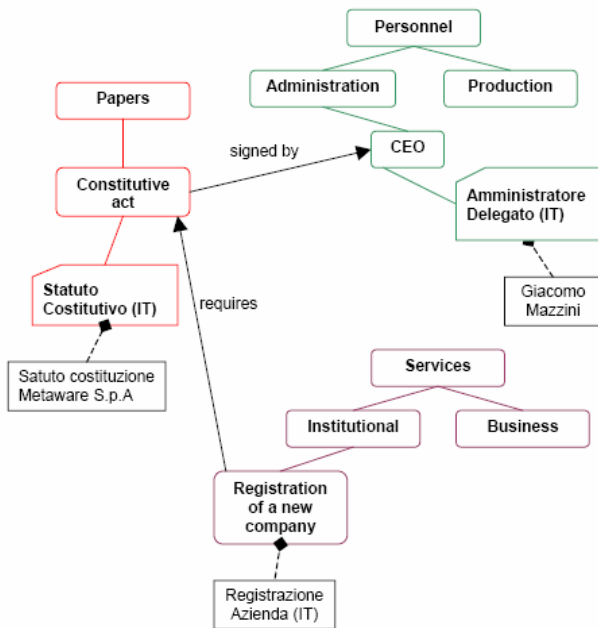


Figure 1: A sample domain ontology fragment, showing a high-level, abstract layer, and some country-specific specialization.

concepts and their semantics. These concepts are then used to build the formal BRITE Domain Ontology. Mapping rules are defined that map the BRITE Domain Ontology onto the local scenario.

### Process Ontology and Services

Processes are themselves valuable knowledge assets as well as a vehicle to guide Knowledge Management activities in e-government (cf. [2, 3, 7]).

The processes addressed in BRITE are complex in nature as well as knowledge-intensive. Participants need to provide required information, make decisions, take actions while conforming to national and European-wide regulations and all this cross-organizational.

BRITE introduces processes and services derived from the EU directives that need to be implemented by national registers, each with their own legacy system implementing national register processes. However, there are tasks (such as delete company entry or check company integrity) that

are generic over all registers and due to the new EU directive, even more tasks need to be addressed in the national registers. This poses problems of implementing the new directives, the cooperation between national registers, as well as in adapting and integrating the required know-how in the various legacy systems used.

Therefore, BRITE will investigate two issues:

- First, how to provide support for knowledge-intensive processes in the register domain based on the emerging domain ontology to ensure an adequate process support of the new services.
- Second, establishing an ontology for generic tasks, a Process Ontology, for the register domain to adequately coordinate the national register processes into the enactment of cross-border tasks as regulated by the EC directives. This Process Ontology is then used in combination with the domain ontology to provide and capture process know-how as well as finding appropriate process know-how for the problem at hand.

This approach also ensures flexibility of the processes if redesign is required (e.g., by new legislation; introduction of a new system in the national registry) as well as maximizing the separation between knowledge and customized legacy integration layers, providing better maintainability and reducing development costs.

### Service Case Assistance Repository

The Service Case Assistance Repository exploits the BRITE Domain Ontology and the Process Ontology for process-embedded information support. The BRITE domain is complex and knowledge-intensive. Therefore, a knowledge repository has to be provided and maintained containing information with relevance to the BRITE domain.

Not all of the knowledge that is necessary to execute the various service cases in the BR domain can be fully formalised. Nevertheless, the agent executing a BRITE service case process should be provided also with relevant informal information that is useful for the task at hand. Examples are relevant national and European regulations as well as further documents in that domain such as news articles or company profiles. The potential content of the knowledge repository will be identified during process analysis and in discussion with the business registers about their domain.

The knowledge repository will be accessible by all business registers and use the domain ontology as well as the process ontology to classify its content. Web-services will allow for accessing the repository for all business registers in order to enable process-embedded knowledge delivery and capture.

Figure 2 gives an overview of the abstract BRITE architecture: National Business Registers have their own

activity implementations which are handled as black boxes from the BRITE point of view. These activities are annotated by the BRITE process ontology. This allows:

- The definition of the EC directives as high-level workflow templates which are at execution time instantiated with the local, national implementations in a semantically consistent way;
- Linking to information elements in the knowledge repository which might be required during the execution of a process.

### Technological Infrastructure

The technological infrastructure delivered by BRITE will comprise two main elements: i) a knowledge framework for modelling and maintaining the BRITE ontologies, and ii) a service-oriented integration platform that coordinates the national business registers accesses to the domain and process ontology- and information-related services.

The knowledge framework will not only be a repository and simple editor for modelling the BRITE domain and process ontologies, but will also have to support a methodology for development and maintenance that reflects particularities arising from the pan-European scenario. This means that not only adequate versioning with sophisticated rights and obligations concepts has to be deployed, but also the respective update communication channels for new requirements resulting from changes in

national or European regulations.

The framework will be the implementation basis for the knowledge repository, which means storing and providing access to

- the BRITE domain and process ontologies,
- mapping rules from the BRITE ontologies to the local process descriptions and data sources,
- information items that can be utilized for process-oriented information support.

The integration platform is the process-oriented element of the architecture. Exploiting the knowledge stored in the knowledge repository, it will allow the execution of cross-border processes by grounding high-level process descriptions specified by the EC directives into possibly complex workflow processes comprising local, national activities.

The runtime support for such a hierarchical workflow model will be complete with full knowledge-aware data delivery, by which relevant information is provided to the performer of each workflow activity according to the semantics described by the BDO and the Process Ontology, taking multilingual issues into account.

The legacy workflow activities implemented by “black boxes” in the national BR might even hide manual activities, and could take any amount of time. Because of this, handling of long-lived transactions is required.

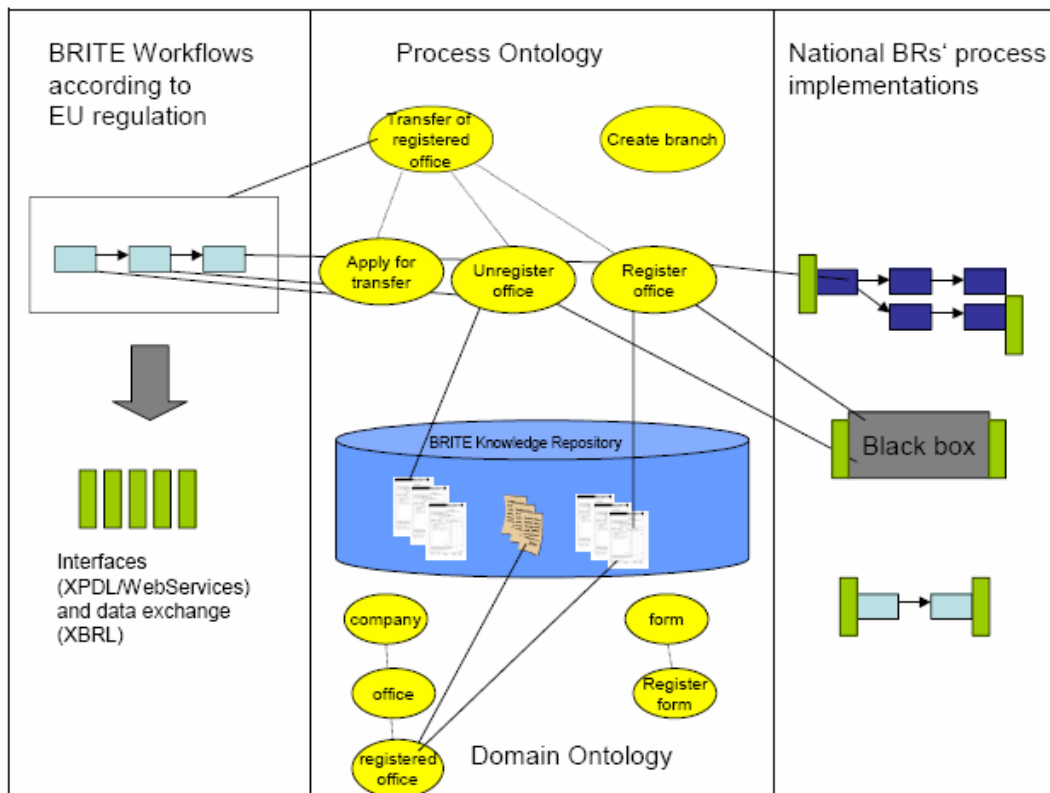


Figure 2: Linking the BRITE ontologies to national and global processes.

## Service Cases

Several service cases, like *Transfer of Registered Office* and *Support for eProcurement Take-up* are selected for testing the suitability of the overall approach.

There is a natural tension between policy development and legislation on the one side, and technological advancement on the other side. This can take one of three forms.

- Public policy can track technological progress, identifying and documenting the *de facto* business processes that arise from new possibilities provided by technology, and codifying the best of those practices into law. The amendments to the First Company Law Directive to require electronic filing built on the breakthrough of the Internet and the fact that many registries had already implemented e-filing. The **BRITE eGovernment Service Case Support for eProcurement Take-up** investigates the possibilities allowed by innovations such as advanced “intelligent” electronic documentation to support the development of new policy in that field based upon the availability of this new technology. Service Case **Support for Cross-Domain Interoperability** investigates the possibility of the BRITE technological advancements to stimulate new forms of interaction among different governmental institutions, enabling new forms of policy to emerge.
- Usually however technology is required catch-up with the challenges imposed by laws and systems that have been in place for many years. Databases were put in place in the ‘80s and document-imaging systems in the ‘90s to enable a move away from the centuries old paper based systems. While the directive concerning Service Case **Transfer of Registered Office** is not yet in place, the legislation is at an advanced stage and will, for the most part, extend the existing parallel provisions on the European Company. BRITE will provide the technology and security to give effect to those changes. The existing laws on Branch disclosure are causing real problems for registries and enforcement agencies that BRITE will help to dislodge (Service Case **Enforcement and Simplification of 11th Directive**).
- Much more rarely technology can be used to unblock beneficial public policies that could not be implemented with existing systems. The SLIM (simpler legislation of the internal market) proposals on the registration of branches (Service Case **Enforcement and Simplification of 11th Directive**) were blocked because neither the Commission nor the Member States could see how they might be implemented through existing systems. When BRITE is implemented it will be possible to re-visit the SLIM proposals for the registration of branches as the major technological barriers will have been removed.

With this context in mind, each eGovernment service case is now described in detail.

**Transfer of Registered Office.** A European citizen of a Member State is not only a citizen of his own nation but also of Europe, with fundamental rights of free movement and establishment of residence throughout the Community granted by the Treaty. But a European business wishing to transfer its residence (its registered office) from one member state to another – for example, to adapt its location or organisational structure to market changes – is fettered by a web of restrictive and often contradictory national laws that in most cases render it effectively impossible. The very fact that a company transferring its registered office from one Member State to another today must invariably first be wound up in the home country (implying onerous liquidation proceedings), and only then be re-established in the other Member State (as described in the German literature, “the company is killed at the border”), makes the situation clear: *de facto* today, a company, unlike a citizen, does not yet have a true European identity, but only a national one.

Yet this was not the intention of Article 48 of the Treaty, which explicitly states that “companies or firms formed in accordance with the law of a member state and having their registered office within the community, shall be treated in the same way as natural persons who are nationals of member states for the purpose of applying the Treaty’s rules on the right of establishment.” Aware of the inability of European businesses today to exploit one of their fundamental rights under the Treaty, the Commission has undertaken a number of important initiatives:

- A new legal instrument based on European Community law gives companies the option of forming a European Company – known formally by its Latin name of *Societas Europaea* or SE. An SE will be able to operate on a European-wide basis and be governed by Community law directly applicable in all Member States. In particular, an SE transferring its registered office from one member state to another will not need to be wound up first.
- Following recommendations from two Public Consultations, from the High-Level Group of Company Law Experts and from the European Court of Justice, the European Commission is working on a new Coordination Directive on the Transfer of Registered Office (the planned 14th Company Law Directive), which likewise guarantees transfer without the need to wind up a company.

Together, these initiatives define the basic procedures for transfer of registered office – for example, transfer proposal, general assembly, changes in company statutes for compliance, etc. – that will finally enable a true

European identity for companies. But a service realising the implementation of these procedures will require a high degree of coordination among business registers throughout Europe, and will require significant advances in interoperability at technical, semantic, and organisational levels.

Clearly the procedures generate requirements for business registers to exchange documentation for the companies involved, much of which is defined and regulated in separate national contexts and often with different semantic connotations. Equally challenging, both from a process and semantic perspective, are the many constraints and additional procedural requirements that may arise from national contexts, taken both individually and in combination. As a specific example, consider the simple matter of a company's name: in Great Britain, a commercial enterprise may not include the word "Royal" in its name; in Germany, the word "Deutsch" is reserved only for "large" companies; in Spain, no two companies may have the same name – whereas in Italy it is allowed. Each of these national constraints must be captured and its consequences in a transfer scenario analysed.

The service must also address the provisions of the SE regulation and the forthcoming 14th Directive concerning the protection of the rights of certain categories of persons, notably minority shareholders and creditors, allowing the traceability of the company wherever it is located or re-located. Furthermore, the law may require that the company guarantees its debts not only to private creditors, but "Member States may extend this arrangement to a company's debts to public authorities (e.g. tax debts, amounts owed to social security bodies, etc.) incurred up to the date of the actual transfer." This possibility exposes the service to issues of cross-organisational interoperability – that is, not only among business registers but also with other governmental entities.

Given the complexity of the processes and scenarios triggered by the implementation of Transfer of Registered Seat, feedback to policymakers given by the BRITE dashboard will be invaluable in evaluating the impact of legislation such as the 14th directive and the European Company in the field. The BRITE dashboard includes monitoring of traffic between clients of the business registers and the business registers, as well as among business registers. Mining mechanisms will be able to detect and analyze patterns of such traffic. This will be the basis in evaluating the usefulness of existing regulations and give hints for improvement.

In summary, the eGovernment service case Transfer of Registered Office will not only provide an urgently needed implementation of Community policy, but also will be a driving force behind the research and technological objectives of BRITE.

### **Enforcement and Simplification of 11th Directive.**

Whereas the Transfer of Registered Office service case concerns primarily policy implementation and monitoring, this service case also exhibits characteristics of policy *enforcement* as well as active support for policy *formulation*. We begin with the issue of enforcement.

The 11th Company Law Directive of 1969 (Council Directive 89/666/89) concerns cross-border branch offices. As complex as Transfer of Registered Office can become, the potential complexity of scenarios involving branch offices is even greater. At the heart of this complexity are the various reasons why a company registered in one Member State may open a branch office in a different Member State.

The normal reason for a company to open a branch office in another Member State is, of course, to allow the company to better manage its business opportunities in the other State. But companies are now regularly formed in one Member State (home State) with a view to carrying out business exclusively in another (host State). One reason for such a strategy might be the search for less onerous incorporation procedures. Often, there is also another reason: by registering in a different State to that where business is conducted, a company can acquire a lower exposure to the activities of the supervisory authorities in the host State.

Not surprisingly, this has led to many practical issues of supervision of the activities of branches. Commercial supervisory functions in Member States are usually closely interlocked with company law. Where a company has a substantial activity in its place of its home registration the supervisory authorities are charged directly with the task of protecting the rights of members and creditors. Those authorities have readily to hand the documentation pertaining to the company being supervised. Where a company has *all* of its formal documentation in one Member State and *all* of its economic activity in another, *this supervisory connection is weakened*. Addressing these cross-border issues will require increased co-operation between supervisory authorities. The communication issues will be substantial – indeed, even more substantial than in the Transfer of Registered Office service case.

Consider now another important issue: a company formed in one Member State with a view to setting up a business totally within another, may not always be diligent in complying with the filing requirements in the Member State where it is registered. It might therefore be removed from its home register and cease to exist. There is no direct mechanism whereby the host register becomes notified of the change in the company status and in particular that the "company" on the home register has ceased to exist.

While the fact that the company may cease to exist is the critical issue to be resolved, at a second level the host

company may go through changes that are relevant to the branch register. It may change for example its name or legal form. BRITE will enable the free flow of this vital information to the register of the branch.

This service case, therefore, involves the enabling of cross-border communication between business registers such that any significant change in the status of a company in its home register is automatically communicated to the host register.

Now we turn to the issue of *simplification* – again, involving the 11th Directive. The Working Group on Simpler Legislation for the Internal Market, known as SLIM, has made a number of recommendations, which presented such a challenge to business registers and supervisory authorities that thus far the Commission has not dared to bring forward proposals for amendment.

The Working Group suggested the implementation of a “home state” principle: in case of cross-border establishments within the Union, no additional filing requirements should exist in the host state. The scheme proposed by SLIM was as follows:

- a. Disclosure exclusively takes place in the home state of the company and remains subject to the regulations of that state, which will also determine, pursuant or in addition to the directive which information should be disclosed.
- b. In the host state, no additional filing should be required, implying that third parties are able to retrieve the documentation from the electronic database in the home state.
- c. If home and host state do not use the same language, the information should be translated in the language used in the host state, or in the states in which the company has secondary establishments.
- d. The minimum data to be so translated and disseminated are determined in a future directive, inspired by the present 11th directive (e.g. the main data of the articles of association and the powers of attorney of the local representative, if any). It can be supplemented by the authorities of the home state. Whether other documentation (e.g. the annual accounts) is to be translated is left to the home state, or, on a voluntary basis, to the company.
- e. This translation should be authenticated by the authorities of the host state.
- f. The host state can waive, as a general measure, the requirement for a translation if the home state language is easily accessible to the residents of the host state.
- g. If for tax or other administrative purposes, the existence of the company has to be proved to the authorities in the host state, an extract of the filed documentation, with translation, and a declaration by the home state that this information has been filed, will be sufficient.

It is expected that the number of transactions that would be originated by this set of recommendations would be much higher than the number of transactions originated by the 14th Directive and the Regulation on the European Company.

Clearly, this BRITE service, in order to implement automated support for this SLIM recommendation, will have to be able to process the semantics of filing requirements in the different Member States and map them accordingly in cross-border inter-register communications. In addition, it will have to deal with issues of translation and the various alternative scenarios outlined in the steps above. It will also involve issues of certificate authentication.

In summary, this eGovernment service case will provide an example of how BRITE can aid in the enforcement of the provisions of an existing directive, creating important links among registers that in turn strengthen the links between supervisory authorities and companies operating under their jurisdiction. In addition, it will provide an example of how BRITE can contribute to the simplification of the bureaucratic burden placed upon companies doing business within the European Union.

**Support for eProcurement Take-up.** The last two services bring us into issues of cross-domain interoperability – that is, interaction between the domain of business registers and other domains – for example, the domain of government procurement, as addressed in this service case.

Public procurement procedures are an important aspect of a vibrant, competitive economy, but the regulatory burden on business participating in procurement bids in the European Union is quite high. For example (from Directive 2004/18/EC of 31/03/2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts):

- Article 46, concerning suitability to pursue the professional activity under bid, requires a bidder to provide proof of registration in his home business register;
- Article 47, concerning proof of financial standing, requires the bidder to furnish documentation such as bank statements and/or balance sheets.

Clearly, eProcurement holds out the hope to considerably simplify such procedures. In 2004 a Communication of the Commission to Council (*Action plan for the implementation of the legal framework for electronic public procurement*) states that “... to generalise e-procurement, it is important that all steps are taken to reduce the regulatory burden. Standardising and restructuring business documents as well as more uniform tendering documents should help automating certain

purchase routines and allow both sides to concentrate on the substance of the purchase. A typical example of red tape concerns the numerous certificates and business documents required. These are rarely available in electronic form. Additionally, they need to be usable and acceptable across borders.”

The Communication focuses much of its recommendation squarely on the availability of standardised documentation in electronic form, recommending that “ ... the Commission and Member States should analyse and compare results achieved in this area at the national level with a view to agreeing on a common set of electronic certificates, at least for some of those most frequently required. E-procurement would be an excellent test base for the development of such e-government services.”

eProcurement naturally brings up the question of certification of electronic documentation from the Business Registers. In that regard, the Amendment of the First Company Law Directive (Directive 2003/58/EC of 15th of July 2003 amending the Council directive 68/151/EEC as regards disclosure requirements in respect of certain types of companies - to be implemented by January 2007), in allowing the procurer to request all or part of the required document in electronic form, requires that:

- electronic copies supplied shall not be certified copies unless the procurer explicitly requests such a certification;
- Member States shall take the necessary measures to ensure that certification of electronic copies guarantees both the authenticity of the origin and the integrity of the content, by means at least of an advanced electronic signature.

Advanced certification addresses the problem of authenticity, but it is not enough to ensure that data contained in the electronic document are understandable (language diversity), usable (or re-usable) and acceptable across borders. Research has to be carried out in a number of areas, such as

- The definition of common certificate contents;
- The definition of an agreed standard;
- Aggregation of data, for example as required by Articles 46 and 47;
- Re-usability of data;
- Delivery tools;

Through the vehicle of this eGovernment service case, the BRITE project can address this issue in a coordinated way in order to have, from the very beginning, a coordinated approach at EU level.

**Support for Cross-Domain Interoperability.** This service case has been identified to deal explicitly with

issues of interoperability across domains. There are a number of domains in which the interaction with actors from the business register domain can be an extremely important value-added capability. The information and data exchanged among registers (as results of the first two services and other services that will be developed as part of the exploitation, like cross border mergers, disqualified directors, etc), together with the indicators that will be available from the BRITE dashboard and integrated with the other company information (already provided by the national registers directly, for example) are of key value for other administrations and supervisory authorities.

A number of key domains demonstrating high impact have been identified to be addressed in this service case:

*Prevention of financial crime.* National agencies in charge of investigating and preventing financial crime can clearly benefit from access to information available within business registers, both at the national level and cross-border. A cross-border access to business registers data, integrated with information about business mobility, business mobility monitoring, disqualified directors, cross border mergers, etc. could allow the agencies responsible for tracking financial crime to identify ownership linkages between companies, used for suspect fund movements.

*Transparency for regulated markets.* An important case for cross-domain interoperability can be found in the information dissemination requirements imposed on companies the securities of which are traded on a regulated securities market in the EU (“issuers”). One of the main objectives of the so-called Transparency Directive 2004/109/EC of 15 December 2004 is to facilitate access for investors to information about issuers incorporated in other Member States. The Transparency Directive states that information which has been disseminated should be available in a centralised way in the home Member State of the issuer, allowing an European network to be built up, accessible at affordable prices for retail investors, while not leading to unnecessary duplication of filing requirements for issuers”.

*Prevention of money laundering.* Business registers are a valuable source of information for law enforcement agencies involved in the prevention of money laundering for which, again, information originated from the first two services and other services that will be developed as part of the exploitation, like cross border mergers and disqualified directors, will represent a clear added value.

*Prudential supervision of financial institutions.* A further case for interoperability across domains concerns the supervisory system put in place by various directives on financial institutions (credit institutions, investment firms, financial conglomerates etc.). Cross-border access to the business registers by the authorities in charge of supervising financial institutions will enable these authorities to check information provided to them by the



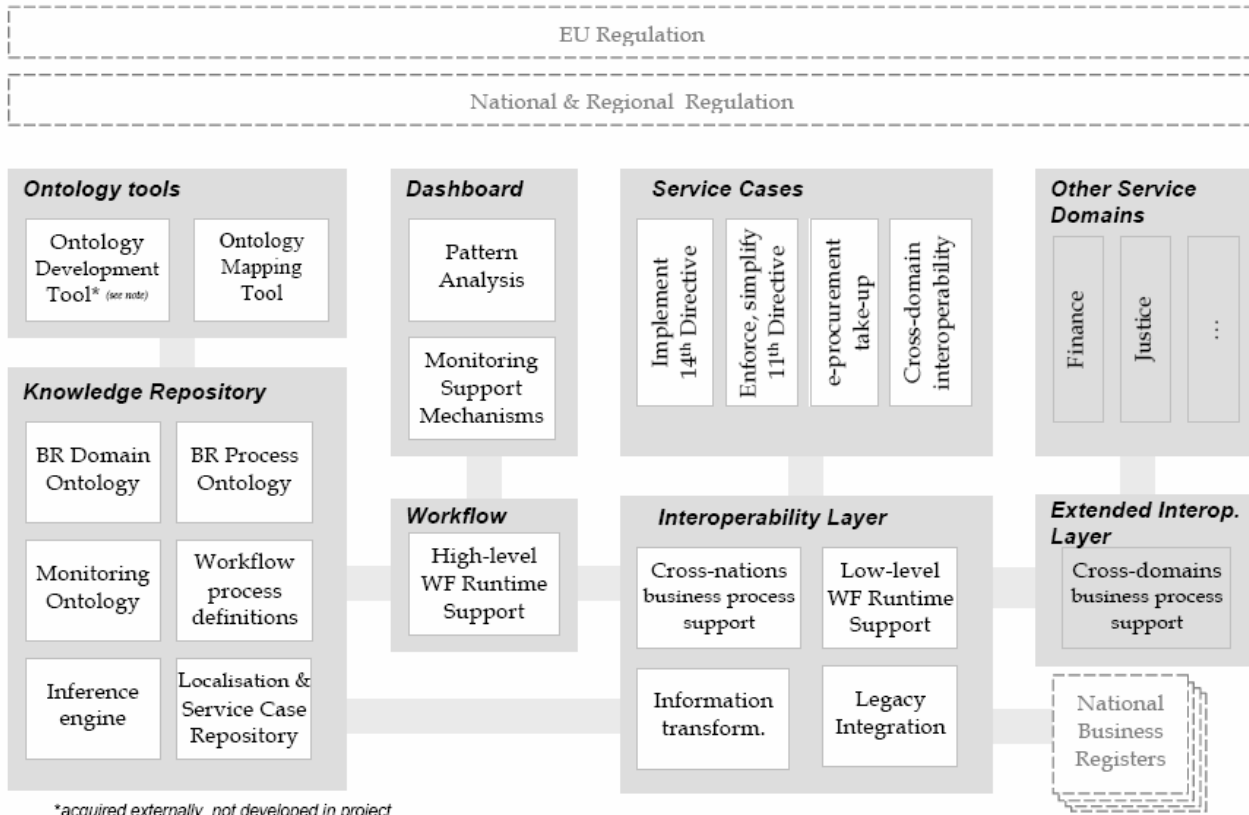


Figure 3: Overview of the BRITE Project Architecture.

supervised entities (e.g. information as to the group structure, information on major shareholdings, on board membership by directors of the supervised entities etc.). A rapid access by these authorities to the data in the business register in another Member State, together with information about business mobility, disqualified directors, cross border mergers, etc would clearly constitute a valuable tool for exercising prudential supervision.

This service case will provide the core capabilities of the BRITE platform needed to interact across domains, such as the mechanisms for the secure and trusted exchange of information, as well as mechanisms and approaches for defining semantics of information exchanged between domains, publication of data, publish and subscribe mechanisms, different access rights management (access from public bodies versus private institutions).

## Summary

In this paper, we presented the EU integrated project BRITE (see Figure 3 for an overview). BRITE will improve the interoperability of business registers throughout Europe. To achieve this, semantic technologies will be used to capture the different business register infrastructures in the member states that result from differences in legislation and culture. Based on this model of data and processes, communication and collaboration of business registers will be considerably improved. Four showcases will demonstrate the success of the approach, implementing functionality that today cannot be realized. BRITE not only addresses cross-border, multi-national issues of collaboration, but also targets at national, inter-domain interoperability, e.g., between business registers and government institutions.

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