

EduStance, an e-learning platform based on Sun ONE



Founded in 1998, Essi Projects is an information system engineering company mainly focused on custom built developments for integration and development solutions in the Internet world. The Company has six key lines of business: service infrastructure implementation, total security projects, SunRay terminal work space rollout, Java application development, e-learning portals rollout and EduStance, a system for developing e-learning projects.

Essi Projects customers are primarily major accounts and government agencies. Initially focused on the Spanish market requirements, it started its international expansion during 2001.

In 1998, Essi Projects envisioned the great potential of e-learning products in the Internet. That is why the Company decided to focus its in-house software development around a distance learning environment named EduStance. Aimed at schools, universities and enterprise training centers, EduStance is a technology solution that satisfies all e-learning requirements. Developed on the Sun™ ONE platform (Open Net Environment), it has been designed along with the help from new information technology investigation teams focused on education from various Spanish universities, all driven by the Tarragona University (URV).

Essi Projects & Sun Microsystems: close collaboration

Since 1997, Essi Projects maintains a solid relationship with Sun Microsystems. In addition to distributing Sun software, hardware and services, the collaboration between both companies goes much further, working together in a series of activities directed at creation of demand, project design and implementation as well as marketing initiatives, new product and new market development.

One of the primary reasons why Essi Projects decided to bet on a strategic alliance with Sun was due to its market recognition and clear focus towards the Internet world, since the beginning a fundamental requirement for the Company. For Antoni Guillén, managing director of Essi Projects, “when we founded Essi Projects in 1997, we wanted to work exclusively for the Internet, therefore we looked for software and hardware vendors that focused their business towards the Internet. Sun just happens to be company most clearly specialized in this aspect.”

For Essi Projects, the core technology value that Sun delivers to its customers is the coherence of its equipment, operating system, services as well as the guarantees it delivers. Sun’s vision when working with partners is another of the reasons pointed out by Essi because, as opposed to other companies, Sun fully supports its partners to supply the demand and trusts them completely.

Company

Essi Projects

Segment

Education

Context

In 1998, Essi Projects decided to bet on the huge potential of Internet based educational products and developed. EduStance, an e-learning system aimed at schools, universities and training centers. Essi Projects objective is to offer an e-learning platform to help teachers, students, tutors and headmasters satisfy all their Internet education requirements.

Business Imperatives

- Build an open and flexible system adaptable to education requirements of companies and educational centers.
- Easy and transparent integration with the rest of existing applications.
- High Scalability.

Solution

Sun™ ONE architecture
EduStance

ROI

- Cost and development time reduction.
- Flexibility to design new functionality easily.

EduStance meets the enterprise e-learning challenges

Enterprises have begun to consider training as a critical task within their organizations. On the other hand there is more importance on return on investment, easily quantified in the distance learning world thanks to employee productivity indicators and time and money savings in training.

EduStance is a system for developing e-learning projects that satisfy all education requirements at schools, universities and enterprises. Moisès Fabra, e-learning consultant at Essi Projects says "It is an e-learning platform that helps optimize investment in education, saving time and money, avoiding traveling and guaranteeing greater time flexibility for students. At the same time, it facilitates information distribution offering educational content in real time".

EduStance creates a virtual environment for education, offering its users all necessary functionality to develop their education activity through the network based around a distributed multi-user architecture and virtual community content creation. It is modular and adaptable to customer education and organization requirements and meets the specifications of the IMS Consortium (Instructional Management System), the AICC organization (Aviation Industry CBT Committee) in regards to management and standardization of educational content, student assessment and management of education records.

EduStance integrates tools into a single platform to manage:

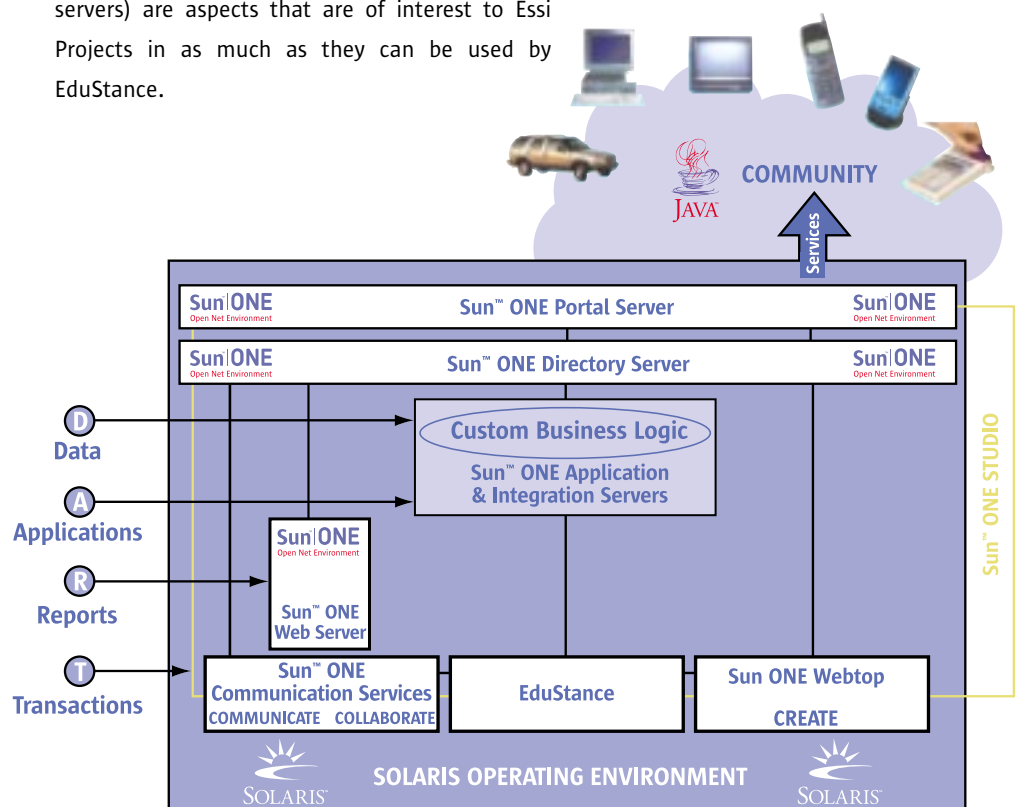
- Educational content: content management, LOM labels to catalogue educational content, standard packager.
- Communication systems: chat, e-mail or discussion forums.
- Collaborative work spaces: polling tools, collaborative calendars, 3D VRML environments (Virtual Reality Modeling Language).
- Student assessment modules: the administrator can manage each of the users that access the environment.

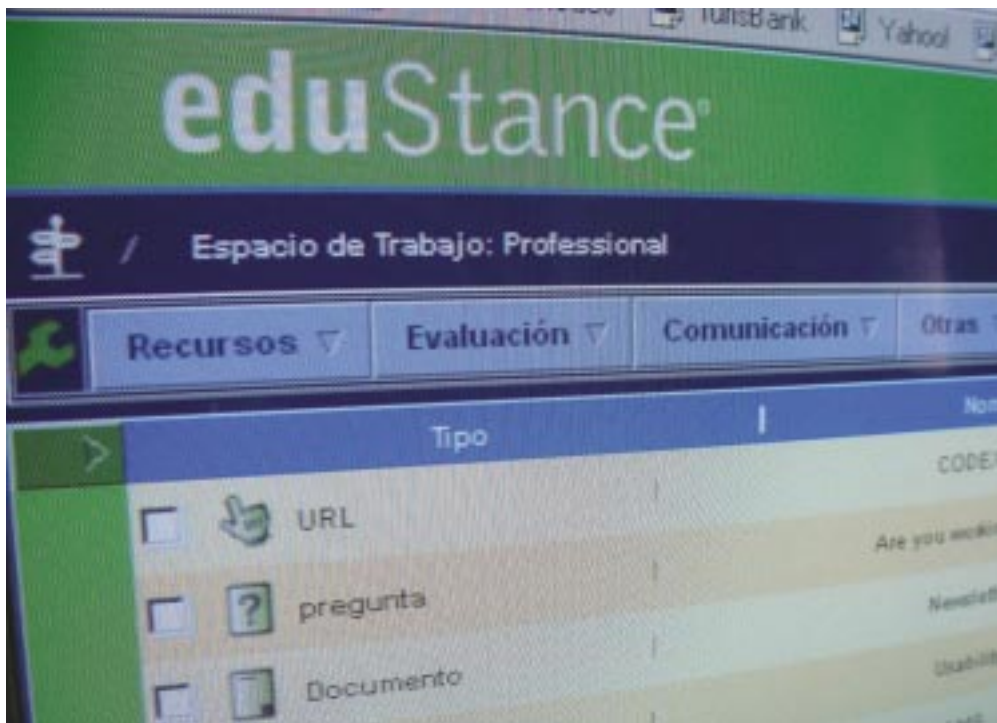
The choice of Sun ONE platform

One of the core requirements during the development of EduStance was to endow the application with high scalability levels, both horizontal and vertical: the platform can be used in a small school as well as in a large education corporation, with hundreds or thousands of users accessing simultaneously in a 24x7 environment.

In addition the platform would have to integrate with legacy systems and third party products, so that it could be used in any technology environment. In fact, one of the added values of EduStance is that it is easily enhanced by the user (developing his own modules and incorporating them into EduStance). To this purpose the Company has developed a set of APIs supplied together with the application.

In addition, Essi Projects was seeking for a technology that offered maximum flexibility during the entire life cycle. Sun's open architecture and constant technological innovation where also two factors that drove the Company to adopt Sun ONE technology. Sun Microsystems' advances in the wireless and peer to peer areas (that allow information sharing without the need for servers) are aspects that are of interest to Essi Projects in as much as they can be used by EduStance.





“One of Sun’s main technology strengths is that it constantly innovates technology, making new functionality available (be it communications or system improvements) and this is something that we can take advantage of while creating tools within EduStance. Another advantage is the existence of groups working on this platform, moving specifications forwards with new developments and versions that continuously improve and optimize technology”, said Jordi Tomàs, EduStance development manager.

EduStance has been developed to Java 2 Enterprise Edition (J2EE) standards and benefits from the independence offered by the Sun ONE platform. For Jordi Tomàs, Essi Projects development manager, “Java is the most powerful programming language and has delivered the greatest possibilities in terms of portability and compatibility”.

EduStance is a Java environment based on J2EE and open architecture; it can work on any application and Web server that meets the J2EE specification and any SQL compatible database engine. EduStance also offers complete support for all J2EE supported technologies such as JDBC, EJB, Servlets, JSP, JNDI, JMS and XML.

Among the advantages of J2EE architecture, Essi Projects highlights the simplicity of access to the data and security models that protect the data even in Internet applications. Likewise, EduStance meets the premise “Write Once, Run Anywhere ”; because it has been entirely written in Java it can run on any platform.

Regarding return on investment, Essi Projects has managed to reduce go to market time of its application development. For Jordi Tomàs, Essi Projects Development Manager “with Sun ONE, new functionality development times becomes shorter. In addition, the risk of code and/or connectivity failure is minimized thanks to its well proven technology”.

Also, EduStance meets the high availability, high performance and security requirements; core elements of the Sun ONE platform.

Design and Architecture.

EduStance is a dynamic environment adaptable to the user requirements thanks to its modular architecture. This allows all functionality available to operate independently. This modularity also guarantees the inclusion of new module developments later.

The EduStance architecture is mainly composed of:

- Web Server.
- Application Server.
- Directory Server (LDAP).
- Database.

There are various versions of the product depending on the number of users and the use they make of the platform. However Essi Projects recommends Sun ONE Web Server as the Web Server platform (able of supporting a large number of users and high concurrency) and Sun ONE Application Server guaranteeing adequate scalability and support for this type of installations.

Application Architecture

The core of EduStance is made of the database and the Enterprise Java Beans (EJB), that has simplified the development of portable transactional middleware components; delivering an automatic platform to create middleware services (such as transaction, security or database connectivity) in addition to increasing development productivity.

There are three well defined layers in the core: a management layer (Session EJBs), a work layer (Entity EJBs) and the database layer. In the last layer we find all the data access objects (DAO).

Communication between EJB's is achieved through RMI as all EJB's reside in the container of an Applications Server. Communications between the work and database layers is achieved through JDBC. EduStance will work with multiple database engines.

Finally the core carries a series of modules to manage logs, configuration files and a complex system of caches. All these modules are extensible system interfaces.

Web Architecture

EduStance's Web core is responsible for communication between the user and the application. This communication is achieved using the standards defined by the IETF and W3C: HTTP and HTML. In this way, the only prior requisite for an EduStance user is to have a compatible web browser.

The technologies used in the development of components are Java Servlets and JSP pages (Java Server Pages).

RMI is at the center of the EJB communication. Communications are implemented by the J2EE application server, based around JNDI as the directory service to locate the selected component.

As far as the user interface is concerned, it is worth highlighting that it is highly customizable, depending on the customer's corporate requirements. Customization is achieved through the use of the XML descriptive language and the corresponding XSLT templates.

This is not the only use for the XML language. It is also used as an intermediary between different parts of the application to share information. In this way, XML is the data transfer standard used between Web components in EduStance.

EduStance is a registered trademark of Essi Projects.

Summary

Education is being considered by enterprises as a critical business process. There is a trend among organizations to strengthen the learning processes and, in this sense, new technologies help to reduce education costs and obtain greater return on investment. Distance learning (or e-learning) delivers an added value in relation to instructor-led training with regards to time and money savings.

The goal of Essi Projects is to offer a robust e-learning platform to satisfy the challenges of enterprises in this area and help them improve productivity. That is why EduStance is based on open standards that allow users to develop and integrate the most powerful technologies. Flexibility and the open technology model of Sun ONE help to obtain huge benefits for companies that wish to implement and rollout the EduStance virtual environment. For Essi Projects, the Sun ONE technology offers huge added value in the sense that it:

- Supplies an open platform, scalable and secure, offering high availability and performance, able to integrate with the rest of existing enterprise applications.
- Delivers technological innovation, incorporating new tools to EduStance and improving the platforms' functionality.
- Improves return on investment, reducing costs and time used to design and develop applications in the EduStance environment

Finally, Sun's commitment to investigation and its sensitivity to education initiatives has given Essi Projects the necessary support to start up its international expansion.

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