Session Description

- This presentation will prepare NM Banner institutions to implement their own Banner XE upgrades.
- This presentation will be an overview of the best practices in implementing Banner XE.
- This presentation will address both functional and technical issue.
Agenda

- Quick Overview of Banner XE
- Planning for the Banner XE Applications
- Plan Technology Upgrades
  - Database Extension
  - Identity Management
  - Hardware and Deployment
  - Extensibility
- Plan Skill Set Development
- How we can help
- For More Information . . .
Quick Overview of Banner XE
From Horizon to Banner XE

2009
Selected Java stack

2010
Shared vision and built initial platform/integration

2011
Shared roadmaps
Delivered
Course Catalog
Class Schedule

2012
XE Roadmaps
Faculty Grade
Event Mgmt
Attendance
Alpha I

Proprietary and Confidential
Key Benefits of Banner XE

- Part of a Broader Strategy
- Functionally Rich
- Improved Usability
- Standards-based Architecture
- Optimized Delivery
- Extensibility Architecture and Tools
Banner XE Adheres to Ellucian XE Principals

- Evolutionary path from Banner 8 to new common architecture
- Standards-based, Open, Modern and Flexible
  - Default patterns and design models: Model View Controller, Data Context and Interaction, REST
  - Client-side technologies: HTML5, CSS3, JavaScript
  - Server-side technologies: Groovy, Java, Grails
  - HE Domain specific: IMS LIS, PESC, SPEEDE
  - Trend away from proprietary stacks, vendor lock-in
- Scalable and Reusable
  - Lightweight modules and components
  - REST based web services
  - Common platform for all applications
Transitioning to Banner XE

Central Authentication Service (CAS)

BEIS SSO Manager

Banner 8 INB
- Banner
  - General
- Student
- HR
- Finance
- Financial Aid

Banner 8 SSB
- Banner
  - Student
- Faculty
- Employee
- Financial Aid

Banner XE
- Student
  - Catalog
  - Schedule
  - Faculty GE
  - Attendance Tracking
  - Registration

Banner Database

DBEU
New Administrative Interface Standards

Search

Pages that were closed

Former 'Options' Menu

Improved Usability
Implementation Considerations

Applications

Institutional Objectives

Technologies

Skills

Proprietary and Confidential
Planning for the Banner XE Applications
Banner XE is Available Today!

Catalog & Schedule – September 2011
  - Improved global user experience

Faculty Grade Entry – January 2012
  - Improved grading tools help better serve students

Attendance Tracking – September 2012
  - Record attendance on a learning event
  - Complements Faculty Grade Entry

Event Management – February 2012
  - More efficient registration and attendance
### COREQUISITE COURSE

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<th>To Term</th>
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### EQUIVALENT COURSE

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### Faculty Grade Entry

**German 0204 101, Section 0**

- Some students rolled
- Course Reference Number: 8006

**Course Details**

- Eligible: 3
- Registered: 3
- Graded Final: 1

**Course Dates:** 08/01/2011 - 12/31/2011

**Primary Instructor:** Cyndy K. N. Rand-Bunte

**Secondary Instructor(s):**

#### Enter Grades

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**Profile Information:** To continue you will need to create a guest account

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- **Last Name:**
- **Surname Prefix:**
- **E-mail Address:**
- **Date of Birth:**

**Phone:**
- **Country Code**
- **Area Code**
- **Number**
- **Extension**

**Street Address**
- **Street Address Line 1**
- **City**
- **State or Province:**
- **ZIP or Postal Code**
- **Country:**

**Username and Password**
- **Username**
- **Password**
- **Re-Type Password**

[Create Account] [Cancel]
### Attendance Tracking

**November 14, 2013**

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Banner XE Registration Starting Beta Now
Plan Technology Upgrades:

Best Practice: **Apply Database Extension Utility Now**
What is the Database Extension Utility (DBEU)?

- Tool for applying large scale database changes to Banner

- First Use: Apply and enable new columns needed for Banner XE and Multi-Entity Processing Support

- Functionality will be expanded as new changes are required
Two Phased Approach

- See Database Extension Utility User Guide for the Banner software dependencies

- **Phase 1 – Add the columns**
  - Add columns to all tables as NULLABLE
  - Known schema to develop against
  - Minimal impact

- **Phase 2 - Enable the Columns**
  - Done incrementally as part of installations
  - Banner 8 and XE releases
  - Application of Multi-Entity Processing
Plan Technology Upgrades:

Best Practice: Plan Identity Management Strategy Now
FIVE CORE IDENTITY MANAGEMENT ELEMENTS

Authentication  
Enterprise Directory  
Role-Based Authentication  
Federated Identity  
Reduced or Single Sign-On
Types of Authentication

- **Local Native Authentication**
  - We continue to support the current authentication methods
  - Support any developed client integration using these methods

- **LDAP Authentication**
  - Applications can authenticate against a configured directory server
  - Allows a common login identifier and credential to be shared by all applications.

- **Claims-based Authentication**
  - Applications support a pre-authenticated token used to establish user identity.
  - Supports identity management controlled environments and provides support for WebISO SSO protocols
CAS Ticket-based SSO

Enterprise Directory

CAS

SSB

INB

Banner XE

TEM

Luminis

SSO Manager

Standards-based Architecture
Central Authentication Services (CAS) Support

- SSO Manager requires the UDCIdentifier to identify the user
- Earlier versions of CAS required extension to provide this attribute
- `bannerValidate` (moving to `samlValidate`)
  - validates a CAS token
  - returns the UDCIdentifier
- Supported CAS versions
  - 3.2.1.1, 3.3.1, and 3.4.2.1 are supported.
SSO Manager

- SSO Web Proxy for INB & SSB
  - Supports claims-based authentication
    - CAS mode
    - 3rd party mode (Shib, OAM, etc.)
  - Supports proprietary (bannerValidate) and standard (samlValidate) CAS validation services
  - Supports deep-linking to INB and SSB
  - Consolidates BEIS SSO functionality

- “SSO Service” Provider
  - Web services that help applications implement claims-based SSO
    - Luminis 4
    - BDM
Plan Technology Upgrades:

Best Practice: **Budget for Hardware and Plan Your Deployment Now**
Summary of Performance Activities

**Summary**
- Multiple dedicated performance environments
- Tune applications on Tomcat, deploy to BIG Test* with WebLogic
- Automated test scripts for specific functional use cases
- Basic methodology
  - Execute test
  - Identify hot spots
  - Tune the code
  - Redeploy
  - Retest

**XE Focused testing**
- Event Self Service
- Event Management Admin
- Registration Self Service
- Registration Admin
- Course Catalog
- Class Schedule
- Faculty Grade Entry

*BIG TEST – internal reference to Banner Integrated Test Environment*
BIG TEST Performance Objectives

- All transactions <3 seconds; 90% of the time
- No known memory leaks
- Scale applications (stand-alone and in a mix) to a representative number of concurrent users
  - Example: scale Registration to 2500 concurrent users, 2000 self-service, 500 administrative
- Initial scale targets, future targets will be higher
  - 50, 100, 500, 1K, 5K, ...
- Validate performance in an environment similar to a Institution’s environment – Luminis, ODS, Degree Works
- Create Banner XE Sizing Guide
Banner XE Sizing Guide

- Will be available on the Commons shortly
- Key Deliverables
  - hardware, software, and configuration information for all performance tests
  - tables for memory and CPU core usage for each application for given numbers of concurrent users
  - formulas to determine hardware and configuration based upon information provided in the tables
  - recommended configuration information for optimal performance for the database, application server, and each application
Banner XE: Memory Sizing Formula / Table

- **XE Administration:**
  - 2GB min and additional
  - ~2GB per 100 users.

- **XE Self-Service:**
  - 1GB min
  - ~1GB per 100 users.

- **XE Registration Beta I:**

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<th>MB for 50 CUs</th>
<th>MB for 100 CUs</th>
<th>MB for 500 CUs</th>
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<td>6GB</td>
<td>30GB</td>
<td>60GB</td>
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</table>
Banner XE: Core Sizing Formula / Table

- XE Administration:
  - ~125 users per core.

- XE Self-Service:
  - ~200 users per core.

- XE Registration Beta I:

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<th>Application</th>
<th>Core(s) for 50 CUs</th>
<th>Core(s) for 100 CUs</th>
<th>Core(s) for 500 CUs</th>
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<td>3</td>
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Banner XE Sizing Recommendations

- Deploy multiple apps / app servers, depending on memory / cpu sizing
- Memory Requirements: allocate no more than 75% of physical or VM memory to all application servers running on the same server
- Number of Cores per Box >= Number of managed Servers per Box + 1
Current Minimum Requirements (pre-Sizing Guide)

- **Oracle Database Versions**
  - 11.1.0.7, or
  - 11.2.0.2

- **Application Servers**
  - Oracle Fusion Middleware 11gR1 using WebLogic 10.3.4, 10.3.5, and 10.3.6
  - Apache Tomcat 6
Operating Systems per Application Server

- Red Hat Linux 5.3 or 5.6 on WebLogic (64 bit)
- Red Hat Linux 5.3 or 5.6 on Tomcat (64 bit)
- Windows Server 2008 on WebLogic (64 bit)
- Windows Server 2008 on Tomcat (64 bit)
- Solaris 10 on WebLogic (64 bit)
- Solaris 10 on Tomcat (64 bit)
- AIX 6.1 (JDK 1.6.0 SR10 or higher) on WebLogic (64 bit)
- AIX 6.1 (JDK 1.6.0 SR10 or higher) on Tomcat (64 bit)
- HP-UX 11iV3 (11.31) on WebLogic (64 bit)
- HP-UX on Tomcat (64 bit) (Version not specified.)

Note: Higher versions are supported once Oracle supports them
Additional Software Requirements

- **Database Extension Utility must be applied**
- **Java 6 JDK** must be installed on the application server platform with the components for Java 1.6.X (64 bit).
- **Current Banner XE Browser Support**
  - IE8, IE9, Firefox 10x (current extend support release), Firefox *most current*, Safari 5 (OSX), Chrome *most current*
- **Tablet Support** (only for Self Service apps)
  - iPad iOS - 5.x, 6.x, and 7.x planned
  - Android - 3.x, 4.x
Plan Technology Upgrades:

Best Practice: **Plan Out How You are Going to Handle Extensibility Now**
Banner XE Extensibility Strategy

- Eliminate (or at least greatly reduce and simplify) rework associated with upgrades
- Eliminate the need to modify source code, but if necessary, make it easy for continuous integration
- Provide a toolbox
- Make tools simple to use
Four Categories of Extensibility

- **Customize to Match Your Institutional Look-and-Feel**
  - Change colors, graphics, fonts
  - Change field labels, error message text

- **Extend Applications to Match Your Business Process**
  - Capture additional data – SDE, table extensions, UI
  - Hide UI components that are not relevant
  - Add additional edits and simple business logic

- **Modify Applications to Match Your Business Process**
  - In-line modifications to change application behavior when needed

- **Develop & Integrate Custom Applications**

ellucian.
Four Categories of Extensibility Tool Projects

- **Configure to Match Your Institutional Look-and-Feel**
  - CSS Editing Tool
  - Property File Editing Tool

- **Extend Applications to Match Your Business Processes**
  - Page Extension Tools – Admin, Self-Service

- **Extend Database Tool**

- **Extend Domain Model Tool (AST Transformation Tool)**

- **Rules Engine (DROOLS)**

- **Aspect Oriented Programming (Developer Guide)**

- **Modify Applications to Match Your Business Processes**
  - Code Modifications (Git Repo and Developer Guide)

- **Develop & Integration Additional Applications**
  - New Applications (Git Repo and Developers Guide)
  - Page Builder Tool

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**Extensibility Architecture and Tools**

- **Customize**
- **Extend**
- **Modify**
- **Develop**

- **Increasing Complexity**
- **Greater Automation**
Plan Skill Set Development

Best Practice: Ascend the Learning Curve Now on Necessary Skill Sets
Understand Required Skills

- Type of institutional approach:
  - Baseline
  - Modifications and enhancements
Understand Required Skills - Baseline

- Infrastructure
  - Java Platform
  - Application server
    - Configuration
    - Application deployment
    - Tuning
  - Oracle Database
  - Banner DBA
- Banner XE Deployment
  - Property files
Understand Required Skills

- Banner XE Customization
  - CSS
  - Property files

- Banner XE Application Development
  - Model-View-Controller pattern
  - Groovy
  - Grails
  - jQuery and ZK
  - Source Code Management with Git
How we can help
How we can help

- Hardware planning
- Banner XE planning and implementation services
  - Environment review
  - Banner XE application review
  - Banner Patches
  - DBEU
  - Application Server
  - Identity Management (Planning / BEIS / CAS / SSO)
  - XE deployment
- Banner XE customization training
  - Java
  - Groovy / Grails
  - Banner XE Modifications
- Banner XE enhancements

Contact your Customer Relationship Manager or Gideon Sanstra Gideon.Sanstra@ellucian.com
For More Information . . .

- Access Resources on the Commons
  - Banner XE Development Practices
  - Banner XE FAQs
  - Innovation webinars
- Download documentation from the Support Center
- Attend an Ellucian education class
- Look for sessions at Ellucian Live 2014
Summary

- Banner XE applications are available and are being implemented by a number of institutions
- Preparations for Banner XE can start now based on your institution’s needs and aptitude
- Information is available at ellucian.com, the Commons, and from your peer institutions to help you plan your implementation
- Ellucian has Professional Services available to help you implement
Questions, Comments, Clarifications