Rapid Adoption, Globalization

A Vendor-Provided Case Study

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Responding to the rapid global adoption of its e-learning software, Blackboard Inc. entered into an expansive partnership with Welocalize to implement an enterprise-wide globalization plan related to the Blackboard Learning System. Focused on further empowering Blackboard's clients, partners, and Building Block application developers, the partnership will directly affect how e-education is deployed and offered around the world and enable educational institutions abroad to tailor e-learning to their local pedagogical approaches.

Blackboard has been working with Welocalize for several months and selected the company as its long-term partner in the full globalization of the Blackboard Learning System. "This will be a tremendous benefit to our entire client base, which increasingly requires enterprise technology and customizable applications that can cross all borders," says Andrew H. Rosen, general manager of Blackboard's international operations.

In contrast to current approaches to translate learning environments, Blackboard's approach to the globalization of its Learning System aims to set a new standard for academic institutions in the process of implementing e-learning programs. The globalized offering is the Blackboard Learning System–ML (Multi Language), reflecting the product's multiple-language functionality and permitting institutions to provide a tailored online environment suitable to their existing pedagogy.

The multilingual offering continues Blackboard's commitment to pedagogical effectiveness, ease of use, international standards, and scalable architecture. Blackboard's teaching and learning solutions began on the campus of Cornell University in the United States, and Blackboard served as the primary contractor to the IMS Global Learning Consortium standards project at conception.

Based on the setting selected by the particular institution, Blackboard Learning System ML offers a variety of features:

Language Customization for User Interface. Users have the ability to set the language of their choice for the interface to appear. For example, a student can select to view the course environment in German, while a peer in the same course can view the environment in French.

Language Preference for Content. Regardless of which language an institution downloads for the user interface to display, learners can type or upload content in any language and the text will be recognized and displayed appropriately.

Locale Specification. The institution can determine which locales it would like to deploy for its users. Each locale dictates the manner in which times, dates, names, addresses, and currencies are displayed.

Based on Blackboard's third-generation scalable, enterprise technology, these fundamental tenets are behind the Blackboard globalization product strategy: phased development, Blackboard Building Blocks, and multiple-language support. The tenets serve to

- accelerate client return-on-investment by leveraging ease of use in an international academic setting
- minimize risk in the marketplace by adopting one solution founded on a stable, scalable code base that supports multiple languages rather than multiple pieces of software per language
- maintain optimal staffing profiles by avoiding duplication of skills, hardware, and software with an e-education platform capable of global learning.

Internally, Blackboard will deliver the application in two phases. The first deliverable has an internationalized user interface so that learners see navigations,

TechSpecs

The Blackboard Learning System–ML Basic Edition includes a course management system, static PERL *My Institution* page, and Chameleon import/export tool. It supports Microsoft Windows 2000/Microsoft SQL Server 2000 platform,as well as the Solaris platform utilizing a scaled-back version of Oracle bundled with the product. It will add Java-enabled LDAP end-user authentication APIs, Building Blocks APIs, Communities, and data integration. The system supports Windows 2000/SQL Server 2000 and Solaris/Oracle 8i platforms.

Installation for Enterprise or Basic will be an English-only system. Clients can add on any number of language packs.

forms, and so forth in their native language. Final delivery will be the completely internationalized application. Blackboard abstracts the code from the presentation layer. Thus, new languages can be added seamlessly in the future without a full upgrade.

The Building Blocks program is a key differentiator for the Blackboard product offering. Through the open architecture and APIs (supported application programming interfaces), this program enables academic and commercial developers worldwide to design, build, and integrate applications into the Blackboard platform. Because of the enterprise architecture that the Blackboard Learning System–ML is built on, Building Blocks developers have myriad choices when it comes to internationalizing applications to run on top of the platform. They can write a localized application for each language, which can appear only in certain courses, or they can create an internationalized application that presents its interface in the user's language ◁http://buildingblocks.blackboard.com.

The need for multiple-language support derives from three requirements:

1. Both the database and browsers must support commingled languages that can enable, for example, a Chinese university to offer a language course in Korean.
2. As the application is used to facilitate distance learning, it must support multiple languages as students of distinct content or even one course may speak different languages (for example, British universities targeting Chinese-speaking students).
3. Market feedback states that any globalized version must set language at run time rather than on installation. That's especially prevalent in foreign language courses and in the Pan-Asian region, where the software isn't used to teach one specific language but many.

Satisfying requirement number 1 captures the bulk of the effort associated with multiple-language support. Numbers 2 and 3 enable an enterprise to scale beyond borders, an added benefit for the client institution and end users.

Some specifics

Campus. Campuses are predominantly a single locale and usually aren't prepared for the administrative burden of fully supporting multiple locales but want to offer support for language studies courses and content. Campuses are usually fully multilingual and need a rich feature set to support all users. This feature set must be localized in order to adequately meet the needs of the end user.

Multinational corporate customers. Corporations require a global solution to meet their international needs, and multilingual support is becoming a fixture on RFPs.

Commercial education providers. Locale is more complex than "one locale for the system" or even "one locale for each user." That creates multiple considerations, including the fact that the system is highly configurable. Images, color schemes, and titles have system defaults that can be overridden, and all must be localized.

Locale categories. Many system elements have an associated locale. For example, User—each role has unique requirements; Course—typically taught according to the conventions of a particular primary locale; Content—images, resource files, announcements, and customizations. The application must process data according to each of those locales.

Administrative settings. The administrator controls the locales enabled for user selection, the locales enabled for instructor selection, and the system-default locale. Those settings affect the system behavior as locale affects the rendering of the user interface. If the instructor sets a locale, it's forcing. That feature is desired by campuses for language studies. This locale applies only to objects rendered within a course. If a user locale is set, it's used for all system features. Otherwise, the system-default locale is used.

Locale negotiation. At the front page and login, the user locale isn't yet known; locale negotiation will be done using ACCEPT_LANGUAGE. The default choice can be overridden through a drop-down that contains the name of each installed language. Implementation causes the locale to be placed into query string, and users who bookmark the login page will find their locale settings preserved.

Building Blocks locale support. A locale-sensitive API layer is maintained for backward compatibility. The new API is locale sensitive, with the Monolingual API becoming a thin layer over multilingual API. There are two ways to use the APIs: 1) Identify a desired locale for all processing in the current thread and 2) operate in a mixed-locale mode, in which each relevant locale is defined separately.

Some lessons learned

The Perl function makes it simple to work with strings, and it's easy to write compact, efficient monolingual code. Unfortunately, that can make internationalization difficult. On the Windows platform, Blackboard uses PerlEx with ActivePerl for performance. Those components cause each script to remain in memory when loaded instead of spawning a new process for each request. Each server has a number of interpreters, each of which eventually contains most of the scripts and modules in the system, and memory space is at a premium.

The Blackboard Learning System–ML edition aims to enable academic institutions to take advantage of the Blackboard platform in their native languages. The Blackboard and Welocalize partnership's mission is a culturally personalized user experience and seamless globalization framework for implementing international e-learning programs.