



CAMPUS PIPELINE

USING SUN™ ONE TO BUILD BLUEPRINTS FOR HIGHER EDUCATION

KEY HIGHLIGHTS

Company

Campus Pipeline

Industry/Market

Education

Context

- A change in business model necessitated a change in thinking around the architecture of its Web Platform product.
- With viability of “build from scratch” options reduced, the company sought a partner with a similar vision for the architecture and that could provide the breadth of products needed to build the next generation Web Platform.

Business Imperatives

- Compressed time-to-market
- Low development costs
- Open, reliable, scalable, available, and integratable architecture

Current Web Platform

- iPlanet™ Calendar Server
- iPlanet™ Directory Server
- iPlanet™ Messaging Server
- iPlanet™ Web Server
- Solaris™ Operating Environment

Future Web Platform Versions

- iPlanet™ Application Server
- iPlanet™ Portal Server
- iPlanet™ Integration Server

ROI

- Reduced development costs
- Reduced time-to-market
- Renewed focus on integration and education-specific applications as core competency
- Quantum leap in ability to deliver role-based services

Campus Pipeline is a leading solution provider helping higher education effectively serve their diverse customer base. Its portal technology allows institutions to tie together their legacy systems, campus applications, bookstore systems, library systems and other systems and deliver the information and services to their constituents based upon the individual’s specific role and attributes.

“Become easy to do business with” is the rallying cry of higher education. For instance, a Biology senior can use the applications provided by Campus Pipeline portal to do all the things associated with preparing for her graduation, such as registering, submitting her senior year thesis and clearing her library dues.

In a crowded portal marketplace, Campus Pipeline faces growing competition from generalists, such as Peoplesoft, Oracle, and IBM, and from specialist companies focused only on the education vertical, such as Blackboard, WebCT and Datatel. In order to differentiate itself from its competitors, Campus Pipeline realized that it needed to become less of a technology infrastructure provider and more of a solution provider—one who understands the higher education customer needs.

Says Andy Cooley, VP of Marketing at Campus Pipeline, “Instead of focusing on what we do best, we were trying to do everything ourselves—like building email, calendar, and application servers. We realized this was not sustainable. Sun was building these technologies better than anyone else and designing them in a way that allowed us to tailor them specifically for higher education. We were already using many Sun ONE components, adhering

to the J2EE™ standard. It became clear that a closer relationship with Sun made a lot of sense.”

By embracing Sun ONE and in particular iPlanet™ applications, Campus Pipeline is steadily cementing its position as the leading solution provider of portal blueprints for higher education. This early adopter case study depicts the decision-making scenario that formed the basis for adopting Sun ONE. The case study also illustrates the dramatic ROI to Campus Pipeline from the Sun ONE architecture adoption.

Sun ONE is the acronym for Sun Open Net Environment. Sun ONE is the vision, products, services and expertise of Sun to enable the delivery of Web services today and Services on Demand tomorrow. It is Sun’s Web services strategy. Web services are self-describing applications that can discover and build on DARTs. DART is the acronym for Data, Applications, Reports, and Transactions that collectively form the invaluable information assets of an organization or university. Services on Demand understand user context, traverse multiple networks, and provide a rich user experience, all in an open architecture. Sun ONE is a platform that enables higher education to create, assemble, and deploy XML-based Web services.

Higher education colleges and universities face many challenges including:

- Dispersed and diverse IT
- Extending lives of legacy systems
- Establishing relationships with students and faculty
- Content management and digital asset management
- Scarcity of IT talent on campus

With a goal to assist higher education institutions in their mission, Campus Pipeline is working to address these specific challenges for them.

Current Higher Education Challenges

Thumbing through huge catalogs to select courses, waiting in long registration lines to register for those courses, waiting for grades to come in the mail, lost financial aid checks, tracking missing grades, problems updating records in the registrar's office, and the frustration of not being able to schedule meetings with busy faculty members are some of the negative experiences that stress students out.

Higher education institutions incur higher operating costs, increased student complaints and lower student ratings as a result of time-consuming, administrative tasks. As colleges and universities begin to focus on customer relationship management, alleviating the root causes of unpleasant student experiences is taking priority.

Higher education institutions know that it is essential to create an environment that can significantly improve administrative functions while delivering powerful, new services to students. However, higher education faces significant business and

technical challenges due to their unique environment. These business and technology challenges include:

Moving from dispersed proprietary systems to standards. Information silos, multiple communication systems and numerous administrative services characterize the environment. Paper-based communication systems that are costly and slow further characterize higher education institutions.

Leveraging and integrating legacy investments. CIOs of colleges and institutions want to preserve and extend the lives of their legacy systems while still advancing the type of service they give to the campus users. This is a huge challenge since they don't have unlimited IT budgets and must get value out of their aging systems.

Enhancing faculty teaching and research productivity. Increasing faculty (new, tenure-track or adjunct) productivity is a priority in higher education. The objective is to reduce the time faculty spend on administrative tasks. The value of saving 30 minutes of faculty time per week for a large university translates into significant dollar savings.

Building relationships with students. Institutions are constantly fighting fires in satisfying both existing and incoming students. They want to streamline processes such as how to give the right information to students and how to improve self-service for repetitive tasks. In addition, they want to better manage relationships with students as they go through the lifecycle—prospect, student, new graduate, and alumni. As a result many institutions are taking a step back and asking, “What would delight a technology-literate student?”

Laying the foundation for e-learning. Universities generate a lot of digital information, content and knowledge. How to manage and deliver digital content and information in a meaningful way to people that need it is a big task. Addressing this question requires emphasis on content management and digital asset management.

Competitive labor market and scarcity of IT talent. Unless institutions have bigger budgets and larger staff, they have limited IT talent. Some institutions don't have the expertise to create and operate new technologies and applications that need to be put in place. The past few years, in particular, have not been friendly to colleges and universities in terms of IT expertise, as people with expertise in newer technologies have been lured away by software firms.

Campus Pipeline was created to help higher education as it transforms to meet the challenges of the 21st century. The company's goal is to assist in higher education's mission by establishing a positive and personally relevant relationship between universities and the individuals that they serve.

With this vision in mind, the company set out to specifically address the above challenges for institutions. Its answer: a role-

CAMPUS PIPELINE, 1998 - 1999

- Established in 1998 around the concept of a role-based services-delivery platform or a portal for higher education
- Received seed funding and help in quick market penetration from SCT
- Built a reputation and brand identity as an integrated portal system provider
- Piloted with nine colleges and universities in April 1999 and later went live in fall 1999
- Total of 100 schools (500,000 students) in April 1999, 170 (1.2 million) in May 1999
- Shipped first commercial release in July 1999, version 2.1 in December 1999

based, services-delivery platform concept or portal for higher education, initially named the “Enterprise Information Portal” or “Pipeline”, and eventually the “Web Platform.”

Campus Pipeline Before Sun ONE and iPlanet

Established in 1998, Campus Pipeline began to offer the first commercially available out-of-the-box portal in higher education. Campus Pipeline was backed by SCT, a leading provider of software and IT services to more than 1,100 institutions around the world. The portal reached into SCT’s campus information systems and pulled out the services and data and made them readily available to the end-user in a manner that was role-specific.

More than a destination web site, main features of the portal included single sign-on, e-mail account, and a customizable “homebase” called “My Pipeline.” For the first time, from a single homebase, students could enroll, register for classes, view grades, request a transcript, check the status of a loan, obtain reading lists, buy books, access email and participate in interactive chat sessions with their professors—all without leaving their room!

“A change in the business model was a big factor in the change in our thinking around the architecture.”

*Scott Doughman, VP of Corporate Development,
Campus Pipeline*

In early 1999, the concept of a customizable “homebase” was considered visionary. As the company evolved, it expanded the offering to integrate with other backend systems such as homegrown systems, Peoplesoft, and Oracle. As a result, the company developed a reputation and brand identity very early on as an integrated portal system provider.

Campus Pipeline conducted a pilot of the Web Platform with nine colleges and universities in April 1999, shipped its first commercial release in July, and went live that fall. Based on feedback from more than 500 campuses that had licensed the platform, a new version, Campus Pipeline 2.1, was released in December 1999. However, by early 2000, the company realized the need for a change in product strategy and direction.

Let’s look at the changes in Campus Pipelines business model and product strategy that unleashed a series of business

decisions that culminated in the adoption of Sun ONE.

Changing the Business Model

This section is representative of the changes currently taking place in the e-business landscape. Quite a few companies that wanted to develop their own infrastructure to service customers in various verticals are increasingly refocusing and choosing to build on top of robust platforms like Sun ONE. They are moving away from complex technology development to being solution providers. Let’s examine a similar change that took place in Campus Pipeline.

Initially, Campus Pipeline offered its portal product for free to institutions. Its business model was advertising supported—based on corporate sponsorships and e-commerce relationships. Thus, Campus Pipeline would make revenues from ad impressions while the budget-constrained institutions received a high-value subsidized offering for free. This was reflective of the “get big fast” times in the late 1990’s when venture capital was available in abundance and market share was the determining factor for future rounds of funding.

The ad impression-based revenue model made sense given the level of usage that Campus Pipeline anticipated by the schools and the clamor in the marketplace for a model that scaled quickly. In 1999, the company was executing against the market share goal of reaching two million students. The company initially focused on the ability to drive usage of the product and not on the architecture of the product or the technical benefits of the architecture.

Scott Doughman, Campus Pipeline’s VP of Corporate Development, explains, “The priorities of Campus Pipeline were not about

BUSINESS MODEL CHANGES

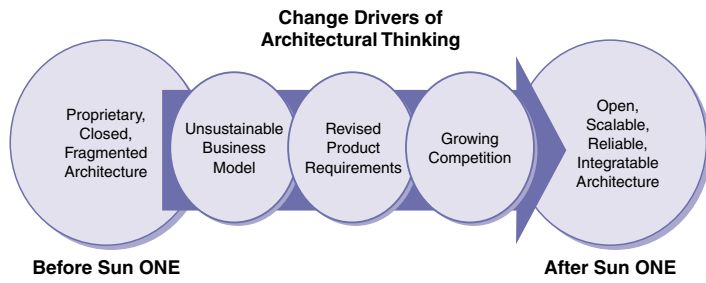
PILOT THROUGH RELEASE 2.1

- Ad impression-based revenue model; charge corporate partners for ads placed on the campus portal
- Target customer on campus: 18-year old student
- Priorities: content and stickiness of the portal

RELEASE 2.2. ONWARDS

- Software license and services-based revenue model; charge schools
- Target customer on campus: CIO
- Priorities: openness, scalability, reliability, availability and integratability of the platform architecture

FIGURE 1: CAMPUS PIPELINE TRANSITION



appealing to the technical interests of the CIO of an institution, but they were about satisfying the needs of the 18-year old students on campus coming to the portal site to check their email, do instant messaging, and access their grades.” He added, “If we could provide them rich content and sticky applications that would tempt them to stay longer, then all the CPM-based (cost per thousand impressions) revenue generated through usage would flow straight through to the bottom line for Campus Pipeline.”

But as advertising impression-based revenue models started to become passé, it became clear that Campus Pipeline could not sustain its cost structure going forward as the CPM-rate declined and also as pressure against commercial advertising models increased within higher education.

So Campus Pipeline found itself in a position to have to drastically alter its revenue model. Instead of going after corporate sponsors, it became clear it had to get the money from the universities themselves. Consequently, the company decided to migrate to the more traditional software license and services-based revenue model.

Literally turning on the dime, Campus Pipeline moved quickly to implement the new business model. But it was not easy. By switching the business model, all of a sudden, the company realized it was catering to a new customer—the CIOs of higher education, who made technology decisions based on criteria such as robustness, integratability, and reliability. This led to a dramatic change around the architecture behind the Web Platform product. Things that immediately became priorities

from a product development roadmap standpoint were data migration, interoperability, and scalability.

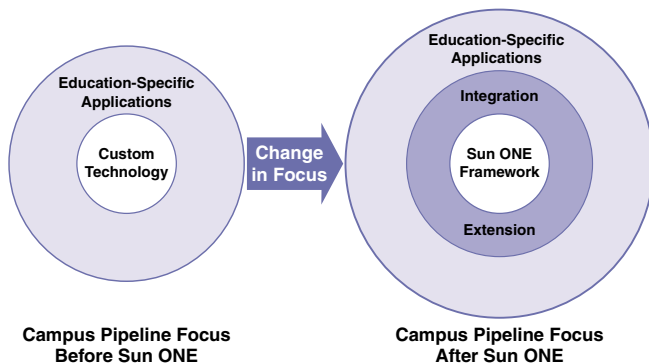
There was also the challenge of managing a large number of users belonging to multiple constituent bases and campuses. It is not uncommon for a campus portal to support forty to fifty thousand users. “As we grew the functionality of our applications and portal services, delivery of user management support became more and more complex. Our customers developed insatiable appetites for more effective ways to identify, target, and deliver custom services to their constituents down to a unit of one,” said Andy Cooley. “We needed scalable user management services.” This transition from the closed architecture to a standards-based architecture is illustrated in Figure 1.

The Business Decision to Adopt Sun ONE and iPlanet

Why spend years building an e-business infrastructure when you can buy it? Campus Pipeline was first introduced to iPlanet and Sun ONE architecture when it was internally debating a build versus buy decision—whether to continue building its own e-mail server or buy an e-mail server, a commodity product. The tendency to try to do too much, too fast, was diluting the attention of engineers and spread critical resources too thin. A small team of engineers analyzed the email server market and decided that the iPlanet email product was the best suited for their needs. This happened in conjunction with another decision to leverage iPlanet’s LDAP directory server for data management.

Campus Pipeline embedded iPlanet’s LDAP server in its 2.2 release of Web Platform in August 2000. The relationship with Sun, however, was not made with any broad vision of a change in the business model or the need to re-architect the product. Campus Pipeline was still thinking incremental changes to its platform. As a result, it was focused on addressing the short-term problems associated with each of the components of the platform.

FIGURE 2: CAMPUS PIPELINE’S SHIFT IN FOCUS



As the company began to move from its 2.2 to 3.0 release, it began taking a long-term look at whether or not it made any sense to retain any portion of the earlier architecture. By taking a real hard look at its options, Campus Pipeline concluded that it was trying to be the best solution provider for the education vertical and not the best technology vendor. This meant that the company was better off developing on the Sun ONE modular building blocks rather than creating the solution from scratch

Choosing Sun ONE: The Decision Process

New architecture projects are by definition a political, financial and technical struggle. As the need for a robust architecture was being realized, the suggestion was made to

partner with a single vendor who could provide the breadth of technologies the company wanted in the new architecture

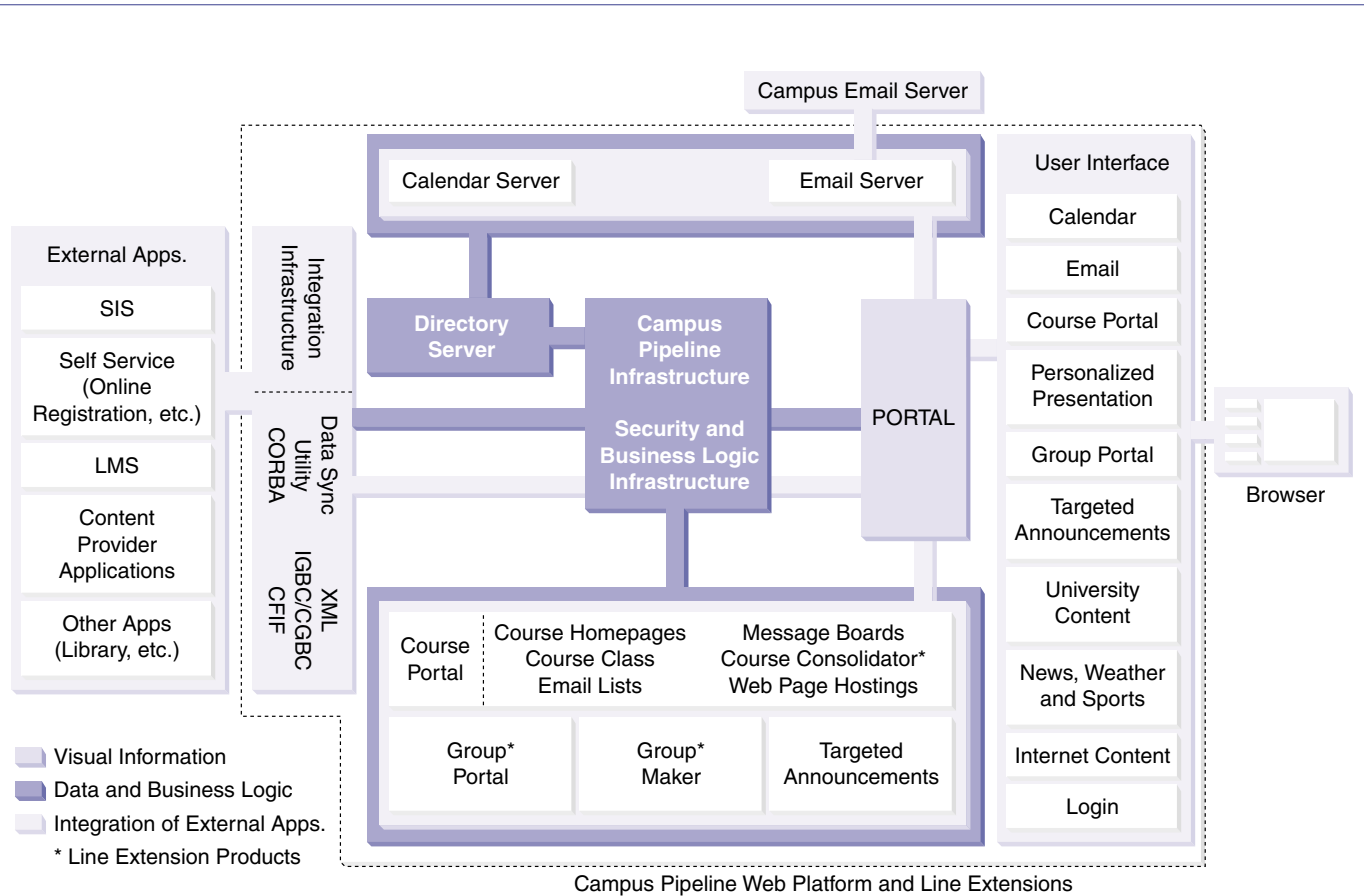
Based on an architecture diagram from iPlanet, product management realized the striking similarities in what Sun was doing with iPlanet and what Campus Pipeline wanted to do. Product management felt Campus Pipeline should stop doing the “plumbing” and lean on a vendor who is in the business of technology. Campus Pipeline, on the other hand, should focus on bringing the components together in a way that is unique to solve the problems on a campus and migrate to the application level of offering.

In this way, the company could focus on bringing the education applications quickly to the market. Doing so would provide incremental revenue opportunities and, more importantly, provide the context to sell the architecture.

The Technology Decision

The next step was to get buy-in around an architecture based on Sun ONE and iPlanet services. Strategy and product management built their own version of the iPlanet architecture diagram and solicited feedback from architects and engineers. Although initial response was a typical “not-invented-here” resistance that is common in many companies, a solid business case was presented to explain why Campus Pipeline should adopt

FIGURE 3: CAMPUS PIPELINE’S WEB PLATFORM ARCHITECTURE BASED ON SUN ONE AND IPLANET



THE DECISION PROCESS TO ADOPT SUN ONE AND IPLANET

1. The strategy group built a model based on the Sun ONE and iPlanet architecture diagram and solicited feedback from engineers and architects within the company
2. Upon receiving a favorable response, a formal business case for “buy versus build” was made
3. A small technical team narrowed the field down to the leading vendors—HP, IBM, BEA and Sun.
4. After careful evaluation, a decision to go with Sun and iPlanet was reached
5. The case was then presented to the executives, and approved by the CEO following careful review
6. Finally, the board of directors approved the plan.

Sun ONE and iPlanet. Sun has invested millions in developing robust infrastructure building blocks. It makes very little business sense for any organization to replicate what Sun has already developed.

From a business standpoint, there are compelling reasons such as reduction in costs associated with faster time-to-market and the ability to deliver role-based services to build on top of the Sun ONE architecture as a starting point. A timeline of two to three months was set for investigating the building-blocks decision. A team of architects and the best engineers Campus Pipeline had, spent time looking at the market. A strong argument based on integration costs and challenges was developed

“If you don’t step back and look at the big picture, it is very tempting to try and get there incrementally.”

Scott Doughman on the Sun ONE adoption decision

for why not to go with multiple vendors and for not leveraging the freeware and shareware components.

The team narrowed the field down to HP, IBM, BEA and Sun. Following further diligence Sun and iPlanet came out at the top. Sun’s commitment to architectural direction and overall leadership in education and research vertical were significant factors.

The Executive Decision

Next, with the engineering team’s support, it was time to get executive management to endorse the decision. According to Doughman, “several days were spent with the entire management team to work through all aspects of the decision.”

As a last step in the process, Tom Lewis, the CEO of Campus Pipeline, made a presentation to the board, which approved the recommendation. The board questioned, “Why partner with an infrastructure provider?” The value of Sun as a scalable and battle-tested infrastructure provider and its non-stop quest to deliver on its “Network as a Computer” vision were key to overcoming board concerns. Once the board members understood that the value of adopting Sun ONE far outweighs the execution risk and cost of a “build everything from scratch” strategy, they approved the decision unanimously.

Sun ONE: Enabling the Campus Pipeline Web Platform

Many of the Sun ONE components such as Calendar server, E-mail server, Directory server and others are embedded into the new Web platform architecture. This new Web Platform architecture is illustrated in Figure 3.

ROI from Sun ONE

The Return on Investment (ROI) for Campus Pipeline from the Sun ONE adoption decision is evident in three forms: tangible benefits, intangible benefits and strategic benefits.

Tangible or “Hard” Benefits

The three tangible benefits that can be measured include: reduced cost of development, faster time to market and ability to deliver new features and functionality.

Campus Pipeline expects that 30 to 50 percent of the functionality being developed in-house came out-of-the-box with Sun ONE, allowing developers to allocate their time to more education specific tasks. The company estimated a significant reduction in its development costs and time to market from a Sun partnership.

Campus Pipeline placed high business value on the time-to-market. Success depends on its ability to innovate and deliver new features and functionality to its customers. This meant moving to a robust new architecture. The 4-year timeframe it estimated for building the new Web Platform product from scratch was unacceptable and the company wanted the next generation of Web Platform in less than 18 months.

According to Scott Doughman, “Our jaws dropped when we were looking at a 4-year roadmap to get to where we needed to be. For competitive reasons, that was absolutely unacceptable. We had to place and do place a huge value on time-to-market. We needed the next generation of Web platform with a time-to-market of less than 18 months. For the feature and function set we have defined, we will get there in half the time and it will actually have 2X

TABLE 1: TANGIBLE ROI BENEFITS TO CAMPUS PIPELINE

BUSINESS AREA	NATURE OF BENEFIT	DESCRIPTION OR METRIC
Development	Cost of development reduced	Without iPlanet, the headcount necessary to build the new product would have been “crippling.”
Finance	Faster payback as	What was a 4-year roadmap was reduced development time is reduced to less than 18 months.
Product Management	Increased ability to deliver	Features like role-based customization are easier to new features and functionality build on the Sun ONE and iPlanet building blocks.

the functionality by going with the iPlanet standard products.”

Besides savings in development cost and time to market, the company, by using Sun ONE applications, was able to leapfrog in its capabilities to deliver role-based services to anyone, anytime. Explains Andy Cooley, “Our decision to integrate iPlanet communications applications and directory services into our platform dramatically enhanced our ability to develop advanced targeted messaging and role-based content delivery applications for our system.”

Table 1 summarizes the tangible ROI benefits to Campus Pipeline.

Intangible or “Soft” Benefits

The intangible benefits that cannot be measured include: risk reduction and being able to leverage the Sun brand. Reduction of risk is a priority for management. After estimating time, headcount and resources required to build the equivalent of the Sun ONE infrastructure, Campus Pipeline realized how prohibitively expensive such an undertaking would be. Also, as the building blocks of portal applications become increasingly complex, the engineering and development risk associated

with a “go-alone” strategy is too much to bear for any firm.

By letting Sun and iPlanet worry about the rapidly changing technology, Campus Pipeline is free to address the application needs of higher education customers. Says Craig Spencer, senior manager of strategic marketing at Campus Pipeline, “We are now able to focus on education-specific applications and leave key foundation components to Sun, a premiere provider of enterprise infrastructure applications.” The value of staying close to the customer is immense for a fast moving firm like Campus Pipeline. Table 2 summarizes the intangible ROI benefits to Campus Pipeline.

Strategic Benefits

For Campus Pipeline the objective is not choosing the cheapest application but choosing a robust platform that provides the greatest long-term strategic benefits. These benefits range from quality, continuous innovation to higher customer acceptance. Take customer acceptance, for instance, providing familiar Sun tools for both business and technical users ensures the applications are quickly adopted and training costs are reduced. Use of standard development frameworks like J2EE enhances

developer productivity. In addition, implementing Sun ONE architecture should decrease integration and maintenance costs. Table 3 summarizes the strategic ROI benefits to Campus Pipeline.

Key Takeaways

Higher education universities and colleges are increasingly looking to partner with vendors who are committed to open standards. The business rationale is simple: open standards ensure that their digital campuses can evolve and are integratable with the past and future applications and technologies. The flexibility and openness of iPlanet applications within the Sun ONE environment are tremendous benefits to higher education. As Web technology rapidly evolves, one can expect these benefits to continue with future applications.

For vendors like Campus Pipeline who are looking to provide solutions to the higher education vertical, the Sun ONE environment provides significant value. The business reasons are quite evident:

- CIOs of higher education institutions are looking for a platform architecture that is open, scalable, reliable, available and integratable.

TABLE 2: INTANGIBLE ROI BENEFITS TO CAMPUS PIPELINE

BUSINESS AREA	NATURE OF BENEFIT	DESCRIPTION OR METRIC
Engineering and Product Management	“Lack of focus” risk minimized	Renewed focus on creating unique applications for higher education as the core competency.
Development	Execution risk minimized	No scarcity of skills for the Java platform in market.
Development Productivity	Quality and coding risk	Building complex building blocks that are scalable is a minimized difficult and time-consuming task.
Marketing, Branding and Positioning	Leveraging Sun brand in the education Segment	Sun has a very respected and powerful brand image with CIOs of higher education.

TABLE 3: STRATEGIC ROI BENEFITS TO CAMPUS PIPELINE

BUSINESS AREA	NATURE OF BENEFIT	DESCRIPTION OR METRIC
Innovation	Technology risk minimized	Sun is assuming the burden of innovation. It is constantly creating technology that is available, reliable and scalable.
Integration and Deployment	Integration risk minimized	Sun ONE provides robust servers and adapters to integrate with existing IT infrastructure.
Business Development	Cost of marketing reduced	Campus Pipeline is able to use co-marketing opportunities with Sun to increase awareness of its product and reduce overall cost of marketing.
Sales	Channel risk minimized	Access to worldwide Sun sales force, channel partners, resellers and brand.
Customer Acceptance	Increasing the probability	Millions of customers are using Java and J2EE. of adoption Result: adoption risk minimized.

- Sun’s commitment to higher education is a significant advantage over other major platform providers such as IBM, HP and BEA.
- Sun ONE and iPlanet significantly enhance the capability to deliver role-based services. For competitive reasons, time-to-market is a critical parameter for vendors when deciding to migrate their platform architecture.

- The ROI is clear and evident. Campus Pipeline received “twice the functionality in half the time” by going with iPlanet and Sun ONE architecture. Also, the execution risk of building complex application blocks goes down substantially.

The bottom-line: Campus Pipeline is positioning itself as a premiere solutions provider for higher education. The Sun ONE modular building blocks are playing a big role in making this happen.

**ROI FROM
SUN ONE**

With Sun ONE and iPlanet, Campus Pipeline shaved off about 2.5 years in development time. With a developer team size of about 65, that adds up to more than 286,000 development man-hours.

“The roll out of Sun ONE in higher education supports our vision of providing a scalable and robust foundation for traditional software applications while laying the groundwork for future service methods such as Web services in education. Campus Pipeline and Sun are providing the benefits of open standards-based digital campuses to over 100 institutions.”

Kim Jones, VP, Global Education and Research, Sun Microsystems

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