ANGEL® 7.3 Implementation Guide

An Introduction to the ANGEL Change Management Framework



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Introduction

ANGEL Learning has provided this document to serve as a basic guide to the implementation of the ANGEL learning management system (LMS). This implementation guide identifies project phases using the Implementation Framework described below. Also defined are many of the key decisions that should be made during each phase to enable a successful rollout and continuous adoption of ANGEL. The owners of the decisions have also been identified, but may vary depending on the organization of your institution. This guide also provides an estimated timeframe for each of the project phases. A sample timeline is provided in <u>Appendix A</u>.

Implementation Framework

The ANGEL Learning approach serves as a framework with significant latitude for adjustment based on various factors such as available timeframes, capacity, resource skill levels, and economic pressures. This framework is based on the Microsoft Solutions Framework (a best practices guide to planning, building, and deploying projects), results from our experience, and input from the ANGEL community. This facilitative process assists our customers on building consensus throughout the project.

The phases shown in the following diagram provide major objectives and milestones for the implementation team. These phases can be scaled to meet the time pressures of the project, and can be performed iteratively to build on prior aspects of the implementation. Throughout the implementation project, frequent and regular communication is essential. There is (and should be) a healthy tension between scope, delivery date, and quality.



Initiate

This phase consists of a cooperative cross-sectional team, with members of administration, IT, and faculty working to construct a high-level project plan based on information gathered by a series of meetings.

Objectives:

- a. Deliver a short vision document (1–2 pages) outlining the goals for the implementation and the desired timeline for the rest of the project.
- b. Rough in the major responsibilities of each area.

Timeline: ~10% of total time to pilot.

Design

The design phase produces a definitive list of requirements—a hard scope of what is to be expected. This phase drives decisions to be made during the project, such as training and education programs, course conversion and content management, and potential customizations and integration points. The support model for the distributed or centralized administration of the system is also defined. The result of this phase is the final project plan, incorporating milestones and dates for completion.

Objectives:

- a. Deliver a list of requirements for the implementation project, including a timeline, intermediate deliverables, and milestones.
- b. Complete foundational training and education for core team members to give them a context for decisions and activities (i.e., instructor/instructional design training and technical training).

Timeline: ~40% of total time to pilot.

Develop

The development phase is the execution of the blueprint laid out during the design phase. The system should be ready to be used for the pilot at the end of this phase.

Objectives:

- a. Install and set up the system.
- b. Develop integration programs and procedures.
- c. Implement customizations.
- d. Create training and education materials.
- e. Begin converting existing courses.
- f. Begin training of pilot end users.

Timeline: ~50% of total time to pilot.

Pilot

In this controlled yet live test environment, a limited number of participants are asked to use ANGEL and provide feedback on the system and policies. Feedback is incorporated into the ANGEL configuration prior to the system-wide rollout.

Objectives:

- a. Conduct a controlled live-environment test.
- b. Obtain feedback and incorporate appropriate changes into the material.
- c. Continue instructional designer/instructor training.
- d. Continue creating/converting courses to be launched.

Timeline: One term.

Refine

This phase is a continuous process of incorporating product upgrades and customizations as well as policy changes in order to better serve the end users. The refinement phase takes feedback from users, prioritizes their requests, and matches suggested changes with the goals of the project. If the requests are deemed appropriate, the design, development, pilot, and launch phases should be reused.

Objectives:

- a. Make revisions based on observations and feedback.
- b. Prepare for rollout in the next term.

Launch

In this phase, the final configuration is deployed to all users, training is completed, and course migrations are prepared for live instruction. The support network should be completed and in place for the initial launch to support the entire institution.

Objectives:

- a. Roll out and support the solution.
- b. Continue review and refinement process from term to term.

Initiate

During the initiate phase, the framework for the entire project is established. A project lead is designated who defines the personnel required to implement the application successfully. The Project Charter is established to guide the rest of the project.

Project Lead

To ensure ownership and successful implementation of the solution, we recommend that a project manager be identified to drive the overall effort. While such an approach may seem intuitive, this critical success factor is often overlooked by many organizations. Benefits of this approach include higher ownership of the solution, knowledge transfer for long-term gain, and greater commitment as a whole.

Project Team

In this document, the areas of responsibility have been divided by task. The size of your project team will depend on your institution. <u>Appendix B</u> provides a checklist with the high-level tasks and areas of responsibility for each member of the team. Those areas are as follows:

- **Project Lead:** Overall responsibility for the project. The project lead has the authority to make any decision required for the project.
- **Policy Lead:** Owns the finalization of policies with regard to the project.
- **Communication Lead:** Responsible for communication within the project team and to the institution as a whole.
- **ANGEL Administrator:** Responsible for configuring the ANGEL system and policies. The ANGEL administrator also serves as escalation contact for ANGEL support issues.
- Information Technology Lead: Responsible for designing, setting up, and maintaining the environment for ANGEL. The Information Technology Lead also may be responsible for customizations to the system.
- Education and Training Lead: Responsible for defining the instructional techniques and guidelines for the institution, and for ensuring that all instructional designers, faculty, and students are trained in the use of ANGEL.
- **Support Lead:** Responsible for creation of the support policies, operation procedures, and knowledge base. The support lead is also the first-level support for questions from instructional designers, faculty, and students.

Project Charter

The requirements documents developed during the evaluation and purchasing process may be used as a starting point for the Project Charter. The document should contain a high-level overview of each of the following areas:

- Goals, objectives, and key stakeholders
- Scope definition
- Approach/methodology to accomplish the work
- Deliverables
- Roles and responsibilities
- Acceptance criteria
- Work plan (including activities and resources assignments)
- Communication plan
- Desired timeline

Project Lead Tasks

Many of the critical implementation decisions will be made during the design phase of the project. Following is a list of the major objectives for the project lead:

Objectives:

- a. Monitor overall project progress.
- b. Assemble project team and leaders.
- c. Attend ANGEL training.
- d. Prioritize items to be implemented in each project phase.
- e. Determine key deadlines and dates.

Monitor Overall Project Status

As in any project, the project lead has the responsibility of monitoring the progress of the entire project. The method of monitoring varies depending on the institution, but may include periodic meetings, email updates, and/or use of a project management software tool.

Assemble Project Team

As discussed earlier, we recommend the organization shown in the following diagram. Depending on your institution's size and structure, the actual number of resources involved may vary, but all these tasks must be covered. Each team member must have the authority to make the decisions for his or her area of responsibility, and be able to work with the other team members in a manner suitable to the overall goals of the project.

Project Lead	Policy Lead	Comm. Lead	ANGEL Admin.
Monitor overall project progress. Plan and manage the project (facilitate meetings). Review and sign off on project deliverables.	Determine system policies and configuration settings for ANGEL. Determine data integration approach, term rollover process, and schedule. Define migration plan.	Determine approach for communication within the project teams, and for gathering and reporting information from all users. Communicate with administrators, faculty, and students with regard to project status, training, and important dates.	Configure ANGEL to match system policies. Serve as an escalation contact for support issues. Provide support to ANGEL users. Process SIS (integration) tasks.
IT Leac Design and develop th technical solution. Ensure that ANGEL is effectively. Tailor ANGEL to meet requirements.	e overall operating institutional Educ. & T Define instruct and guidelines will implement Determine use requirements a needs.	raining Lead Supervised Serve as to operations Help Desk practices.	Ipport Lead the advocate for s, product support, and c. d implement support tions procedures.

Each area may have one or more individuals contributing. If multiple campuses are involved, we recommend that representatives from each campus be consulted by team leads, in order to provide campus-specific voices in the process. Ideally, the project will also have representation from the stakeholders in the project (instructional designers, faculty, students, and so forth).

Attend ANGEL Training

The project lead should attend ANGEL training early in the project to help the project decision makers understand how ANGEL works. The project lead should attend these courses:

- ANGEL Online Administrator Training
- ANGEL Online Instructor Training

If the project lead cannot attend all of the training sessions, it is important that someone from the project team attend the training sessions in the project lead's place and translate technical aspects into the appropriate policies for your institution.

Note: For information regarding additional ANGEL training offerings, see <u>Appendix C</u> of this document.

Prioritize Items

During the design phase, a list of tasks will be developed. The project lead must determine which items will be incorporated into each phase, based on the project's objectives, budget, timeline, and available resources. This process is continuous throughout the life of the project as new requests come in.

Determine Key Deadlines and Dates

The project lead (with input from the other areas) must determine the final project timeline. Following are some of the important deadlines:

- Installation
- Configuration
- Pilot training
- Pilot
- Launch training
- Final configuration
- Production launch

Deadlines and their importance must be communicated to the other team leads so that the project can proceed on schedule. If any deadline is in jeopardy during the project, this fact should be communicated to the team so that appropriate alternatives can be implemented as soon as possible.

Policy Lead Tasks

Most of the policy tasks are completed during the design phase and determine the focus and direction for the other team members throughout the remaining phases of the implementation. The policy lead seeks input and representation from each of the other leads to arrive at the best policies for the stakeholders and institution.

Objectives:

- a. Determine system policies and configuration settings for ANGEL.
- b. Identify ANGEL system editors and support providers.
- c. Determine data-integration approach (account creation, enrollment, and so on).
- d. Define term rollover process and schedule.
- e. Define migration plan (if applicable).

Determine System Policies and Configuration Settings

The ANGEL environment installs with default system policies that may need to be modified to meet your institutional needs. System policies are generally configured based on the system rights level of the user. Therefore, enabling student access to a system tool also enables the tool for all users with system rights higher than that of student (staff, faculty, and so on).

Tip: System policies can be configured based on account group affiliation. This approach keeps the policies from applying to all users.

Commonly modified system configuration policies and settings include the following:

User account creation. Any user with editing rights within a course or group can create new user accounts from within the course or group. Consider restricting user-account creation rights if you intend to automate or batch-create the user accounts, or plan to require a more formal user-account creation process.

Note: The ANGEL license agreement is based on the number of active user accounts on the system; therefore, it may be advisable to limit access to the account creation tool.

Course and group creation. Students and faculty can create community groups, and faculty can create courses, by using the Create a Course and Create a Group options located on their personal home page. Consider restricting access to these tools if you plan to batch or automate the course creation process, or if you intend to require a more formal course/group creation process. You also can restrict the number of courses or groups that authorized users can create.

File upload quotas. Increasing or decreasing the default 10 MB per user quota setting directly impacts your server hard drive capacity requirements. File quotas can be uniquely configured by system rights (faculty, student, etc.), account group, or per user.

Roster management. Any user with editing rights within a course or group can add, edit, or delete roster entries from a course or group. Consider restricting roster management rights if you plan to automate or batch the roster enrollment process, or you intend to require a more formal roster enrollment process.

Public tools. The ANGEL login page provides public access to several tools, including Library Resources, Course Search, and People Search. Consider restricting access to one or more of these tools to restrict course, group, or student information from being viewed by unauthenticated users. Public tools also can be disabled, renamed, or redirected to other web-based resources or tools.

Note: Course, group, and student information (other than name, title, organization, etc.) will not display in the Course Search, Group Search, or People Search tool results for unauthenticated users unless the information intentionally has been made viewable to unauthenticated guests.

Academic codes and levels. The ANGEL application allows you to rename the default academic levels (Campus, School, and Department) to match the terminology used by your institution. In addition, the system can be configured to display full titles for each academic code (for example, display "School of Liberal Arts" instead of "SLA") and can even filter course search and creation tools to display only select codes.

Tip: Standardization of academic codes and levels is especially important in ANGEL to restrict instructor access to repositories, master courses, content templates, and content development macros. Restrictions are based on campus, school, department, and course code information.

Branding of ANGEL environment. You can customize the ANGEL environment by changing the title and banner image for the login page, or use the System Theme Editor to change background colors, styles, and fonts to match those of your institution's home page. You also can embed the ANGEL login fields directly into an existing home page or portal page.

Tip: Branding can be extended further to provide a different look-and-feel based on domain settings or account groups.

Account groups and domain settings. Account groups and domain settings allow the configuration of unique system policies and settings based on account group affiliation (account groups) or based on the web address used to access the ANGEL environment (domain settings). Therefore, you can specify unique system policies, branding, and settings for different campuses, districts, programs (non-credit, credit, Adult Ed, outreach, etc.), and user roles (faculty, students, staff, K-4, 6-8, 9-12, and the like).

Domain settings are unique in comparison with account groups because the domain's system policies apply immediately once the user has accessed the domain's web address. Consider a scenario in which users access a secondary web address for the university's outreach program (for example, http://outreach.myuniversity.edu). The user would see unique branding and public links for the outreach program. Once logged in, the user's access to tools and courses is based on the other system policies that have been set for the domain.

In contrast, account group system policies do not apply until the user has logged into the ANGEL environment. In situations where domain branding and account group–based system policies are required, account groups and domain settings can be used in combination to provide the most flexibility. For example, upon accessing the outreach web address/configuration described above, the user would see the same outreach branding as any other user accessing the web address; but upon logging into the environment, a user affiliated with the K-4 account group might be restricted to using a subset of tools to help focus the younger learner.

Identify System Editors and Support Providers

The ANGEL application supports the creation of system editors, who can be provided with any subset of system administrator tools. Available tools include user account manager; course, group, and repository managers, public tool editors (such as public calendar, public announcements, etc.), and more.

In addition, system administration filters allow the restriction of system editors to access only particular campuses, schools, departments, or semesters. This option is useful in designating support providers (system editors) whose access can be restricted easily to only those courses, groups, and learning object repositories that are affiliated with the support provider's campus, school, or department. This delegation of responsibilities allows the system administrator to focus on system-wide tasks while empowering campus, school, and department support providers to resolve local support issues.

Determine Data-Integration and Authentication Approach

ANGEL supports a wide array of options for the creation of user accounts, courses, and roster enrollment. The IT lead should investigate these options and assist the policy lead in determining the most effective data-integration approach for the implementation. When determining data-integration processes, it is helpful to consider the following questions:

Should user accounts, enrollments, and course "shells" be batch-created for each student and course section?

Batch-creation of user accounts, enrollments, and course shells for each student and course section eliminates the initial hurdles that a student and instructor might otherwise face to begin using ANGEL.

By batch-creating the user accounts, enrollments, and course shells, the instructor needs only to log into the environment (without first requesting a user account), click the title of the class (to begin adding course content without being required to create the course shell), and click the Class tab to view a list of all enrolled students (without being required to enroll each student manually).

Similarly, a student can log in to view a list of enrolled courses and click the course title to get started (without first requesting a user account or enrollment).

The removal of these barriers helps to promote increased rates of adoption for new student and faculty users through word-of-mouth and campus announcements.

Do users already have assigned usernames/passwords? If so, do they log in via NT domain, Active Directory (ADS), LDAP, or POP3 services?

ANGEL maintains its own database of authentication credentials (username and password) by default; however, it also can be configured to authenticate against one or more external methods, including Windows NT or Active Directory (ADS), LDAP, or POP3. Use of these external authentication methods allows users to log into ANGEL using the same username and password they use to log into other campus resources. Because ANGEL does not store the external password in its database, there is no need for users to synchronize their external passwords manually with the ANGEL system, and no need for your ANGEL administrator to send passwords to users.

Define Term Rollover Process and Schedule

Regardless of the data-integration approach used, it is important to define a process and schedule for course availability and archival. As a best practice, for each new term we recommend creating a new course shell for each course section. This approach provides several advantages:

- Support for course archival of previous terms based on standardized key information (for example, semester, campus, school, department, course, and section codes).
- Early faculty access to a separate course environment to prepare materials for the new term.
- Extended student access to finish incomplete course lessons beyond the end of the current term.
- Student and faculty access to previous term course materials, grades, and reports.

A common course availability and archival schedule includes the following items:

- Date on which faculty will be given access to their courses for course preparation purposes (for example, six weeks before the start of classes).
- Date on which students will be enrolled into their courses, so that faculty can view the roster (for example, two weeks before the start of classes).
- Date on which students will be given access to their courses (for example, one week before the start of classes).
- Amount of time that courses from previous terms will remain available to faculty and students (for example, the past three semesters will remain accessible to users).

The dates determined above help to resolve other important timeframes:

- When initial batch processes must take place to create the new course shells and create/enroll faculty accounts.
- When initial batch processes must take place to create/enroll student accounts.
- How often the system should be updated to reflect student drop/add activity, the addition of new courses, and changes in course information or instructor of record.

When determining the course availability and archival schedule, consider the following issues:

- How volatile are student enrollments leading up to the beginning of a new term? At what point does drop/add activity cease? What specific point in the drop/add enrollment process would provide the most static moment to perform the initial batch enrollment process?
- How much disk space will be required to allow one or more past terms to remain available to students and faculty? How many terms in the past will faculty require for easy access to their courses (consider courses taught annually and biannually, instructors on sabbatical leave, etc.)?

Define Migration Plan

If your institution is migrating from another learning management system, it will be important to define a migration plan to make the transition as easy as possible for end users. At a minimum, the migration process generally involves the scheduled import or transfer of existing course content, and clear communication of key migration dates to the stakeholders, including students, faculty, and support staff.

Note: For more information regarding communication strategies during implementation, see the *Communication Lead Tasks* section of this document.

The transition between learning management systems is generally easiest and most effective leading up to the beginning of a new term, as opposed to being conducted midsemester. This transition period is also an opportune time to verify or reevaluate your current naming conventions for usernames, course IDs, and course information; your goal should be to ensure standardization, uniqueness, ease of use, and support of ANGEL content repositories.

Key migration process decisions include the following:

- Will all course content be migrated to ANGEL at the same time, or will specific courses be migrated in scheduled phases (during the pilot phase, over several terms, etc.)?
- Will user accounts and account information be batch-created using an exported data file from the previous LMS, directly from the student information system (SIS), or by other means?
- How long will you keep your current LMS to support the transition phase(s) to ANGEL?
- Who will research and test available content migration options to help determine the institution's recommended approach?
- How will the migration information and schedule be communicated to stakeholders?
- Who will migrate existing course data (faculty, content developers, instructional design staff, etc.)?

Note: ANGEL provides course-content import toolsets for easy migration of Blackboard[™] or WebCT[™] course content exported in IMS format. Existing LMS user accounts and user account information also can be imported into ANGEL from any delimited data-export file.

Communication Lead Tasks

The communication lead is responsible for maintaining clear and consistent communication throughout the implementation process.

Objectives:

- a. Establish internal communication.
- b. Encourage faculty and student adoption.
- c. Plan a formal introduction and rollout.
- d. Encourage continuous improvement feedback.

Establish Internal Communication

All project team members must be aware of what the other parts of the team are working on, including any issues or concerns that may arise. To facilitate that communication, the following items should be considered:

- Meeting minutes:
 - Who takes the minutes?
 - Who receives copies and how are they distributed?
 - How are the minutes archived?
- Issues and suggestions:
 - What method is used for gathering issues and suggestions?
 - How are issues and suggestions prioritized?

Encourage Faculty and Student Adoption

A good communication initiative provides detailed information early in the process to ease faculty and student concerns. This communication should emphasize what to expect and the benefits of change to your audience. Recommended communication channels include the following:

- A series of "town hall" meetings, conducted at multiple locations, to present the vision and describe the process.
- Periodic teleconference events (for large consortiums or institutions), each hosted from a different member location, to serve as supplemental updates throughout the process.
- Email bulletins sent out at the completion of major milestones.
- FAQ documents posted at a common site to serve as another channel of information.

Plan Formal Introduction and Rollout

Your institution should take a well-planned approach to rolling out ANGEL to the student body. For example, begin with an online announcement to introduce students to the new system. A thoughtful approach informs students of the reason for the change, what to expect, key dates, FAQs, and to-do lists before the transition. <u>Appendix D</u> provides some sample communications.

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Encourage Continuous Improvement Feedback

Once the system goes into production, end users will have suggestions for improvements. The communication lead should set up a protocol by which these suggestions can be made, gathered, and reviewed. That information should be shared with the entire project team for prioritization and inclusion in the next refinement cycle.

ANGEL Administrator Tasks

In addition to becoming comfortable with all aspects of the ANGEL environment, the ANGEL administrator is responsible for using the ANGEL administrator tools to apply system configuration policies, custom environment variables, and branding.

Objectives:

- a. Learn ANGEL administrative and instructor toolsets.
- b. Apply system configuration policies.
- c. Apply ANGEL updates.

Learn ANGEL Administrative and Instructor Toolsets

As the application specialist for your institution, the ANGEL administrator must become comfortable with both the administrative and instructor toolsets of the ANGEL application. Several resources are available to the ANGEL administrator:

- Online Administrator Training and Online Instructor Training
- Administrator, programmer, and end-user documentation
- Support portal, including administrator knowledge base (http://support.angellearning.com)
- Administrator online community (http://listserv.iupui.edu/archives/angel-l.html)
- ANGEL Learning support staff (317-333-7300x2, Mon-Fri, 8am-7pm)

The ANGEL administrator should enroll in the Online Administrator Training course as soon as possible once the ANGEL environment (or a test instance of the application) has been installed. Many administrators prefer working in a separate test instance of the application to allow experimentation with the available toolsets without worrying about affecting the pilot environment.

Note: The Online Instructor Training course does not require installation of ANGEL to be complete before enrollment. For information regarding additional ANGEL training offerings, see <u>Appendix C</u> of this document.

Apply System Configuration Policies

Based on the decisions made in the design phase, the ANGEL administrator is responsible for applying system policy and configuration settings for the ANGEL environment. Most of these policies can be configured using the ANGEL System Configuration Manager; additional system configuration can be accomplished through the use of environment variables and INI settings.

Note: For information regarding how to use the System Configuration Manager, Environment Variables Manager, and INI Settings Manager, see the *ANGEL Administrator Reference*. For information regarding INI settings and environment variables, see the *ANGEL Programmer's Reference*.

Apply ANGEL Updates

Depending on the institution, the application of ANGEL updates may be the responsibility of the ANGEL administrator or the IT lead. ANGEL updates typically are released the first Monday of each month. These updates are available in the ANGEL administrator console. We recommend that each update be installed soon after its release.

Information Technology Lead Tasks

The primary role for the IT lead during the design phase is to determine system requirements for the pilot and final production environment, and to research other IT-related tasks that have an impact on the design and development phases.

Objectives:

- a. Determine server and network configuration requirements.
- b. Investigate data-integration and authentication options.
- c. Develop database and file server backup and maintenance plans.
- d. Purchase and install hardware, operating system, SQL Server, and ANGEL.
- e. Test and evaluate server performance.

Determine Server and Network Configuration Requirements

The ANGEL environment is implemented as an Internet Information Server (IIS) web application, on a single server or in a session-aware, load-balanced configuration with two or more web servers. The ANGEL application is composed of SQL Server databases, a set of Active Server Pages (ASP) scripts, custom DLL components, and files uploaded into the environment by end users. With the exception of binary files uploaded by end users, all data for the environment is stored in the ANGEL database. The ASP script framework provides session-state management and acts as a host for the custom ANGEL DLL components.

In a production environment, the ANGEL database and IIS web application should be run on separate servers to optimize system tuning and increase data security. For very high-volume implementations, the database file system can be tuned to provide optimal performance. Redundancy at the database layer can be accomplished using SQL Server data-replication services or hardware clustering. Typically, database servers should be dual- or quad-processor machines. Extremely active sites (with 100,000 or more users) may require an eight-processor machine for fast response times.

When web server load balancing is used, a shared file system must be implemented to store files uploaded by end users. This shared file space can be implemented on a network-attached storage (NAS) system. The shared directory is linked to and from all the web application servers by means of a virtual directory that references the shared folder.

When determining server and network configuration requirements, consider the following questions:

How many users will be using the system in two years?

We recommend basing system requirements on projections of the anticipated number of active users and active courses one to two years into the future. File and database space requirements depend on how much historical data is kept live on the servers versus being stored elsewhere (such as in network-attached storage).

The following formula shows the general rule for calculating file space needed:

2 MB x (number of active users) + 10 MB x (number of active course sections) Database space required

For example, 10,000 active users and 1,000 active course sections would require approximately 30 GB of file space.

For database space requirements, use the following assumptions:

- Web-enhanced courses: 10 MB database space
- Online-only courses: 50 MB database space
- User account:
- 20 KB database space

For example, 10,000 user accounts would need 200 MB, and 1,000 active course sections would need from 10 to 50 GB.

How many past terms will remain accessible on the server at any one time?

This total does not affect the CPU and memory requirements of the server, but it does impact the amount of disk space you will need for the database and file systems. For example, based on the estimates above, to leave 1,000 course sections per term accessible for three terms would require an additional 10 GB of file space, and an additional 30 to 150 GB of database space.

Do instructors/students have special disk space needs (extensive use of high-resolution imaging, video, etc.)?

Institutions that make extensive use of video content, high-resolution images, etc. (such as online arts colleges and medical schools) should modify estimates for required file space per course to account for the average course size. Using ANGEL learning object repositories is recommended for commonly referenced media content to reduce the amount of redundant data stored on the file server.

What RAID configuration will best suit the OS and data drives?

We recommend RAID 1 or RAID 5 configurations on both web and database servers to ensure uptime in the event of a hard drive failure. RAID 5 configurations are ideal, as they provide means to increase available space by adding hard drives.

Note: For more information regarding system configuration requirements, see the System Requirement Guidelines .

Investigate Data-Integration and Authentication Options

The ANGEL application supports a wide array of options for the creation of user accounts, courses, and roster enrollment. It is the role of the IT lead to investigate these options and help the policy lead to determine the most effective data-integration approach for your implementation. When determining data-integration processes, it is helpful to consider the following questions:

Does your enrollment database or student information system support the export of user accounts, enrollment, and instructor-of-record information?

Course creation, user account creation, and user enrollment can be performed as batch processes by using the Batch Enrollment/Account Creation and Text Import Wizard ANGEL toolsets. This technique works on any format of delimited data file. Similar batch processes can be used to update the system to reflect student drop/add activity, changes in user account information, etc.

Note: Course creation, user account creation, and user enrollment can also be performed by the instructor, system administrator, or system editor using a one-by-one approach. Instructors can also batch-enroll students or enable students to self-enroll into a course or group.

To increase the reliability, accuracy, and efficiency of data integration, these processes can be automated using the optional ANGEL Extended Enterprise Integration (XEI) software package to perform real-time or near-real-time synchronization of ANGEL with your student information system or database.

Note: For more information regarding the use of the Batch Enrollment/Account Creation and Text Import Wizard toolsets, see the ANGEL Administrator Reference available on the ANGEL support portal.

Do users already have assigned usernames/passwords? If so, do they log in via NT domain, Active Directory (ADS), LDAP, or POP3 services?

ANGEL maintains its own database of authentication credentials (username and password) by default; however, it can be configured to authenticate against one or more external methods, including Windows NT or Active Directory (ADS), LDAP, and POP3. Using these external authentication methods allows users to log into ANGEL using the same username and password they use to log into other campus resources. Because ANGEL does not store the external password in its database, there is no need for users to synchronize their external passwords manually with the ANGEL system.

Develop Database and File Server Backup and Maintenance Plans

As with any mission-critical application, the ANGEL environment should have a backup and maintenance plan to support rapid system recovery in the case of hardware failure. Two steps are needed to complete a full backup of the ANGEL application:

1. Back up the ANGEL SQL Server database (using scheduled SQL Server database backups).

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2. Back up the ANGEL file system (AngelSites directory) and database backup files. (These backup processes typically should be scheduled daily, at a time early enough to be completed prior to peak use time.)

When developing web server and database backup and maintenance plans, consider the following questions:

Will you use the standard SQL Server backup and Windows Server NT Backup utilities to back up the file and database servers, or will you use a third-party utility such as Symantec (formerly VERITAS) Backup Exec?

Many administrators find the standard SQL Server backup and Windows Server NT Backup utilities to be effective in backing up the ANGEL database and file server, allowing easy restoration of the resulting backup files.

Third-party backup utilities such as Symantec (formerly VERITAS Backup Exec) can provide more robust functionality, ease of use, and the ability to back up an SQL database directly to a tape or network drive. (SQL Server backup must write to the local drive before being backed up to a secondary location.)

Standard SQL Server backup and Windows Server NT Backup utilities provide a cost advantage, though, as they are included with your database and server OS licenses at no additional cost.

Will backups be stored to a different network drive or to tape?

It is a good idea to back up the database and file data to a secondary location such as a network drive or tape backup system. If a tape backup system is used, backup tapes can be taken offsite to provide a higher level of protection.

What type of backup is recommended and how long should backup files be kept?

Many institutions create nightly incremental backups of the file system while performing a normal (or full) backup once per week. The SQL Server backup utility always creates a full backup. The resulting backup files commonly are kept for a period of several days to several weeks (depending on the institution's datarestoration needs) before deletion or recycling.

What time of day/evening should the backup procedures be conducted?

The amount of time you will need for a scheduled backup depends on the size of your database and the amount of time required to write to a tape or network drive. If you are using the SQL Server backup utility, the file system backup should be scheduled to run after the SQL Server backup has completed.

The ANGEL administrator may consider adding a global announcement to the ANGEL site to alert users that the application may not be available or fully functional during the specified maintenance window. This arrangement provides a time for the server administrator to apply server/application updates, and run backup and batch processes that may slow server performance.

Purchase and Install Server OS, SQL Server, and ANGEL

To begin this phase of the implementation, the IT lead needs to install the application server(s) based on the system requirements determined in the design phase. Larger installations that require the use of clustering and/or load balancing must be configured before proceeding with the installation of ANGEL. Also, be sure to review the *ANGEL Installation Guide* to prepare for installing the ANGEL application.

Test and Evaluate Server Performance

Server performance can be evaluated using several different approaches. For smaller installations, the pilot itself can serve as an indicator of server/application performance. However, evaluating server performance during the development phase is preferable. This plan allows the server administrator to work through potential issues prior to the pilot phase.

Some institutions find value in conducting a load simulation using a group of 20 or more users to verify application responsiveness and functionality.

Software-based stress-testing tools, such as the Microsoft Web Application Stress (WAS) tool, are easy to configure and allow the network administrator to simulate a heavy traffic load to determine the servers' maximum traffic capacity.

Note: For more information regarding the Microsoft Web Application Stress (WAS) tool, visit http://support.microsoft.com/default.aspx?scid=kb;en-us;313559.

Education and Training Lead Tasks

The education and training lead is responsible for learning the ANGEL application, determining training needs, developing and delivering training sessions for faculty and students, and updating documentation with custom configurations.

Objectives:

- a. Develop expertise in the ANGEL environment.
- b. Determine training needs and develop training sessions.
- c. Define content development/conversion best practices.
- d. Review and update end-user documentation.

Develop Expertise in ANGEL Environment

To prepare for the development of training topics, the ANGEL trainer must become familiar with student and instructor toolsets. Several resources are available to the ANGEL trainer:

- Online Instructor Training course
- End-user documentation (available for download from support.angellearning.com)
- ANGEL knowledge base (support.angellearning.com)
- ANGEL online community (http://listserv.iupui.edu/archives/angel-l.html)

To jumpstart the learning process, the ANGEL trainer should enroll in the Online Instructor Training course and review the ANGEL end-user documentation.

Note: For information regarding additional ANGEL training offerings, see <u>Appendix C</u> of this document.

Determine Training Needs and Develop Training Sessions

Orientation sessions are a good way to introduce new students to login procedures and the most common application tools. While many institutions find that no additional training is necessary for students, faculty users generally require a more comprehensive selection of training topics (due to the greater number of toolsets they use to create course content, view student reports, and track student grades).

Define Content Development/Conversion Best Practices

Your institution's instructional design lead and early adopting faculty users are ideal candidates to research and suggest best practices for course development, sharing of course content, and conversion of course content from previous course management systems.

Learning Object Repositories

ANGEL learning object repositories, master courses, content templates, and HTML Editor macros allow instructional designers, course coordinators, and instructors to share instructional content and resources. Access to these tools can be restricted to courses and groups, based on campus, school, department, and course codes.

Content Conversion

In general, course conversion approaches include the automatic conversion of WebCT[™] or Blackboard[™] IMS exports (using the ANGEL Import tool), or the creation of the course from scratch, using existing electronic course materials and ANGEL batch toolsets. The best approach will vary for each course, depending on the content and structure of the source course. Importing course content by using the ANGEL Import tool sometimes requires the imported content to be restructured due to different content organization approaches among different LMS products.

Note: For more information on WebCT[™] and Blackboard[™] conversions, refer to the WebCT[™] Switcher's Guide and the Blackboard[™] Switcher's Guide, available on the ANGEL support portal.

Review and Update End-User Documentation

If the project team chooses to configure unique system policies and configurations for the ANGEL system, the ANGEL documentation will require a review to identify areas that may need to be revised. If some or all of these system policy decisions are made early in the design phase, the education and training lead can make notes on the topics that require revision during the first read-through of the documentation. Other project members may be able to offer assistance with this task throughout the implementation project.

Support Lead Tasks

The role of the support lead involves developing application expertise on the ANGEL application, developing help procedures, and identifying commonly asked questions.

Objectives:

- a. Develop expertise with ANGEL end-user functionality.
- b. Define a support issue escalation protocol for ANGEL.
- c. Document commonly asked questions.

Develop Application Expertise

The support lead has many resources available to gain expertise on the ANGEL application. In addition to participating in pilot training sessions, the support lead should assist with review of the ANGEL documentation, identifying areas to be revised for institution-specific configurations. The ANGEL knowledge base is another useful resource. Documentation and the knowledge base are available online at <u>support.angellearning.com</u>.

Note: For information regarding additional ANGEL training offerings, see <u>Appendix C</u> of this document.

Define Support Issue Escalation Protocol

The process for resolving user support issues can be made more efficient by escalating more difficult support issues to support team members who develop expertise with the ANGEL environment. Ideally, all support members should develop a comfort level with the application in order to handle common support issues, but be provided with a documented escalation procedure for issues that require more involved research or knowledge of the application. Issues that cannot be resolved by the support team should be escalated to your institution's designated ANGEL administrator.

Document Commonly Asked Questions

Consider documenting application questions that come up during implementation, as it is likely that other project team members and future end users will have the same questions when they begin learning the new application. The resulting document provides a great start toward creating a knowledge base or frequently asked questions document for use by the support staff and end users. Further, the resulting set of knowledge articles can grow over time and help define a base level of end-user support issues. These issues should be able to be answered using online resources or first-tier support staff.

Appendix A: Sample Timeline

Initiate	
	Project Kickoff Meeting
	Define project schedule.
	Complete Project Charter (objectives, constraints, assumptions, roles and responsibilities).
Design	
	Administrator training.
	Instructor training.
	Install hardware.
	Installation Planning Meeting
	Install ANGEL.
	Configuration Meeting
	Complete and review ANGEL configuration design.
	Content Conversion Meeting
	Determine and document course cleanup approach.
	ANGEL Data integration and Term Administration Meeting
	Determine and document ANGEL administration procedures.
	Determine user training needs.
	Identify support resources.
Develop	
	Configure ANGEL.
	Import/create content.
	Develop and review launch communications.
	Develop and review training.
	Document support procedures.
Pilot	
	Complete course conversion, cleanup, and review.
	Deliver pilot communications.
	Deliver training.
	Complete ANGEL administration procedures.
	Pre-Pilot Status Meeting
	Begin pilot.
Refine	
	Post-Pilot Status Meeting
	Refine configuration.
	Refine support.
	Refine training.
	Refine communication.
Launch	
	Complete course conversion, cleanup, and review.
	Deliver launch communications.
	Deliver training.
	Complete ANGEL administration procedures.
	Pre-Launch Status Meeting
	Begin launch.

Appendix B: Project Checklist

Project Lead

- Prepare Project Charter.
 - Define goals and objectives.
 - Define scope.
 - Define project team.
 - Define timeline.
- Develop project plan.
 - Assemble project team.
 - Attend ANGEL training.
 - □ Confirm goals and objectives.
 - $\hfill\square$ \hfill Prioritize wants and needs against goals and objectives.
 - Set key deadlines and dates.
- Monitor progress of project.

Policy Lead

- Determine data-integration approach.
 - User accounts batch-created?
 - Enrollments by batch?
 - Course shells batch-created?
- Determine authentication approach.
- Define migration plan.
- Determine ANGEL system administrators and support providers.
- Determine term rollover process and schedule.
- Determine system policies and configuration settings.
 - User account creation.
 - \Box Course and group creation.
 - File upload quotas.
 - Roster management.
 - Public tools.
 - $\hfill\square$ Academic codes and levels.
 - Branding.
 - Account groups and domain settings.

Communication Lead

- Establish internal communication.
 - Meeting minutes.
 - Mechanism for issues and suggestions.
 - Communication between leads.
- □ Encourage faculty and student adoption.
 - Town hall meetings.
 - Teleconferences.
 - Email.
 - FAQs.

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Announcements.

Continuous improvement feedback.

ANGEL Administrator

- Learn ANGEL.
- Apply system configuration policies.
- Apply ANGEL updates.

Information Technology Lead

- Determine server and network configuration.
- Investigate data integration.
- Define integration with current Student Information System (SIS).
- □ Investigate authentication.
- Develop web server and database backup and maintenance plans.
- Purchase hardware and software.
 - Install server OS.
 - Install IIS.
 - Install SQL.
 - Install ANGEL.
- Test and evaluate performance.

Education and Training Lead

- Develop expertise with ANGEL environment.
- Determine training needs and develop training sessions.
- Define content development/conversion best practices.
- Plan learning object repositories.
- Plan content conversion.
- Review and update end-user documentation.

Support Lead

- Gain application expertise.
- Define support issue escalation protocol.
- Document commonly asked questions.
- Develop end-user policies and procedures information sheets.

Appendix C: Training Resources

Online Instructor Training

This two-week self-paced training window provides a practical focus on key aspects of ANGEL for instructors and instructional designers. The course is moderated and typically requires 15-30 hours to complete. Topics include the following:

- Content development
- Effective utilization of assessment and collaboration tools
- Advanced course design

Onsite or Remote Instructor Training

For groups of up to 12 participants, the full-day onsite workshop provides detailed, hands-on activities. Topics include the following:

- Content development
- Effective utilization of assessment and collaboration tools
- Advanced course design

An optional remote format is conducted in four sessions, two hours each, using application sharing and phone conferencing tools. Participants in both formats have access to the Online Instructor Training course.

Onsite or Remote Advanced Instructor Training

For groups of up to 12 participants with previous ANGEL and course management system experience, the full-day, hands-on onsite workshop covers selected advanced topics, including the following:

- Sharing content using learning object repositories and master courses
- Personalizing learning paths and enabling dynamic alerts using agents

An optional remote format is conducted in four sessions, two hours each, using application sharing and phone conferencing tools.

Online Administrator Training

This four-week self-paced training window provides a practical focus on key aspects of ANGEL for administrators. The course typically requires 15–30 hours to complete. Topics include the following:

- User account management
- Importing to and exporting from the ANGEL database
- Administration tools

• Introduction to portal customization

Remote SQL Query Training

This hands-on workshop covers the use of SQL Query language, the SQL Query Manager, and the ANGEL database schema to teach participants how to create custom reports, troubleshoot user data issues, and more. The SQL Query training course is conducted in four sessions, two hours each, using application sharing and phone conferencing tools.

Environment Programming and Portal API

To help programmers to understand and apply the ANGEL application programmer interface (API) and other customization tools, we offer three one-day courses:

- Environment Programming
- Portal API
- Component API

The Environment Programming class is a prerequisite for the other two courses. This workshop format focuses learning on specific customization experiences and outcomes selected by the participants. Due to the nature of these workshops, size is limited to three participants.

Technical Consulting Services

One of the strengths of ANGEL is its ability to be tailored and enhanced to meet customers' specific requirements. Our experienced consultants are available to help you through all or any part of the implementation process—defining requirements, analyzing solutions, implementing the solution using the ANGEL APIs and other technologies, and deploying the tested capability. This type of consulting includes the following common projects:

- Single sign-on authentication
- Custom integration with enterprise systems or applications
- Enhanced reporting

Appendix D: Communication Examples

Introduction letter outlining reasons for change

"For every school that grows, there comes a time when the school facility itself becomes a limitation. At that point, the school is rebuilt, its peeling wallpaper and leaky ceilings are repaired, or it moves to some swanky new building across town. Hundreds of students have sent us suggestions for features they'd like to see implemented at <Your Institution> (maybe you're one of them!), and we've been listening."

Assurances that the change will be as seamless as possible

"Every attempt will be made to make this exciting change as seamless as possible for students and faculty. There will be no major interruption of service. Students can post assignments or inquiries in the current environment until <Transition Date>, and log in to retrieve content or email right up to launch day on <Transition Date>. Make sure that you are aware of all key dates."

Expectations for completion of an orientation session

"Students must complete the ANGEL Orientation and fill out their new User Profile before submitting any messages or assignments in classes."

Direction for familiarization

"What can you do now? Take the time now to get familiar with the important facts, dates, and policy changes related to this school transition. Get all the facts on the following pages to make sure that you're fully prepared for launch day. Have a question? Check out the FAQ, or email our hotline at <Support Desk>."