



E-CULTURE NET

EUROPEAN NETWORK OF CENTRES OF EXCELLENCE:

**DIGITAL CULTURE RESEARCH AND EDUCATION
NETWORK**

-RESEARCH PROJECTS FOR BROADBAND INTERNET-

BELE. Informal Executive Modules' Relationship

AUTHOR: Diego Antona/ANID-Draft Version

DATE: 28 November 2002

ABSTRACT

Addressed to institutions, companies and professionals of teaching foreign languages, it provides technology to reproduce at distance off-line courses. Compatible with IPv6, it responds to the requirements of a network Bandwidth (Internet2, 3G/UMTS).

Table of Contents

OBJECTIVES	4
GUIDELINES	5
APPROACH	5
SYSTEM	6
MODULES	8
CONNECTIVITY: PLUG-AND-PLAY BROADBAND AND BEST PRACTICES [BELE-100-A]	8
SECURITY, AUTHENTICATION AND E-PAYMENT: UNIFIED IDENTITY CARD AND PLATFORMS [BELE-200-A]	8
E-LEARNING CORE: IT STRUCTURES AND DIDACTIC METHODOLOGIES [BELE-400-A]	8
CORE XML DIRECTOR [BELE-800-A]	9
ARTIFICIAL INTELLIGENCE: VIRTUAL LEARNING COORDINATION P2P BY AGENTS [BELE-700-B]	9
NATURAL LANGUAGE PROCESSING [BELE-900-A]	9
VIDEOCONFERENCE: MANY-TO-MANY UMTS VIDEOCONFERENCE [BELE-500-A]	9
BACKOFFICE. E-BUSINESS BELE FRAMEWORK [BELE-600-A]	10
DISTRIBUTED REPOSITORY: MULTIMEDIA DIGITAL LIBRARY: PATRIMONY NOT ONLY LINGUISTIC [BELE-300-A]	10
CALENDAR	13
PHASES	14
PARADIGM	16

INDEX OF FIGURES

FIGURE 1 SYSTEM PARADIGM	7
FIGURE 2 RESOURCES' VERTICAL AND HORIZONTAL RELATIONSHIP	11
FIGURE 3 RELATIONSHIPS BETWEEN REPOSITORIES. THE GRAPHIC ALSO REFLECTS THE ONTOGENETIC AND PHILOGENETIC RELATIONSHIP OF DISTRIBUTED BELE SITES	12
FIGURE 4 CONSORTIUM'S WORKS	13
FIGURE 5 TASK	14
FIGURE 6 BELE PARADIGM	16

Preface

The modular organization of the tools allows an adapted operation to the different institutions in charge to disseminate the results, scalability, and an open connection with other projects, presents or futures.

- Connectivity: Plug-and-play Broadband and Best Practices [BELE-100-A]
- Security, authentication and e-Payment: Unified Identity Card and Platforms [BELE-200-A]
- Distributed repository: Multimedia Digital Library: Patrimony not only Linguistic [BELE-300-A]
- E-Learning Core: IT Structures and Didactic Methodologies [BELE-400-A], Core XML Director [BELE-800-A]
- Artificial Intelligence: Virtual Learning Coordination P2P by Agents [BELE-700-B] and Natural Language Processing [BELE-900-A]
- Videoconference: Many-to-Many UMTS Video conference [BELE-500-A]
- Back Office. E-Business BELE Framework [BELE-600-A]

The requirements, modular, allow the establishment of shared networks of resources and creation of distributed networks. The use of documentation standards (**SGML/XML**) guarantees the visibility, portability, information survival and multi-format characteristics.

Objectives

1. To investigate and develop a rich Conceptual Model, open, distributed and scalable, for the electronic education of foreign languages, compatible with 3G platforms.
2. To develop and integrate the modular, organic works, with the entrance in the partnership of new specialists responsible for its creation and integration with the didactic E-Learning Core.
3. To obtain, at different levels, the BELE platform Dissemination and Exploitation of results and the modules that integrate it.
4. To attract new participants, as a form of auto-sustainable project, next to the implication of the European government agents, companies and capital, to turn the initiative in a business in expansion of high social benefit, forms under which we considered will be demonstrated successful.

Guidelines

Here you are some important issues in common to all the modules:

There is only one Common User Interface (user and administrator): a **GNU** Web interface project, **POSTNUKE** ¹ We strong recommend that every participant involved in code generation begin to know better and work with. In this system a modular approach already exists. In the practice we see it functions. All the web Interface related issues will be presented by **PHP** language: of course, the applications regarding different modules can be coded in **J2EE**, **Servlets**, **Java**, etc., or in **PHP** as well. We are only deciding here the common interface of final user web presentation, not the technology to construct the core and logic of the needed modules and applications. All used language of programming is admitted, if we can show the results in a common way: a unique Web Interface, **POSTNUKE**, already broadly tested.

We think all of you are familiar with **XML** and **Relational Databases**. We have potential partners: **eXcelon** and **Oracle**, both capable to provide a broad and professional number of solutions related with these technologies. We strong recommend development teams to only use such a solutions ² in the minimum strength, or for prototyping. If we have a **Native XML Database** or a Relational Database, we only will use then 'as is', not basing our developments and integration's efforts in closed suites. This decision permits in the middle term a good no-constrictions framework for the open, easy integrated, scalable BELE system all of us must develop together. If possible, it can be perfectly run by **MySQL** (a relational one 'open' database); and if we have no a free native XML database, always we can use **MySQL** to include XML files.

Approach

BELE IT approach is based on:

1) **XML** standard, used for

- a) **Information** (structured files) in Distributed repository: Multimedia Digital Library: Patrimony not only Linguistic [**BELE-300-A**], not for the whole 'Repository', complete concept we later discuss, and
- b) **Data System Configuration Core XML Director** [**BELE-800-A**].

2) **Relational Databases** (general use

[Data for population of **Dynamic Web pages** are yet based in relational technology. In the future, **Native XML Databases**, hierarchical, will reach identical roles with the same efficiency]) also for **Data mining**, necessary in Virtual Learning Coordination P2P by Agents [**BELE-700-B**] in order to populate with data the **Intelligent Agents** System to relate students interests, profiles, and expertise to help the others students in a **P2P** mode, with an **Avatars** based interface representing them.

Take in account that all we communicate is for each one of the modules, not only for the BELE system that finally arises by an **optimal integration**:

¹ [Version 0.6.4.] This version is estable. New and present versions include better and new users and groups administration capabilities.

² Suites with closed and not standard functionalities. We are not 'forbidding' very useful *tools* as XML Editors, formatters, parsers, DBs interfaces, etc.

- **Multi-language** So, when programming, the best practice signifies that there are some files independently located -as we see in **Postnuke**- that really permits realize 'n' Languages Variables Sets, in an easy way, without the need to invent a different approach to solve an e-learning multi-language capable interface.
- **Configuration Data** will be very clearly identified, because they will be part of a XML Data Central Structure. The Core XML Director **[BELE-800-A]**, pertaining each BELE implementation can be considered as the 'Metadata' of each one of the distributed BELE systems; the systems ID that permits distributed system capabilities. Think about such structural facilities. Postnuke has Administration Capabilities of independent modules from one control panel. We prefer to have the global control of some variables as well. These will be also necessary from one main configuration data Control Panel of distributed systems, in order to connect several applications internally, and crossing data between them.
- **Group, User and Roles Capabilities** again we reinforce the Postnuke approach initially. We are working in the Module Unified Identity Card and Platforms **[BELE-200-A]** in a platform for authentication based in smart cards for students, teachers, and administrators of the system, including also **PHP Lib** and **LDAP**.

Despite other e-Learning approach, we think that BELE is a **Teacher (Professionals) and Business Oriented Project**. (Well, some of the modules have a different Student centered approach: Virtual Learning Coordination P2P by Agents **[BELE-700-B]**, or mixed Many-to-Many UMTS Videoconference **[BELE-500-A]**)

System

See also **Paradigm** on page 16 and ***Figure 3*** on page 12

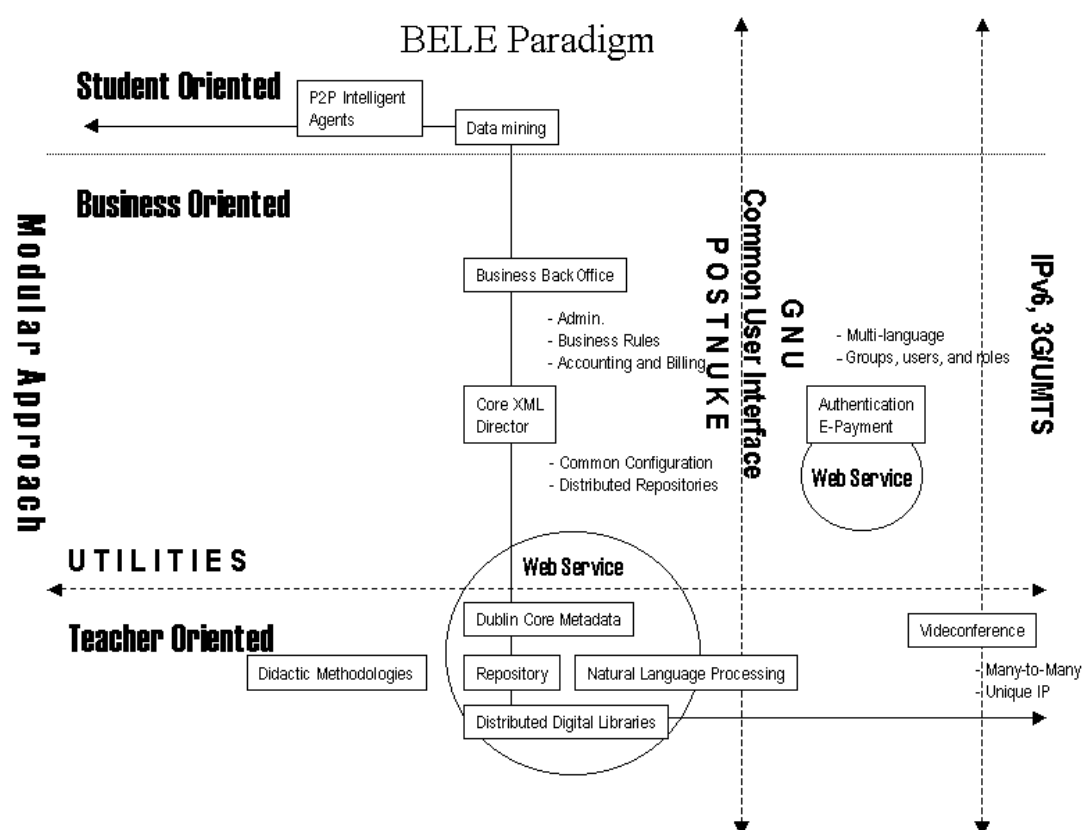


Figure 1 System Paradigm

Modules

Connectivity: Plug-and-play Broadband and Best Practices [BELE-100-A]

ABSTRACT

Teams: Coordinated by Dr. **Alejandro Pisanty Baruch** and **Jorge Martínez Peniche** . UNAM

Recommendations, Guidelines and Consequences for BELE systems: 'Plug and Play' **IPv6** possibilities.

Internet2 Requirements: Software, Systems and Platforms.

3G/UMTS related with Videoconference: Many-to-Many UMTS Video conference **[BELE-500-A]**.

IPv6 related with Distributed repository: Multimedia Digital Library: Patrimony not only Linguistic **[BELE-300-A]**.

Security, authentication and e-Payment: Unified Identity Card and Platforms [BELE-200-A]

ABSTRACT

Teams: Coordinated by Dr. **Tolga Tufekci**, Scientific and Technical Research Council of Turkey (TUBITAK) Information Technologies and Electronics Research Institute (BILTEN)

Kalysis MEI Authentication and **E-Payment** Platforms and **Smart Cards** .

Web Service : e-Cash and electronic ID

Groups, Users and Roles, in User Interface and **BackOffice** .

Billing and **Accounting** (related with BackOffice, E-Business BELE Framework **[BELE-600-A]**)

E-Learning Core: IT Structures and Didactic Methodologies [BELE-400-A]

ABSTRACT

Teams: Coordinated by Mr. **José María Requejo**. **Escuela de Turismo de Salamanca**.

Teacher Centered Methodology.

Utilities: Description, Functional Analysis and General Design.

Core XML Director [BELE-800-A]

ABSTRACT

Teams: Coordinated by **Manuel Montoro, ANID.**

Integration of Data Configuration elements in a **DTD (Schema)** Director file for local and distributed relationships with several BELE sites.

Artificial Intelligence: Virtual Learning Coordination P2P by Agents [BELE-700-B]

ABSTRACT

Teams: Coordinated by Mss. **María Teresa Linaza Saldaña, VicomTech.**

Graphic **Avatars.**

Data mining for Artificial **Intelligent Agents.**

Students Dynamics and Profiling.

Data Systems Feedback.

Natural Language Processing [BELE-900-A]

ABSTRACT

Teams: Coordinated by Dr. **Alexander Brenner** and Dr. **Victor Gluzberg.** **Holtran technology Corp.** Department of Mathematics, Technion - **Israel Institute of Technology.**

XML. Structuring Textual Documents, Utilities and Systems (HOLTRAN Software)

Related with resources: Distributed repository; Multimedia Digital Library; Patrimony not only Linguistic **[BELE-300-A]**

External (and distributed) Resources Classification

Other possibilities: Data mining and **CRM** related with BackOffice, E-Business BELE Framework **[BELE-600-A]**

Videoconference: Many-to-Many UMTS Videoconference [BELE-500-A]

ABSTRACT

Teams: Technological partners are invited.

Linking with Common User Interface (**Postnuke**) existing **3G/UMTS** compatible **videoconference** products.

Support for complementary utilities. Related with Connectivity: Plug-and-play Broadband and Best Practices [BELE-100-A]

BackOffice. E-Business BELE Framework [BELE-600-A]

ABSTRACT

Teams: Coordinated by **ANID** and **Kalysis**' partners.

BELE Administration

Business Rules

Accounting and **Billing**

Smart Card Works related with Security, authentication and e-Payment: Unified Identity Card and Platforms [BELE-200-A]

Distributed repository: Multimedia Digital Library: Patrimony not only Linguistic [BELE-300-A]

ABSTRACT

Teams: Coordinated by **Xavier Ajenjo** (**Fundación Hernando de Larramendi**) and **DIGIBIS**.

We understand this repository based in horizontal and vertical relationship. Vertical, with textual documents, and Horizontals with each textual document and the rest of the media. We consider here that courses (but not only) are also structured documents, and documents (textual or media) can be related.³

³ We recommend endnote **iii** on page **18** Distributed repository: Multimedia Digital Library subcategory for a better understanding of the concepts Digital Library involved

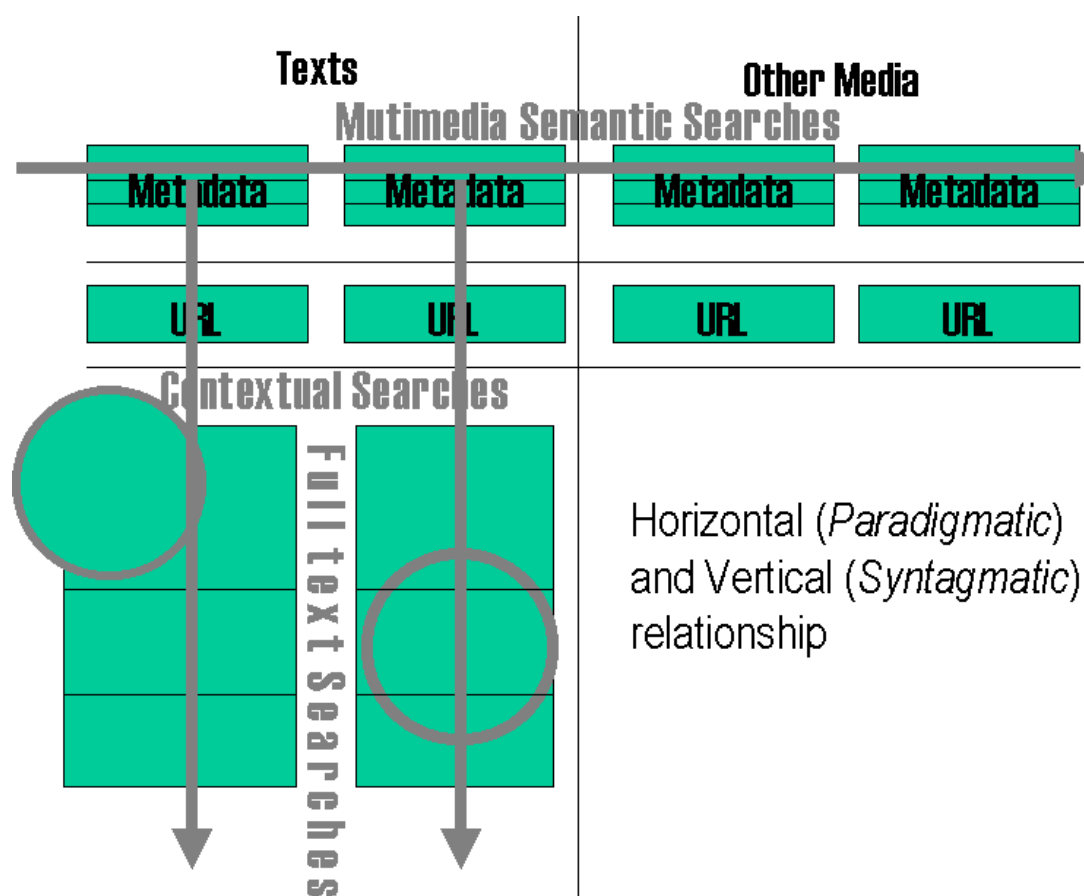


Figure 2 Resources' Vertical and Horizontal Relationship

Three tracks we must explain here only in an executive way the structure of resources:

1. **Metadata: Dublin Core Metadata** subset, for labeling each element of the repository (document or media), enabling contextual search.
2. **URL** of the repository's elements.
3. **XML** Document (Structured resource).

Web Semantic approach. This structure implies **Glossaries** and **Thesauri** on-line for a consistent and unique classification of distributed resources. A good equilibrium between level of detail and efficiency will be reached.

Much of them should be structured by **Natural Language Processing [BELE-900-A]**

Finally, we hope from actual and future participants, dissemination institutions and experts, a broad set of materials and **Contents**. Disposed or created.

- System will permit **Pay-per-Use** (of local and distributed contents) and/or free access to resources⁴ of the repository. For so, it exists a close relationship with Back

⁴ Multimedia contents in a broad sense: documents of text, video, images, sounds, music, Web links...

Office, E-Business BELE Framework [BELE-600-A], and Security, authentication and e-Payment: Unified Identity Card and Platforms [BELE-200-A]

- **Syndicating** capabilities: We can understand the relationship between different repositories as a main functionality: the principal **Web Service** of this module.

Platforms and Applications shared, the same concept will be applicable for the track of Contents.

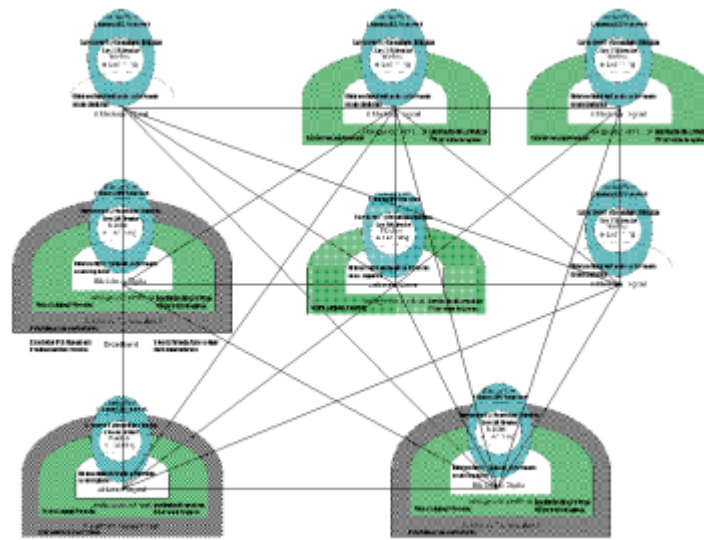


Figure 3 Relationships between repositories. The graphic also reflects the ontogenetic and phylogenetic relationship of distributed BELE sites.

Calendar

Reception of participants' forms: until 10 December 2002

Present Proposal: 12-14 December 2002

IST FP6 Proposals reception: 15 February 2003

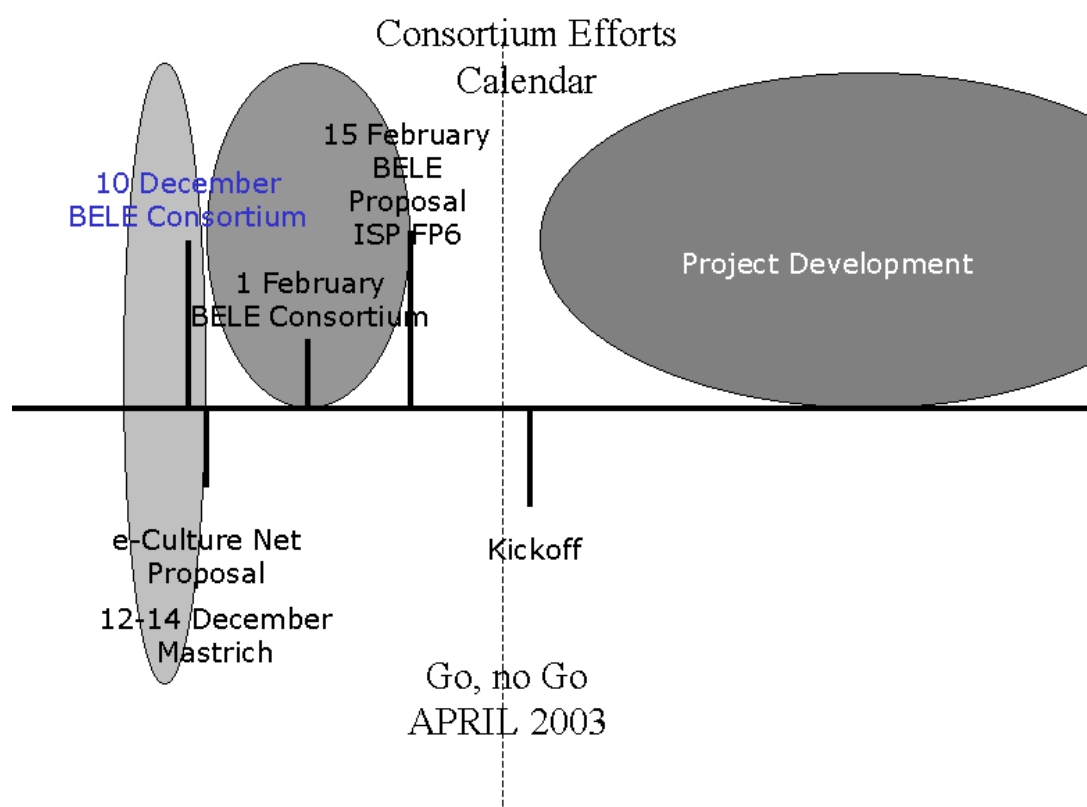


Figure 4 Consortium's Works

Phases

ABSTRACT

Right now we must work and present a small form with executive ideas for each of the modules to Maastrich European Coordination, **e-Culture Net**, before 10 December, in order to consolidate several contributions in only one document.

Before FP Proposal:

1. Participants' Objectives
2. Planning and 'Business Requirements'
3. Deliverables
4. Calendar
5. Estimate Budget

Post Approval Works ⁵ (Phases):

Understanding of the Situation	Business Requirements	General Design	Development	Integration	Operation	Metrics	
		Detailed Design		Testing	Implantation		Impact Analysis
					Dissemination		

Figure 5 Task

- General Design
- Detailed Design
- Coding
- Testing
- Integration
- Implantation
 - Dissemination
 - Exploitation
 - Metrics and Impact Analysis
- Updates, New Modules and Partners acquisition

⁵ Under normal Software's Life-Cycle

■ Evaluation

We must document our developments, phases and deliverables to track our success. We need intelligible modules all we must understand to better relate them. Sure, we will have a big work integrating all the developments, and installing a very complex system: be 'user friendly'. At last, but not the least, we should think about complete products, not only code.

Research is good, but better if applied. If it is also a business

[EU is financing *Business Plans*, not *Costs Plans*], individually for each module and for the whole, BELE project will be a success for Consortium participants.

Thank you very much,

Diego Antona

Asociación Nacional de Investigadores en Didáctica

Paradigm

See also **System** on page 6 and **Figure 3** on page 12

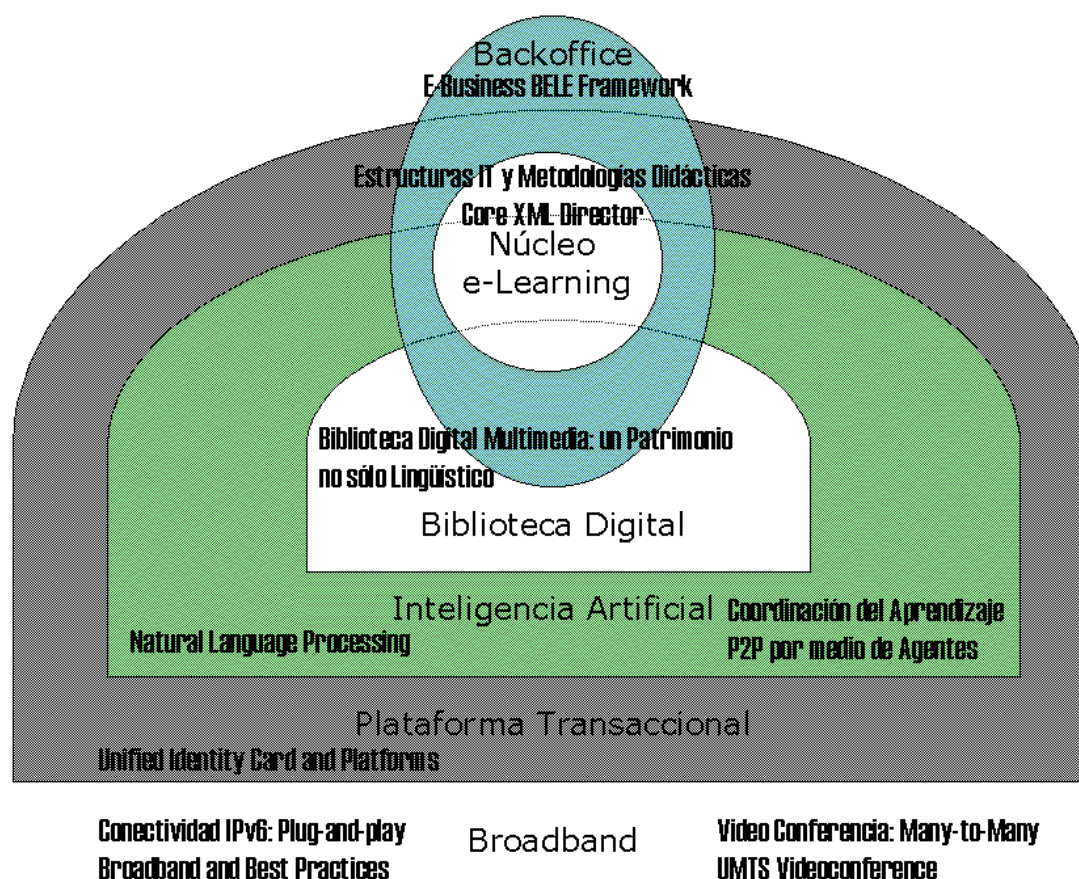


Figure 6 BELE **Paradigm**

- Connectivity: Plug-and-play Broadband and Best Practices [BELE-100-A]
- Security, authentication and e-Payment: Unified Identity Card and Platforms [BELE-200-A]
- E-Learning Core: IT Structures and Didactic Methodologies [BELE-400-A]
- Core XML Director [BELE-800-A]
- Artificial Intelligence: Virtual Learning Coordination P2P by Agents [BELE-700-B]
- Natural Language Processing [BELE-900-A]
- Videoconference: Many-to-Many UMTS Videoconference [BELE-500-A]
- BackOffice. E-Business BELE Framework [BELE-600-A]
- Distributed repository: Multimedia Digital Library: Patrimony not only Linguistic [BELE-300-A]

Index

I		G	
[BELE-100-A].....	9	Glossaries.....	10
[BELE-200-A].....	5, 9, 11	GNU.....	4
[BELE-300-A].....	4, 7, 8	Group, User and Roles Capabilities.....	4, 5
[BELE-500-A].....	5, 7	H	
[BELE-600-A].....	8	Holtran technology Corp	8
[BELE-600-A].....	7, 11	I	
[BELE-700-B].....	5	Information Technologies and Electronics	
[BELE-700-B].....	4	Research Institute	7
[BELE-800-A].....	4, 5	Intelligent Agents.....	4, 8
[BELE-900-A].....	10	Internet2.....	7
3		IPv6.....	7
3G/UMTS.....	7, 8	Israel Institute of Technology	8
A		J	
Accounting.....	7, 9	J2EE	4
Alejandro Pisanty Baruch.....	7	Jorge Martínez Peniche.....	7
Alexander Brenner	8	José María Requejo	7
ANID.....	8, 9	K	
Authentication.....	7	Kalysis.....	7, 9
Avatars.....	4, 8	L	
B		LDAP	5
BackOffice	7	M	
BILTEN.....	7	Manuel Montoro.....	8
Billing.....	7, 9	María Teresa Linaza Saldaña.....	8
C		MEI	7
Calendar	12	Metadata.....	10
Configuration Data.....	5	Multi-language.....	5
Contents	11	MySQL.....	4
CRM	8	N	
D		Native XML Database.....	4
Data mining.....	4	Native XML Databases.....	4
DIGIBIS.....	9	O	
DTD.....	8	optimal integration	4
Dublin Core Metadata.....	10	Oracle	4
Dynamic Web pages.....	4	P	
E		P2P.....	4
e-Culture Net.....	13	Paradigm.....	6, 15
E-Payment.....	7	Pay-per-Use.....	10
Escuela de Turismo de Salamanca	7	PHP	4
eXcelon.....	4	PHP Lib.....	5
F		Postnuke.....	5, 8
Fundación Hernando de Larramendi.....	9		

R

Relational Databases 4

SScientific and Technical Research Council
of Turkey 7

Schema..... 8

Servlets Java..... 4

SGML..... 2

Smart Cards..... 5, 7, 9

T

Thesauri..... 10

Tolga Tufeci..... 7

TUBITAK 7

U

UNAM..... 7

URL 10

Utilities 7

V

VicomTech..... 8

Victor Gluzberg..... 8

videoconference 8

W

Web Semantic 10

Web Service 7, 11

X

Xavier Agenjo 9

XML 2, 4, 8, 10

ⁱ ANID <http://www.kalysis.com/ANID>ⁱⁱ BELE Project <http://www.kalysis.com/BELE>ⁱⁱⁱ BELE Documents <http://www.kalysis.com/BELEdocs>^{iv} BELE List BELE@kalysis.com^v PHP <http://www.php.net>^{vi} POSTNUKE <http://www.postnuke.org>