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# Catalyst Project Plan – Phase II

## Scaling and Deployment of a Learning Management System

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## INTRODUCTION

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### Phase I - Summary

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In summer of 2006, De Anza College began Phase I of our first locally administered on-line course management system. The system was based on an open source tool called Moodle. After some slight customization, the system was branded as “Catalyst” in reference to its ability to activate the on line learning process. The system has been located in the L7 District Data Center on the De Anza Campus.

The Phase I installation was expected to support 5,000-10,000 student accounts. This goal was successfully accomplished. Phase I of the project ended in June of 2008.

### Phase I - Results

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During the first two years of operation, the Technology Resources Group and Distance Learning noted the following:

### *Faculty Acceptance*

While initially, a small number of faculty were reluctant to migrate on line content to a new system, with time, faculty embraced the new system wholeheartedly. During the first year of operation, faculty continued to offer on line courses using WebCT, ETUDES Classic and PageOut, with the understanding that support for WebCT and ETUDES Classic would cease at the end of that academic year. (PageOut, available through McGraw-Hill with textbook purchase, has never been a supported tool at De Anza. PageOut continues to be used by some De Anza faculty.)

By the beginning of Fall Quarter 2007, all on line De Anza courses that had been previously taught using WebCT or ETUDES Classic were migrated to Catalyst. In Fall Quarter of 2007, De Anza College rolled out approximately 50 on line courses that had either been migrated to Catalyst or created in Catalyst.

For the first complete year Catalyst was offered, the 2007-2008 academic year, 440 courses were offered with 10,750 users.

### *Student Response*

Student response to Catalyst has been overwhelmingly positive. A survey of De Anza's distance learning students included comments such as "it's convenient, fast and easy to learn," and "as simple as getting my email." Requests from students for technical support dropped below the level previously experienced from WebCT based courses, indicating that Catalyst is more intuitive and user friendly.

### *Uptime and Downtime*

Uptime on the Phase I Catalyst installation, both projected and actual, was over 99 percent. This is comparable to our previous use of WebCT, which was hosted by the grant-funded California Virtual Campus.

### *Unexpected Technical Issues*

While cluster technology brings many added benefits to the installation, it also adds a level of complexity, which requires additional research and planning. During the preliminary research phase, it was discovered that all processors being utilized in the installation must be of the same architecture. As of the end of phase I, the system contained two distinct architectures (IBM's PowerPC 970 "G5" pure big-endian and Intel's "Harpertown" x86 Xeon pure little-endian). Since the G5 architecture is being phased out of production, additional Xeon hardware has purchased to ensure the entire system will be based on the same architecture.

During the phase I rollout, it was observed that database size was increasing rapidly. To help limit future issues, a decision was made to switch from a 32-bit version of the MySQL database software to a 64-bit version. While there was

some technical trouble with the system post-migration, research has shown this to likely not be related to bit length. Rollout of the cluster technology will help minimize the impact of the unexpected shutdown of any piece of the MySQL database or the hardware on which it resides.

Throughout phase I of the catalyst project, a small number of outages occurred. In addition to the cluster upgrade planned as part of Phase II, additional steps have been taken to reduce the overall downtime experienced by users:

- Maintenance cross-training
- Application administration cross-training
- Automatic crash recovery and restart
- Additional network and power outage planning and coordination
- Acquisition of redundant hardware and software
- Automation of system backup and recovery processes
- Integration of online Schedule of Classes data with shell request processes
- ETS to install additional UPS service for planned power outages.

### *Support Issues*

During the first phase of this project (June 2006-June 2008), Catalyst was primarily supported by two staff: The Instructional Designer (Distance Learning) and the System Administrator (Technology Resources Group.) As enrollment in Catalyst continued to expand, these two resources quickly became overloaded. The Technology Resources Group has begun to address the work overload by cross training two other positions (The Webmaster and the Web Support Technician) to provide technical support to our Catalyst system Distance Learning has a larger challenge, with only one Instructional Designer and a smaller overall staff, which limits the cross-training opportunities.

Near the end of the second year of operation, the De Anza College Instructional Designer accepted another position. As part of a pilot project run by the CVC with Presidium Learning for a 24/7 help desk, support for faculty continued, although not with the personal one-on-one format provided by an in-house instructional designer. A new instructional designer has been hired and is scheduled to be onboard August 4, 2007.

At the end of the pilot project in June 2007, the Distance Learning Center elected to continue with the 24/7 Catalyst Help Desk for faculty and students.

## **Phase II Summary**

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Phase II of the Catalyst project, beginning in June of 2008, will include a complete rebuild of the hardware and software which will allow the system to

better scale to support De Anza's 25,000 enrolled students. The installation will take significant advantage of clustering technologies, providing the following advantages:

- Reduced single points of failure.
- Ability to perform maintenance and upgrades with limited downtime.
- Ability to scale horizontally to support on line enrollment growth.

The above advantages translate to increased uptime and enhanced scalability, two key requirements for continued use of Catalyst.

## **Phase II Approach**

Phase II of the Catalyst project will require 3 Apple Xserve Xeon servers (8 cores, 16 GB RAM, RAID card, etc All current systems will be upgraded to Apple's OS 10.5 (Leopard) OS, and will use the 5.1 version of MySQL (with cluster).

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## **Items Beyond Scope**

- ETS installation of additional UPS capacity
- Stability of campus Network
- Scaling beyond 25,000 users/year or 1,000 courses/year

## **Projected Budget**

Define the project budget and insert it here:

Hardware costs:

- Two 2.8GHz Quad-Core Intel Xeon (8-core)
- 2GB (2 x 1GB)
- Xserve RAID Card
- 80GB Serial ATA ADM @ 7200-rpm
- 80GB Serial ATA ADM @ 7200-rpm
- 80GB Serial ATA ADM @ 7200-rpm
- 8x SuperDrive DL (DVD+R DL/DVD±RW/CD-RW)
- ATI Radeon X1300 64MB SDRAM with VGA Adapter
- None (with PCI Express x8 riser)
- None (with PCI Express x16 riser)
- Dual 750W Power Supplies
- Rack Mounting Kit - Square Hole Rack

- AppleCare Premium Service and Support for Xserve  
\$5,169.00 x 2

- Two 2.8GHz Quad-Core Intel Xeon (8-core)
- 2GB (2 x 1GB)
- Xserve RAID Card
- 80GB Serial ATA ADM @ 7200-rpm
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- 8x SuperDrive DL (DVD+R DL/DVD±RW/CD-RW)
- ATI Radeon X1300 64MB SDRAM with VGA Adapter
- None (with PCI Express x8 riser)
- None (with PCI Express x16 riser)
- Dual 750W Power Supplies
- Rack Mounting Kit - Square Hole Rack
- AppleCare Service Parts Kit for Xserve
- AppleCare Premium Service and Support for Xserve  
\$5,968.00 x 1

- Mfgr: Apple
- Product Line: Xserve
- Model: Xserve (800 MHz FBDIMM)
- 4GB kit (2GBx2)
- Part #: CT776431 • DDR2 PC2-6400 • CL=5 • Fully Buffered • ECC • DDR2-800 • 1.8V • 256Meg x 72  
\$269.99 x 12

Hardware Total: \$16,306 + \$3,239.88 = \$19,545.88

Software costs:

- OS X Server: \$499.00 x 6 = \$2,994.00.
- Xsan 2: \$499.00 x 4 = \$1,996.00

## **Milestones/Project Schedule**

The following represent key project milestones, with estimated completion dates:

<b>Milestone</b>	<b>Estimated Completion Date</b>
New Hardware/Software Installation and Testing	August 2008
Phase II goes live	Sept. 2008
Software (middleware) completed for auto creation of course shells	Sept 2011*

\* This date is estimated, based on installation and testing of our new Enterprise Information System, which is replacing our outdated SIS.

## **ASSUMPTIONS**

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### **Project Assumptions**

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The following assumptions were made in preparing the Project Plan:

- Management will ensure that project team members are available as needed to complete project tasks and objectives.
- Management will support budget required to implement
- Failure to identify changes to draft deliverables within the time specified in the project timeline will result in project delays.
- Project team members will adhere to the Communications Plan.
- Mid and upper management will foster support and “buy-in” of project goals and objectives.
- All project participants will abide by the guidelines identified within this plan.
- The Project Plan may change as new information and issues are revealed.

## **CONSTRAINTS**

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### **Project Constraints**

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The following represent known project constraints:

- Project funding sources are limited, with no contingency.
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### **Related Projects**

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District Portal Project  
New EIS system  
Distance Learning Support of Hybrid and On-Campus Web-Enhanced Classes  
Podcast Producer Pilot  
Web Archive Classroom Project

### **Critical Project Barriers**

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Unlike risks, critical project barriers are insurmountable issues that can be destructive to a project's initiative. In this project, the following are possible critical barriers:

- Removal of project funding
- Layoff of key personnel
- Reassignment of key personnel
- Resignation / Retirement of key personnel

Should any of these events occur, the Project Plan would become invalid.

## **PROJECT MANAGEMENT APPROACH**

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### **Project Roles and Responsibilities**

<b>Role</b>	<b>Responsibilities</b>	<b>Participant(s)</b>
Project Managers	<ul style="list-style-type: none"> <li>▪ Manages project in accordance to the project plan</li> <li>▪ Serves as liaison to the Technology Task Force and ETS</li> <li>▪ Receive guidance from Technology Task Force</li> <li>▪ Provide overall project direction</li> <li>▪ Direct/lead team members toward project objectives</li> <li>▪ Handles problem resolution</li> <li>▪ Manages the project budget</li> </ul>	Marty Kahn, Linda Elvin
Project Participants	<ul style="list-style-type: none"> <li>▪ Understand the user needs and business processes of their area</li> <li>▪ Act as consumer advocate in representing their area</li> <li>▪ Communicate project goals, status and progress throughout the project to personnel in their area</li> <li>▪ Review and approve project deliverables</li> <li>▪ Creates or helps create work products</li> <li>▪ Coordinates participation of work groups, individuals and stakeholders</li> <li>▪ Provide knowledge and recommendations</li> <li>▪ Helps identify and remove project barriers</li> <li>▪ Assure quality of products that will meet the project goals and objectives</li> <li>▪ Identify risks and issues and help in resolutions</li> </ul>	Kevin Metcalf, Linda Elvin, April Qian, Larry Ching, Bradley Creamer
Subject Matter Experts	<ul style="list-style-type: none"> <li>▪ Lend expertise and guidance as needed</li> </ul>	On Line Faculty

## ATTACHMENTS/APPENDICES

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*Appendices/Attachments may be included in a hardcopy form*

## APPROVALS

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### Sign-off Sheet

*I have read the above Project Plan and will abide by its terms and conditions and pledge my full commitment and support for the Project Plan.*

Project Sponsor: \_\_\_\_\_ Date

Project Manager: \_\_\_\_\_ Date

Tech Task Force: \_\_\_\_\_ Date

Tech Task Force: \_\_\_\_\_ Date

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