**BEACON**
**Brazilian European Consortium for DTT Services**

**www.beacon-dtt.com**

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| Action lines: | |
| Clusters: | |


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| Number of partners : | 11 |


**Main objectives :**

BEACON is a three year innovative research project on Digital Terrestrial Television, in Europe and Brasil, with three core objectives: the development of interoperability between the European (DVB) and the Brazilian (SBTVD) Digital Terrestrial Television standards, the study of a methodology for distance learning through digital television and the delivery of tLearning services related to social inclusion in Sao Paulo, Brasil.

Although e-learning is an all-encompassing term used in reference to 'learning through any electronic device', it is most commonly used for computer-enhanced learning. As a subset of e-learning, 'tLearning' or **'learning through interactive digital television' (IDTV) can prove highly beneficial however to regions where access to internet-enabled computers is significantly low**. Research reveals that the large majority of today's households own a television rather than a computer. In the context of Latin-America these numbers are even more critical: while 95% of the Brasilian households have a television, less then 20% owns an internet-enabled computer. For the lowest economic classes (D and E) access to computers or internet is even lower than 2%. The exploitation of this potential is therefore undeniably important for the implementation of relevant educational policies.

The success and steady growth of tLearning services will depend primarily on factors as 'effectiveness' and 'reliability'. These factors in turn depend on (1) the development of affordable and easy-to-use consumer access devices (end user terminals and associated open middleware), (2) the appropriateness of the developed tLearning services – which relies on the understanding of the type of learning resources and the way people learn at home and (3) the availability of the technology solutions that enable and facilitate such developments.

It is in this perspective that BEACON aims to go **ahead in the state of the art of the Digital Terrestrial Television (DTT)**. In view of the objective to realise innovative tLearning pilot services related to social inclusion in the State of Sao Paulo (Brasil), BEACON will face the interoperability issue on Interactive TV Platforms. On the basis of state-of-the-art technologies in both Europe (DVB-MHP framework) and Brasil (SBTVD-T platform) **interoperability through a GEM-based solution** (Globally Executable MHP) will be created.

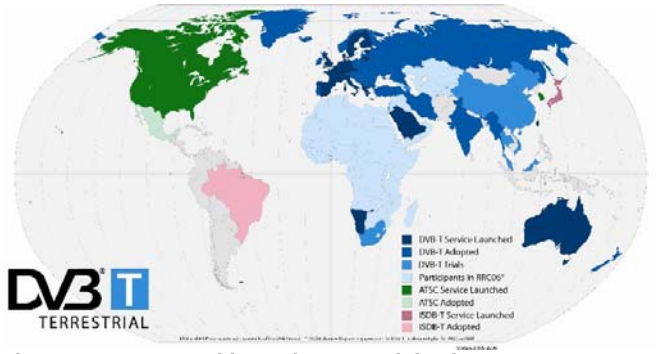


**Figure 1 - DVB-T World Map (source: Digitag)**

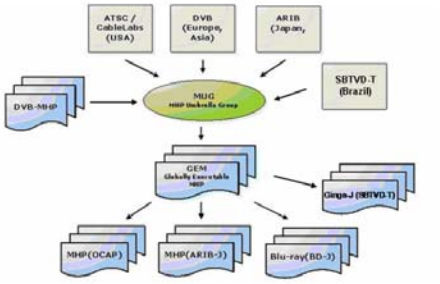


**Figure 2 - Globally Executable MHP**

At the same time **a pedagogically sound methodology for distance learning through digital television** will be defined. This issue is underdeveloped since the majority of learning activities through IDTV so far have been developed by broadcasting companies rather then by the educational world.

The technological and pedagogical research will be followed by in-depth testing of the tLearning services through a series of pilot runs related to social inclusion issues in Sao Paulo. The use of a 'User-Centred Design (UCD)' evaluation methodology during this pilot phase will enable **the definition of a sustainable model for tLearning development**, particularly customised for the Latin-American market.

Ultimately the BEACON project will establish **a Brasilian-European Consortium** that will manage the exploitation of the research outcomes resulting from the project activities.

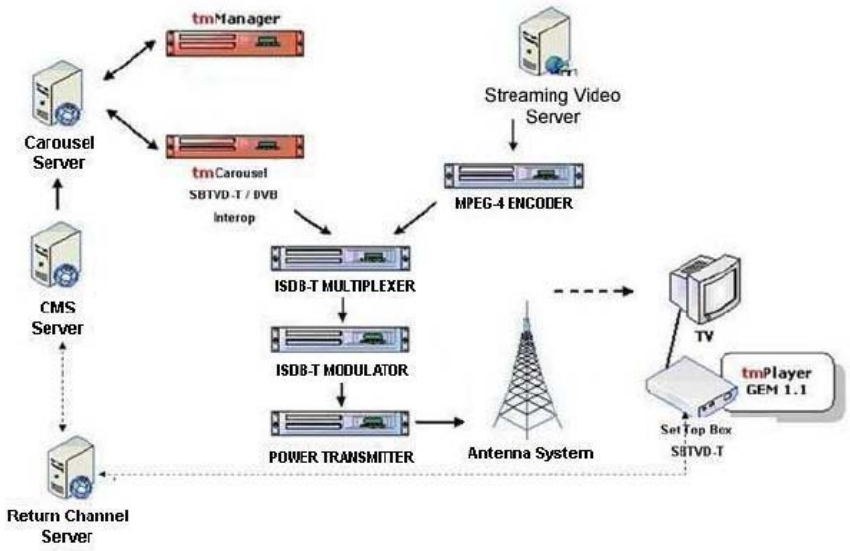


**Figure 3 – BEACON System Architecture**

**Technical approach :**

In order to achieve its goals, BEACON workplan has been organized into six main workpackages.

WP1 addresses the needs analysis and the definition of the user requirements. The main objectives of this workpackage are to identify the user needs and requirements related to user attitude towards ICT-driven interaction, eLearning methodologies adaptable to tLearning and the definition of usability requirements and application scenarios for evaluation.

WP2 aims at the design and development of the tLearning services. The main objectives of Workpackage 2 are to identify the envisaged services' main characteristics (features, usability, interactivity, etc.) to define the technological requirements and identification of possible constraints and to design and implement the tLearning services, the hardware and software modules, the communication protocols and the service infrastructure. This work is the basis for the final architectural model of the BEACON platform design in WP3.

WP3 concentrates on the DTT platform design and deployment. In this workpackage the DTT Service Centre will be designed and developed. The state of the art of SBTVD-T standard will be evaluated and the state of the art of GEM specifications for middleware will be identified. This will lead to the design and development of the components of the overall interoperable framework for DTT platform. In particular, the Consortiums own tmCarousel, tmManager and tmPlayer will be updated to GEM specifications, to grant interoperability.

WP4 activities include evaluation, dissemination and exploitation. The evaluation covers the usability testing within the User-Centred Design approach of the project. It describes the laboratory and real context of use testing of the designed prototypes through a series of pilot runs to be executed in WP5. The dissemination's primary objective is to ensure regional, EU and international level dissemination of the deliverables and the results of BEACON as well as to increase the understanding of the BEACON service. The exploitation is closely connected with the outcomes of the evaluation & dissemination activities; the main objectives of this task are to establish an exploitation plan which forms the basis for setting up the Brazilian-European Consortium.

WP5 is dedicated to the deployment of the DTT Services Center in Sao Paulo and the Pilot runs. The main objectives of this Workpackage are to deploy and start up the final DTT Service Center, to set up the final demonstrator for user testing and to deliver the pilot run of tLearning services.

WP6 is dedicated to management and coordination. The overall objective of this Workpackage is to ensure both the technical and the administrative coordination of the project.

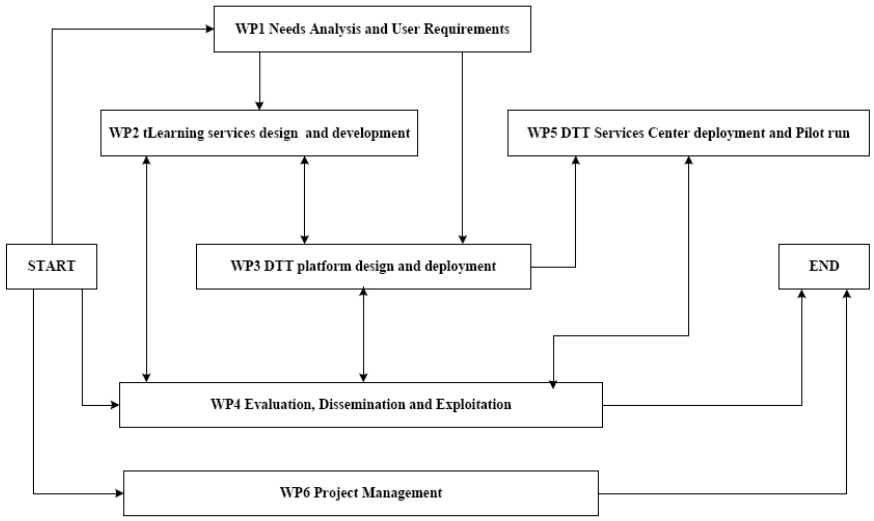


**Figure 4 - WP scheme**

**Key issues :**

BEACON develops tLearning services that are interoperable between Europe and Brasil for Digital Terrestrial Television. This interoperability will allow the creation of interoperable services on different DTT platforms in the world. Through the development of tLearning services related for social inclusion, BEACON will provide in a definition of "learning via interactive digital television" and a sustainable model for future creation of similar tLearning services.

**Expected impact :**

The results of the BEACON project are expected to allow the creation of new interoperable services on different platforms, especially between Europe and Brazil, as well as the development of pedagogically sound, innovative tLearning services related to social inclusion.

**New interoperable services**

The realisation of interoperability between the European and Brazilian standards through a GEM-based solution is expected to create compatibility of API's between Europe and Brazil.

- The project's intention to develop iTV applications on different DTT platforms based on Globally Executable MHP 1.1 (both on the server side and the client side) will allow the implementation of interoperable services on different frameworks.
- By implementing and validating the newest release of GEM, both in term of functionalities (APIs) and in the compatibility check with available STBs, the project will also support and extend relevant standards. In the context of the pilot tLearning services and the didactic methodology that will be used to allocate formative contents for instance, the project envisages to support and extend SCORM, AICC e IMS standards.
- Moreover, the projects interoperability realisation could gain particular relevance with the eventual convergence of Audia Visual home platfom (DVB-T) and Mobile devices (DVB-H). The compatibility between these two platforms would significantly increase the impact of the interoperability realised by BEACON to the larger market of mobile phone users all over the world.
- The choice of the Brazilian Government for an ISDB-based broadcasting solution will support the interoperability with the mobile scenario both in Brazil and in Japan as well. As the Brazilian SBTVD broadcasting standard is based on ISDB-T, all Japanese achieved results in supporting the fixed-mobile convergence will also apply to the Brazilian context, as such spreading the opportunity to get advantages of the project results in a worldwide environment.

**New tLearning services**

The definition of a sustainable model for tLearning services related to social inclusion in the BEACON project will allow the development of new tLearning services.

- Other than current tLearning services, the BEACON services are designed and implemented from an educational, didactical perspective rather than from an exclusive broadcasting perspective. It is therefore expected that the BEACON tLearning services definition will allow the creation of new, pedagogically sound services.

**Contribution to policy developments**

Following the intention of the Brazilian Government to use the Brazilian DTT as an instrument of distance learning (expressed in the Brazilian Government Decree related with the SBTVD-T Project), the BEACON project is the basic test case for SBTVD-T APIs interoperable with DVB-MHP with a focus on distance learning and social inclusion. The Service Centre that will be designed and set up at São Paulo within the BEACON project will measure to what extent the objective of the SBTVD-T can be achieved. Consequently, the BEACON approach to learning through the DTT platform is expected to provide guidelines and solutions to support social inclusion policies in Brazil (more generally also in the Latin American region). This anticipated effect is also coherent with the "European Co-operation objectives with Brazil" ("Federative Republic of Brazil – European Community, Country Strategic Paper 2001-2006")

The BEACON project also aims to further deepen any collaboration initiatives between the EU and Brazil. The project's objectives and expected results are aligned with the Priority Sectors for the "Co-

operation strategy with Brazil" described in the above mentioned Country Strategic Paper. BEACON expects to contribute to the strategies described in the mentioned document:

- Science & Technological programme - greater involvement of Brazilian institutions in EU research projects and networks; application of technological innovations to enhance the productivity and competitiveness of specific industries and companies;
- Social development - improve living conditions, schooling/education, skills opportunities; an improved education, living and income situation in the community involved.