EA in Higher Education

Introduction & Practical Approaches

| Educause | Orlando | October 28-31, 2008 |
The following material was presented at a full day workshop / seminar at Educause 2008 in Orlando, Florida, USA.

The workshop was a joint effort between Charles Sturt University and British Columbia Institute of Technology.

It was attended by more than 40 attendees.

Session abstracts follow.
Seminar 04F - Enterprise Architecture in Higher Education: An Introduction and Practical Approaches

PLEASE NOTE: Separate registration and fee are required to attend this seminar.

• Session Details
  • Tuesday, October 28, 2008
    8:30 a.m. - 4:30 p.m.
    Room W330G
    Full-Day Seminar

Speaker(s)
• David Bedwell, Director, Service Alignment, Charles Sturt University
• David Cresswell, Associate Director, IT Services and Strategic Practices, British Columbia Institute of Technology
• Leo de Sousa, Manager, Business Application Services and Enterprise Architecture, British Columbia Institute of Technology
• Diane Ireland, Director, Enterprise Architecture & Liaison, Charles Sturt University
• Session convener: Kent Percival, Manager, IT Development, University of Guelph
Abstract

- British Columbia Institute of Technology and Charles Sturt University both practice enterprise architecture and created EA communities in the higher education sector in Canada and Australia, respectively. This workshop will introduce EA and its key components and provide you with practical approaches, tools, and examples to apply EA on any scale.

- EA offers a foundation for building technology and information plans aligned with strategy; creating an application portfolio based on needs, not wants; improving communication between communities; creating master data management; implementing identity management; and understanding complexity to help make better decisions.

- EA is neither hype nor panacea. If you’re starting from scratch, this workshop will help you save time and energy. If you’ve already embarked on the EA journey, it may rejuvenate you and give you fresh ideas and a new network.
Today

1. Introduction and What is EA?
2. Foundation EA Tools and Application
3. Journeys, Principles, and Q&A
Introductions

Leo de Sousa,
Manager, Business Application Services & Enterprise Architecture

Diane Ireland,
Director, Enterprise Architecture & Liaison

David Cresswell
Associate Director, IT Services and Strategic Practices

David Bedwell,
Director, Service Alignment
Introductions

Why are you here?
What is EA?
Memo

Dear Team,

I read an article in a magazine on a plane the other day. It noted that the new generation of students wish to wrap up their degrees faster and enter the workforce earlier.

It seems that many other Universities are beginning to makes moves in this area already. So to get ahead of the game, I have therefore decided that we will offer our 4 year degrees in 18 months, starting in 2009.

I’m not sure of the details on how you’ll do this, but I expect that we can fit four semesters in the year instead of two. After all it’s just detail and there are 24 hours in a day (and then there’s night)

All the Best

Your Vice-Chancellor and President

P.S. Please let my secretary know the new grad ceremony dates as soon as you can
Projects

In a group, develop some points around what do you will have to consider?
• WHAT Information / Data
• WHO Organisation (ppl, comm’s, stholders, etc)
• HOW Processes & Procedures
• WHERE Locations
• WHEN Events
• WHY Strategy & Legislation
• SYSTEMS
• Do you have this information?

• How much of it?
• What sort of format is it in?
• Where do you store it and how accessible is it afterwards?

• How do you go about getting it?
Enter EA

• Imagine if you had this information

  – Packaged and ready for your project team

  – Even better, with advice to the project about the impacts or scope of the changes

  – Even better still, during planning discussions at the university level with advice about how it relates to strategy, other projects, people, things that are happening or going to happen
What is EA?

‘There are known knowns; there are things we know we know; there are known unknowns; that is to say the things we know we don’t know; and then there are unknowns, unknown unknowns, the things we know we don’t know we don’t know and those are the dangerous ones’

Donald Rumsfeld
What is EA?

- Current (As-Is) vs Future (To-Be)

- Engineer the change - don’t document it afterwards
EA in Higher Education

Roadmap

Model

Strategy & Plan

Model

Strategy & Plan

Model

As-Is

Interim

To-Be
### Business Continuity

Business Continuity occurs in a reciprocal arrangement between the two DIT Staff locations. For future location of IT staff in Wagga and initial discussion on the decision can be made and planning accomplished.

#### Tasks
- **Core LAN**
  - Contact Rights of Way and Change to AsBe
  - Direct planning for 600Gbps fibre to connect to Wagga ACC, Bathurst S1, New Data Centre, Thourgoona Hub, Orange Mesh Communications Room, Dubbo Mesh Communications Room.

- **Disk Storage**
  - Outline options for future location of OT staff in Wagga and initiate discussion on the decision can be made and planning accomplished.

- **Intercampus Network**
  - Purchase and install new line conditioner in the Graham Building.

- **Satellite Sites**
  - Evaluate option of outsourcing backups and if not viable plan for tape backups to stream to one set of centralised infrastructure located separate to the two Primary data centres and with fire proof storage.

- **Modems**
  - Plan phase of Business Continuity to occur across the campus sites or 1 as the options of outsourcing the Data Centre facility.

- **Business Continuity Site 1**
  - Contact Wagga to AREN.
  - Phase-out remaining microwave functionality.

- **Business Continuity Site 2**
  - Phase-out functionality at all sites and consolidate satellite sites at Wagga and Albury/Wodonga.

- **Network Cabling & Power requirements gone to tender**

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### Data Centre Types

#### Table 1 Types of Data Centres - As-Is

<table>
<thead>
<tr>
<th>Type</th>
<th>As-Is</th>
<th>Interim</th>
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#### Table 2 Types of Data Centres - To-Be

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#### Tips and Tricks

- **Concep**
  - Develop Roadmap
    - Don’t attempt to answer everything.
    - List options
    - Highlight analysis that is needed
  - Develop Models
    - Select a model that will depict what you are attempting to do throughout the roadmap and makes it look simple.

- **Process**
  - Select Stakeholders that will give you the different perspectives. Move you up and down through the Zachman Framework.
  - Pick a level of detail to get the most out of the your information.

- **Stakeholders**
  - Considerations:
    - Opportunities
    - Risks
    - Opportunities for them to clarify details
    - Opportunity for feedback on the strategy

- **Table of Contents**
  - Considerations:
    - Risks
    - Opportunities
    - Not addressed Stakeholders
    - Roadmap
      - Current
      - Short term
      - Medium Long

- **Other**
  - Find a level of detail that communicates the strategy/message to the audience – different perspectives.
  - EA need to be the ones to present it so the stakeholders get the right message.
  - It is consistent across stakeholders they get the opportunity for feedback we get feedback no loss of visibility for the group and individual.
Zachman Framework for Enterprise Architecture
(zifa.com)
<table>
<thead>
<tr>
<th>Zachman Framework</th>
<th>DATA</th>
<th>FUNCTION</th>
<th>NETWORK</th>
<th>PEOPLE</th>
<th>TIME</th>
<th>MOTIVATION</th>
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</thead>
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<tr>
<td><strong>SCOPE</strong></td>
<td>List of Things</td>
<td>List of Strategic Processes</td>
<td>List of Locations</td>
<td>List of Organizations</td>
<td>List of Cycles</td>
<td>List of Strategic Goals</td>
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<tr>
<td>Executive</td>
<td>List of Executive Things</td>
<td>List of Executive Strategic Processes</td>
<td>List of Executive Locations</td>
<td>List of Executive Organizations</td>
<td>List of Executive Cycles</td>
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<td><strong>BUSINESS MODEL</strong></td>
<td>Semantic Model</td>
<td>Business Process Model</td>
<td>Logistics</td>
<td>Workflow</td>
<td>Master Schedule</td>
<td>Business Plan</td>
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<tr>
<td>Owner</td>
<td>Logical Data Model</td>
<td>Application Architecture</td>
<td>Distributed System Architecture</td>
<td>Human Interface Architecture</td>
<td>Process Structure</td>
<td>Business Rule Model</td>
</tr>
<tr>
<td><strong>SYSTEM MODEL</strong></td>
<td>Physical Data Design</td>
<td>System Design</td>
<td>Technology Architecture</td>
<td>Presentation Architecture</td>
<td>Control Structure</td>
<td>Rule Design</td>
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<tr>
<td>Designer</td>
<td>Data Definition</td>
<td>Programs</td>
<td>Network Architecture</td>
<td>Security Architecture</td>
<td>Timing Definition</td>
<td>Rule Specification</td>
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<tr>
<td><strong>TECHNOLOGY MODEL</strong></td>
<td>Data</td>
<td>Application</td>
<td>Network</td>
<td>Organization</td>
<td>Schedule</td>
<td>Strategy</td>
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<td>Builder</td>
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</table>

Leo de Sousa,  
Enterprise Architect  
BCIT June 2006
Zachman Framework 3D Model

- Implementation Composites
- Data
- Motivation
- Function
- Time
- Network
- People
- The Enterprise
- Architectural Primitives
CSU Model

- Goals, Objective, Strategy
  - Have

- IT Service Provider (IT itself, vendors)
  - Provide, support, maintain
  - Coordinate & Supply

- IT Services
  - IT Infrastructure (or Elements) (Data, code, hardware, events, rules, roles)
  - Make an
  - supports

- Customer
  - Use
  - undertake

- Process
Phases of EA at CSU?

• Get IT out of trouble – Silver bullet?
• Describe and manage complexity
• Both a service and infrastructure to assist organisational change and improvement
EA at CSU

- Provision of ‘As-Is’ and ‘To-Be’ Enterprise Information (Enterprise Models are corporate knowledge – this is infrastructure)

- Provision of strategic advice and continuous improvement to assist in changing the organisation towards the ‘To-Be’ (This is a service)
BCIT’s EA Taxonomy

- Strategy and Policy
  - IT Service Management
    - Business
    - Application
      - Presentation
    - Data
    - Infrastructure
  - Service Delivery and Support
  - Security
Strategic Goal Areas from TEK Vision

“Connect BCIT to the World”
Collaboration & Connectivity

“Equip BCIT’s Learning Spaces”
Intelligent Learning Spaces

“Support Effective Learning & Teaching”
Best Teaching Practices

“Advance Polytechnic Education”
Applied Research

“Ensure Effective Work Processes”
The Business of BCIT

Enterprise Architecture
Enterprise Architecture (EA) is a strategic framework to provide guidance, consultation and approval of investments in people, process and technology that aligns to and supports Institutional Strategy and Vision.

The benefits of adopting EA at BCIT are:

<table>
<thead>
<tr>
<th>Doing the Right Things</th>
<th>Doing Things Right</th>
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<tbody>
<tr>
<td>• Alignment of IT to BCIT’s Strategy</td>
<td>• IT Service Mgmt (ITIL)</td>
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<tr>
<td>• Education</td>
<td>• Improved Planning</td>
</tr>
<tr>
<td>• Research</td>
<td>• Manage Complexity</td>
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<tr>
<td>• Business</td>
<td>• Adopting Best Practices – PM, ITIL, BA, Solutions Arch.</td>
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<tr>
<td>• Governance</td>
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</table>
Session 1 Wrap

• EA is an Opportunity
  – University
  – Departments
  – IT

• Don’t limit it to technology
Foundation EA Tools

and their application
This session

- Data
- Organisation
- Process
- Application
- Combinations
- Technology
Data

What
BCIT’s EA Model

- Strategy and Policy
- IT Service Management
- Business
- Application
- Presentation
- Data Infrastructure
- Service Delivery and Support
- Security
Do you have this problem?

CASIMS
Academic Senate
Authoritative source of
Course and subjects at CSU

Other Systems

Banner
Student Administration
Students, Subjects,
courses, offerings,
enrolments, examinations,
flag of poor academic
progress

Courses (Major/Program) have never been defined by CSU
What’s a Course?

• **Faculties**
  – A set of content with one or more award names
  – May have very tight relationships to other courses

• **Student Admin**
  – A program code based on (but not always…) an award name, plus attributes
  – Also Govt. and Admissions concepts

• **Planning & Audit**
  – A Govt. funding code, plus attributes

• **Marketing**
  – Sets of related “courses”

• **Not to mention**
  – Any one document can (could!) refer to any course, part of a course, articulated set of courses OR any unrelated courses or parts thereof that a faculty chose to bundle together
• A **subject** is a subject (a primitive)

• A **subject offering** is

**Subject + Location + Time + Mode**

(ie a composite of primitives)
Who owns a Student’s Address?

- Recruiting – for recruiting students
- Admissions – for admitting students
- Registrar – for registered students
- Financial Aid – for FA applicant students
- Student Records – for graduating students
- Alumni – for graduated/alumni students

In the student lifecycle, who has the right address?
Your Mission

- Data >> Information >> Knowledge
  - sort this out on behalf of your organisation
  - understand differing views
  - plug and play
  - real ‘business intelligence’

- To do this you need …
Data

How would you use this?
Created the BREAF Project

• B – Banner
• R – Recruiting
• E – Enrolment
• A – Alumni
• F – Financial Aid and Awards

Developed data standards and governance policies and then implement address integration
### Strategy vs Issue Matrix: Sorted by Data Issues per Project & Projects per Data Issue

<table>
<thead>
<tr>
<th>Data Issue</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
<th>Project 4</th>
<th>Project 5</th>
<th>Project 6</th>
<th>Project 7</th>
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Organisation

- People
- Groups of people
- Structures of people
- Committees
- Stakeholders
- Relationships
Your Mission

- Understand your organisation
- Help your organisation understand itself

- To do this you need …
Stakeholder Model

Each organisational unit has a detailed stakeholder model. This is a generic faculty model. It places the person or group in question in the centre and their stakeholders around the outside according to type. Each stakeholder has a relationship with the central group. The details of the relationship can be collected and detailed according to the above interaction template. Stakeholder models assist you in ensuring you consider all your stakeholders and is also used to develop process models and service catalogues.
Applications

IT Services
Your Mission

• What Applications have we got?
• What condition are they in?
• What Applications do we really need?
• How much should we spend?
• Who do these Applications support?

• To do this you will need …
• Your definition of an ‘Application’

• A list of ‘Applications’

… Classified in a variety of ways

… With numerous attributes about each
An application:

- Is made up of components of software
- Delivers a cohesive unit of functionality
- Supports a business process or processes
- Has a fundamental purpose
- Is managed as a single ‘system’
# CSU Application Information

<table>
<thead>
<tr>
<th>General</th>
<th>Base Technologies</th>
<th>Classifications</th>
</tr>
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<tbody>
<tr>
<td>• Application Name</td>
<td>• Data</td>
<td>Enterprise Level</td>
</tr>
<tr>
<td>• Application Owner</td>
<td>• Database</td>
<td>• Opportunistic</td>
</tr>
<tr>
<td>• Purpose</td>
<td>• Code (incl. language)</td>
<td>• Innovative</td>
</tr>
<tr>
<td>• Version</td>
<td>• Applications Support</td>
<td>• Departmental</td>
</tr>
<tr>
<td>• Supported until date</td>
<td>• Supportability</td>
<td>• Enterprise</td>
</tr>
<tr>
<td>• Systems Officer</td>
<td>• Application documentation</td>
<td>• Generic</td>
</tr>
<tr>
<td>• Product Vendor</td>
<td>• Operating system</td>
<td></td>
</tr>
<tr>
<td>• Support/Maintenance Vendor</td>
<td>• Network</td>
<td></td>
</tr>
<tr>
<td>• Criticality (derived)</td>
<td>• Hardware</td>
<td></td>
</tr>
<tr>
<td>• SLA reference document</td>
<td>• Storage</td>
<td></td>
</tr>
<tr>
<td>• Health review date (due date)</td>
<td>• Application Servers</td>
<td>Life Cycle</td>
</tr>
<tr>
<td></td>
<td>• Web Servers</td>
<td>• Consider</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Research</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Invest</td>
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<td></td>
<td>• Steady</td>
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<td></td>
<td></td>
<td>• Retire</td>
</tr>
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<td></td>
<td></td>
<td>• Extinct</td>
</tr>
</tbody>
</table>
# BCIT Application Portfolio Attributes

<table>
<thead>
<tr>
<th>Application Name</th>
<th>Executive Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Type</td>
<td>Business Owner</td>
</tr>
<tr>
<td>Application Server</td>
<td>Technical Manager</td>
</tr>
<tr>
<td>App Server OS</td>
<td>Technical Owner</td>
</tr>
<tr>
<td>Data Server</td>
<td>Strategic Governance Definitions</td>
</tr>
<tr>
<td>Data Server OS</td>
<td>Technology Lifecycle Definitions</td>
</tr>
<tr>
<td>App Devel Env</td>
<td>Service Level Agreement (SLA)</td>
</tr>
<tr>
<td></td>
<td>Implementation Year</td>
</tr>
<tr>
<td>Web Enabled</td>
<td>Vendor</td>
</tr>
<tr>
<td>Authentication</td>
<td>High Availability</td>
</tr>
<tr>
<td>Authorization</td>
<td>Storage</td>
</tr>
<tr>
<td>Identity Source</td>
<td>Depends on</td>
</tr>
<tr>
<td></td>
<td>Supports</td>
</tr>
<tr>
<td></td>
<td>Test Environ</td>
</tr>
<tr>
<td></td>
<td>DR</td>
</tr>
<tr>
<td></td>
<td>RTO</td>
</tr>
<tr>
<td></td>
<td>RPO</td>
</tr>
</tbody>
</table>
A bit more about Technology Lifecycle

- R & D
- Invest
- Watch
- Sustain
- Contain
- End of Life
Applications

How would you use this?
Application Profile

Based on known and current application portfolio matrix as of Aug 2007
Application Development Environments

- LAMP = Linux, Apache, mySQL and PHP (primarily used to deliver Web Applications)
- Oracle = combination of Oracle Forms and PL/SQL
- Domino = Lotus Notes applications that are deployed as Windows and/or Web clients
- Java = combination of Oracle and Jboss Java applications
- HTML = mark-up language for the web
- Access = departmental apps using Microsoft Access
## Being Reactive and Proactive with APM

<table>
<thead>
<tr>
<th>Reactive – Incident/Problem</th>
<th>Proactive – Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banner IE 7 incident leading to customer service problem</td>
<td>Managing Complexity – analysis of the Application Portfolio to develop standard Solutions Profiles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reactive – Incident/Problem</th>
<th>Proactive – Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query the Application Portfolio to find all web enabled apps with Business and Technical Owners = Dynamically built a test plan for all web apps</td>
<td>Query the Application Portfolio to find all the technologies we use to deliver applications/services = Articulate Solution profiles and look for redundancies</td>
</tr>
</tbody>
</table>
Process

How
• Enterprises are complicated and complex
• Everyone has a different view / perspective / window / frame / ref point
• We need a constant

• An org chart isn’t enough
Organisational Overlays?

- People
- Committees
- Events
- Locations
- Data
- Procedures
- Systems
- Initiatives
- Risk
- Projects
- Easy wins

- Regulations
- Working Parties
- Rules
- Stakeholders
- Hot Spots
- Strengths
- Weaknesses
- Goals
- Roles
- Pain Points
- Strategy
Organisational Constants?

- Organisation: Who
- Location: Where
- Rules, Controls, Strategy: Why
- Events: When
- Things (assets, programs, subjects, ...): What
- Process: How
Process Model

- What we do (what you do?)
- Conceptual
- Stable
- Independent
- Primitive
- Integrative
- Useful - process is the hub
Your Mission

• Understand what your organisation does
• Help the org make change more effective

• To do this you need …
Core Processes Stream 1: LEARNING & TEACHING

1. Determine Course and Discipline Profile
2. Core Processes Stream 2: RESEARCH & GRADUATE STUDIES
3. Process Information
   - Standard information collected about all processes (left)
   - Information about issues, impact and priority also collected (below)
4. Core Process Health Assessment (above) – evaluation based upon standard weighting across number of criteria
5. Enterprise Process Model (above)
   - A conceptual view of the fundamental University Processes independent of structure, strategy, time and place. University wide involvement in development.
   - Processes are provided by type: Core (the raison detre), Enabling those that enable the core, planning and governance

Enabling Processes
- Have their own core processes. A generic process model for all enablers includes:
  - support customers
  - provide services and infrastructure
  - provide strategy and advice

Note 1: Services
- (Note 1) & Infrastructure (Note 2)
- E.g. Reclassifications, promotions etc.
- (Refer flow below)

Note 2: Infrastructure
- Core 2: Provide & Maintain Services (Note 1) & Infrastructure (Note 2)
- 1. CSU Distinguished Frameworks Eg. EBA, IDP, OD, OHSMS, EEOMP
- 2. Policy & Procedure Eg. internal policy, registers
- 3. HR System Support Eg. Alesco, Chemwatch, ELMO, EO Online

Process Architecture
Introduction to EA

Process Information

Standard information collected about all processes (left).

Information about issues, impact and priority also collected (below).

Core Process Health Assessment (above) - evaluation based upon standard weighting across number of criteria

Enterprise Process Model (above)

A conceptual view of the fundamental University Processes independent of structure, strategy, time and place. University wide involvement in development.

Processes are provided by type:- Core (the raison detre), Enabling (those that enable the core, planning and governance

Enabling Processes (left)

Have their own core processes. A generic process model for all enablers includes:-
- support customers
- provide services and infrastructure
- provide strategy and advice
Process

How would you use this?
Enterprise Process Themes

• Information Infrastructure and Systems Support
• The Student Relationship*
• Customer Support*
• Business Management
• Change Management
• Process ownership*
• Research and Research Management
A new entity in our Enterprise Data Model tied it all together
One view of Excellence, Sustainability and Flexibility

A sense of performance at a meaningful level.

The best academic workforce planning tool we have.

Tangible links between Learning & Teaching and Research
2. Roles and Responsibilities

2.1. Change Manager

The Change Manager is responsible for the control of the Change Management process.

The Change Manager:

- Develops and maintains the Change Management process;
- Mounts an awareness campaign to gain support;
- Directs all Changes through the established process;
- Channels information to all CAB members, prior to each CAB meeting;
- Chairs the CAB;
- Is responsible for the Change Schedule and the scheduling of Changes;
- Liaises with and supports Change Originators (including Release Project Management);
- Prepares monthly report;
- Prepares and presents appropriate reports on the process;
- Obtains documentation and sign-off from the supplier/Change builder before build and implementation;
- Approves/authorises minor changes;
- Performs on-going monitoring of Changes as appropriate;
- Reviews Change Management procedures.
<table>
<thead>
<tr>
<th>PROCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRIEF DESC</td>
</tr>
<tr>
<td>EXPERT / PHONE</td>
</tr>
<tr>
<td>Name &amp; Title</td>
</tr>
<tr>
<td>RESP DEPT</td>
</tr>
<tr>
<td>LOCATION(S)</td>
</tr>
<tr>
<td>Where is the process performed?</td>
</tr>
<tr>
<td>Does it need to be in a fixed location?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INPUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTPUTS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MECHANISMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>System/applications</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTROLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(generic level)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELATED PROCESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any processes that precede or are dependent on the outcomes of this process?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAKEHOLDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept Internal</td>
</tr>
<tr>
<td>CSU Internal (including Committees)</td>
</tr>
<tr>
<td>External (eg Suppliers, StatBodies, Referral agencies)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EVENTS / DATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx Date: Period</td>
</tr>
<tr>
<td>Event Date: (End of year, HECS closing date)</td>
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</table>

<table>
<thead>
<tr>
<th>DATA USED (HCR RELEVANT)</th>
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</thead>
<tbody>
<tr>
<td>Account Transaction</td>
</tr>
<tr>
<td>Examination</td>
</tr>
<tr>
<td>Research</td>
</tr>
<tr>
<td>Alumni</td>
</tr>
<tr>
<td>Fees</td>
</tr>
<tr>
<td>Residences</td>
</tr>
<tr>
<td>ARRI</td>
</tr>
<tr>
<td>General Ledger Graduation</td>
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<td>Residential School Room Booking</td>
</tr>
<tr>
<td>Assignment</td>
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<td>HECS Session</td>
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<td>Books</td>
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<td>Bulking</td>
</tr>
<tr>
<td>Jobs Support</td>
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<tr>
<td>Computer</td>
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<tr>
<td>Maintenance Support Office</td>
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<td>Cohort</td>
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<td>Meals Superintendence</td>
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<td>COURSE</td>
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<td>Payroll Supplier</td>
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<td>Employee</td>
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<td>Practice Teaching Staff</td>
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<td>Administration</td>
</tr>
<tr>
<td>Project Termin</td>
</tr>
<tr>
<td>Grants</td>
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<tr>
<td>Purchase Timetable</td>
</tr>
<tr>
<td>Other data (please provide details)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Known Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue Description</td>
</tr>
<tr>
<td>Impact</td>
</tr>
</tbody>
</table>
EA Group Work

• For the **Teaching and Learning process**, in your group, please create lists for:

  – Systems
  – Data
  – Events
  – People
What you just built ...
Relating Artifacts

Matrix Power & Enterprise Models
• Relate to self (stakeholder to stakeholder)

• Relate across (org to process)

• Things get complicated quickly
<table>
<thead>
<tr>
<th><strong>PROCESS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BRIF DESC</strong></td>
</tr>
<tr>
<td><strong>EXPERT / PH NO</strong></td>
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<tr>
<td><strong>RESP DEPT</strong></td>
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<td><strong>INPUTS</strong></td>
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<tr>
<td><strong>OUTPUTS</strong></td>
</tr>
<tr>
<td><strong>MECHANISMS</strong></td>
</tr>
<tr>
<td>System / Applications</td>
</tr>
<tr>
<td><strong>CONTROLS</strong></td>
</tr>
<tr>
<td>(generic level)</td>
</tr>
<tr>
<td><strong>RELATED PROCESSES</strong></td>
</tr>
<tr>
<td>Are there any processes that precede or are dependent on the outcomes of this process?</td>
</tr>
<tr>
<td>Development Strategy - Timetabling</td>
</tr>
<tr>
<td><strong>STAKEHOLDERS</strong></td>
</tr>
<tr>
<td><strong>EVENTS / DATES</strong></td>
</tr>
<tr>
<td>Approx Date / Period</td>
</tr>
<tr>
<td><strong>DATA USED</strong></td>
</tr>
<tr>
<td>(related to relevant)</td>
</tr>
<tr>
<td>Account Transaction</td>
</tr>
<tr>
<td>Alumni</td>
</tr>
<tr>
<td>ARI</td>
</tr>
<tr>
<td>Asset</td>
</tr>
<tr>
<td>Assignment</td>
</tr>
<tr>
<td>Books</td>
</tr>
<tr>
<td>Building</td>
</tr>
<tr>
<td>Computer</td>
</tr>
<tr>
<td>Enrolment</td>
</tr>
<tr>
<td>Course</td>
</tr>
<tr>
<td>Employee</td>
</tr>
<tr>
<td>Environment</td>
</tr>
<tr>
<td>Enrolment</td>
</tr>
<tr>
<td>Other Data (please provide details)</td>
</tr>
<tr>
<td><strong>Known Issues</strong></td>
</tr>
<tr>
<td>Issue Description</td>
</tr>
<tr>
<td>Core Process</td>
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<tr>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Determine Course &amp; Discipline Profile</td>
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<tr>
<td>Accredit</td>
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<tr>
<td>Prepare</td>
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<tr>
<td>Implement</td>
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<tr>
<td>Review</td>
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</tr>
</tbody>
</table>
Core Processes Stream 1: LEARNING & TEACHING

Accredit
- Accredit Courses
- Accredit subjects
- Determine Academic Regs./Standards /Graduate attributes

Prepare
- Teaching strategies
- Learning materials
- Arrange Library, IT, Lab resources
- Select Students

Implement
- Teaching - Practicums
- Student Learning - Access resources
- Course co-ordination - Determine student progress

Outcomes
- Graduates
- Graduate employment
- Grad. further studies.
- Performance related funding
- Scholarship of Teaching

Review
- Course Review
- Graduate and Industry feedback
- Evaluate Learning & Teaching

Overlay

Core Processes Stream 2: RESEARCH & GRADUATE TRAINING

Plan
- Determine policies,goals and priorities.
- Select/Accredit Research concentrations.

Prepare
- Secure funding.
- Develop Partnerships.
- Develop resources - IT, Labs, Facilities.
- Select Research Higher Degree(RHD) Students
- Train supervisors

Implement
- Conduct Research.
- Prepare theses
- Supervise RHDs.

Outcomes
- Publications, Reports, External Application
- Theses
- Performance related funding

Review
- Review performance and priorities
- Review partnerships
- Evaluate RHD programs

Provide Human Resources
- Attract high quality staff

Provide Financial Services
- Manage Partners
- Provide Library Services
- Develop Staff
- Develop Flexible Learning Solutions
- Provide Student Administration Services
- Provide Student Welfare services
- Provide Learning Materials
- Provide Business Process Support Services (IT, Projects)
- Provide Accommodation and Catering Facilities
- Marketing e.g., - Manage Alumni
- Manage enterprises
- Develop Government Research funding (IGS, RFS, RIBG)
- Review Performance
- Manage Corporate communication
- Manage Research Centres

Planning Processes
- Develop Strategic Plans
- Develop Corporate and Operational Plans
- Implement Risk Management Framework
- Develop Budgets
- Manage Change
- Ensure compliance
- Ensure audit compliance
- Ensure legal compliance

Governance Processes
- Council
Facilities, Student Services, IT

- Provide Services
- Support customers of those services
- Provide advice and strategy to CSU wrt their speciality
Core Processes Stream 1: LEARNING & TEACHING

Prepare
- Teaching strategies
- Learning materials
- Arrange Library, IT, Lab resources

Implement
- Teaching - Practicums
- Student Learning - Access resources
- Course co-ordination – Determine student progress

Outcomes
- Graduates
- Graduate employment
- Grad. further studies
- Performance related funding

Core Processes Stream 2: RESEARCH & GRADUATE TRAINING

Plan
- Determine policies, goals and priorities.
- Select/credit Research concentrations.

Prepare
- Secure funding
- Develop Partnerships
- Develop resources – IT, Labs, Facilities.
- Select Research Higher Degree (RHD) Students
- Train supervisors

Implement
- Conduct Research
- Prepare theses
- Supervise RHDs.

Outcomes
- Publications, Reports, External Application
- Theses
- Performance related funding

Supported Applications
- Secure funding
- Develop Partnerships
- Develop resources – IT, Labs, Facilities.
- Select Research Higher Degree (RHD) Students
- Train supervisors

Planning Processes
- Develop Strategic Plans
- Develop Corporate and Operational Plans
- Implement Risk Management Framework

Governance Processes
- Council
- Ensure audit compliance
- Ensure legal compliance
Application Portfolio Mgmt
Your Mission

• What Applications have we got?
• What condition are they in?
• What Applications do we really need?
• How much should we spend?
• Who do these Applications support?

• To do this you will need …
FUNCTIONALITY

Are all your processes supported?

Do they need to be?

Of the ones that are supported, how well do they do it?
What condition is the application in wrt its elements?
CSU Application Portfolio Handout
<table>
<thead>
<tr>
<th>Performance Aspect</th>
<th>Indicators</th>
<th>Information needed to address this indicator</th>
<th>Possible sources of information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business</strong></td>
<td>Business process support</td>
<td>What processes does the application support. High level and sub-process levels</td>
<td>Process Knowledge base – issues recorded against processes (applications are mapped to processes)</td>
</tr>
<tr>
<td></td>
<td>Business Value</td>
<td>Processes supported – indicator of criticality</td>
<td>Plans</td>
</tr>
<tr>
<td></td>
<td>Data and information quality/timeliness</td>
<td>Application fit to Enterprise Data model</td>
<td>Data Architecture Review of I/O and actual data stored.</td>
</tr>
<tr>
<td></td>
<td>Business robustness</td>
<td></td>
<td>User surveys</td>
</tr>
<tr>
<td></td>
<td>Life cycle position</td>
<td>Business environment changes</td>
<td>Previous report from the architecture review</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
<td>Complexity</td>
<td>Process detail. Application design and integration design.</td>
<td>Touchpaper : e.g., # of changes to the app., problem resolution.</td>
</tr>
<tr>
<td></td>
<td>Reliance on Subject Matter Experts</td>
<td>Level of available expertise to support the application and its elements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintenance Factors</td>
<td>Caution is required in how information relating to changes is interpreted</td>
<td>Touchpaper: e.g., # and nature of changes enhancements</td>
</tr>
<tr>
<td></td>
<td>Supportability</td>
<td>Relates to earlier evaluation criteria such as • Complexity (see earlier) • Skills availability</td>
<td>Time: Vendor SLAs</td>
</tr>
<tr>
<td></td>
<td>Availability and cost of support skills</td>
<td>Relates to supportability above.</td>
<td></td>
</tr>
<tr>
<td><strong>Technical</strong></td>
<td>Architectural alignment</td>
<td>Application of EA principles and standards to sourcing of applications</td>
<td>Enterprise Architecture</td>
</tr>
<tr>
<td></td>
<td>Foundations technology quality/Base Technology Alignment</td>
<td>Elements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extendibility / Adaptability</td>
<td>Application design incl. e.g., APIs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical performance</td>
<td>Summary of the evaluation of the ‘base technology’ / ‘elements’</td>
<td></td>
</tr>
<tr>
<td>Domain</td>
<td>Name</td>
<td>Indicator</td>
<td>Health</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>-----------</td>
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<td>Facilities Mgmt</td>
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<td>BEIMS</td>
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<td>Outlook</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Office</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Application Portfolio Snapshot @ 26/10/XX
BCIT’s EA Model

Strategy and Policy

IT Service Management

Business

Data

Presentation

Application

Infrastructure

Service Delivery and Support

Security
Application Architecture Definition

Application Architecture element describes the technologies, standards and guidelines used to evaluate, select, create and implement software applications into BCIT's Enterprise Architecture.
Application Architecture Definition

This domain addresses the following application domains:

• Commercial Applications
• Developed Applications
• Open/Community Source Applications
• Middleware Applications
## Application Portfolio Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>The software code that accomplishes a logical unit of work. Made up of Core, System, Application Development and Business software.</td>
</tr>
</tbody>
</table>
## Application Portfolio Attributes

<table>
<thead>
<tr>
<th>Application Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Application</td>
<td>Those applications that perform a business function. Examples would be</td>
</tr>
<tr>
<td></td>
<td>Student Registration, eLearning, Timetabling System, etc.</td>
</tr>
<tr>
<td>Core Applications</td>
<td>Those applications common to the enterprise and support the everyday</td>
</tr>
<tr>
<td></td>
<td>functions of the enterprise. Examples would be MS Word, MS Outlook, Adobe</td>
</tr>
<tr>
<td></td>
<td>Acrobat, Host on Demand, Internet Explorer, etc.</td>
</tr>
</tbody>
</table>
# Application Portfolio Attributes

<table>
<thead>
<tr>
<th>Application Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Applications</td>
<td>Those applications that assist programmers in developing the business applications. Examples: Oracle Forms, Java, PHP, PL/SQL.</td>
</tr>
<tr>
<td>System Applications</td>
<td>Those applications that support the processing of Business Applications. Examples would be Linux, AIX, Windows Server, Monitoring tools.</td>
</tr>
</tbody>
</table>
# Application Portfolio Attributes

<table>
<thead>
<tr>
<th>Application Name</th>
<th>Executive Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Type</td>
<td>Business Owner</td>
</tr>
<tr>
<td>Application Server</td>
<td>Technical Manager</td>
</tr>
<tr>
<td>App Server OS</td>
<td>Technical Owner</td>
</tr>
<tr>
<td>Data Server</td>
<td>Strategic Governance Definitions</td>
</tr>
<tr>
<td>Data Server OS</td>
<td>Technology Lifecycle Definitions</td>
</tr>
<tr>
<td>App Devel Env</td>
<td>Service Level Agreement (SLA)</td>
</tr>
<tr>
<td>Implementation Year</td>
<td>Implementation Year</td>
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</table>

<table>
<thead>
<tr>
<th>Web Enabled</th>
<th>Vendor</th>
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<tbody>
<tr>
<td>Authentication</td>
<td>High Availability</td>
</tr>
<tr>
<td>Authorization</td>
<td>Storage</td>
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<tr>
<td>Identity Source</td>
<td>Depends on</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DR</th>
<th>RTO</th>
<th>RPO</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Environ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports</td>
</tr>
<tr>
<td>RPO</td>
</tr>
</tbody>
</table>
Based on known and current application portfolio matrix as of Aug 2007
Application Development Environments

- **LAMP** = Linux, Apache, mySQL and PHP (primarily used to deliver Web Applications)
- **Oracle** = combination of Oracle Forms and PL/SQL
- **Domino** = Lotus Notes applications that are deployed as Windows and/or Web clients
- **Java** = combination of Oracle and Jboss Java applications
- **HTML** = mark-up language for the web
- **Access** = departmental apps using Microsoft Access
BCIT Current Technologies – we have tons!

<table>
<thead>
<tr>
<th>Architecture</th>
<th>IE 6</th>
<th>IE 7</th>
<th>Firefox</th>
<th>Safari</th>
<th>Lotus Domino</th>
<th>Opera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browser</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web Server</td>
<td>IIS</td>
<td>Apache</td>
<td>OAS</td>
<td>BEA</td>
<td>Sun</td>
<td>Lotus Domino</td>
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<td>Application Development</td>
<td>PHP HTML</td>
<td>Oracle Forms PL/SQL</td>
<td>Adobe Flex</td>
<td>Lotus Script</td>
<td>.Net</td>
<td>Java</td>
</tr>
<tr>
<td>Middleware</td>
<td>Oracle Fusion</td>
<td>ODBC</td>
<td>Adobe ADM</td>
<td>Tomcat</td>
<td>Luminis Data Integration</td>
<td>Lotus Domino</td>
</tr>
<tr>
<td>Database</td>
<td>mySQL</td>
<td>MS/Access</td>
<td>Postgres</td>
<td>SQLServer</td>
<td>Oracle</td>
<td>Lotus Domino</td>
</tr>
<tr>
<td>Directory</td>
<td>Active Directory</td>
<td>SunOne LDAP</td>
<td>Novell eDir</td>
<td>Novell LDAP</td>
<td>Apple Open LDAP</td>
<td>Lotus Domino</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows Server</td>
<td>Linux (Redhat &amp; SUSE)</td>
<td>AIX</td>
<td>Solaris</td>
<td>OS/X</td>
<td>Novell</td>
</tr>
<tr>
<td>Hardware</td>
<td>IBM Blade</td>
<td>VMWare</td>
<td>P Series</td>
<td>Sun Fire</td>
<td>Mac Xserve</td>
<td>Intel Desktop</td>
</tr>
</tbody>
</table>
# Solutions Architecture – Current Platforms

<table>
<thead>
<tr>
<th>Architecture</th>
<th>Oracle</th>
<th>Domino</th>
<th>LAMP</th>
<th>Microsoft</th>
<th>Novell</th>
<th>Apple</th>
<th>Sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browser</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>Any IE</td>
<td>Any</td>
<td>Any Safari</td>
<td>Any</td>
</tr>
<tr>
<td>Web Server</td>
<td>OAS</td>
<td>Domino</td>
<td>Apache</td>
<td>IIS</td>
<td>Sun</td>
<td>Apache</td>
<td>SunOne</td>
</tr>
<tr>
<td>Middleware</td>
<td>Oracle Fusion</td>
<td>Lotus Domino</td>
<td>None</td>
<td>ODBC</td>
<td>Luminis Data Integration</td>
<td>None</td>
<td>Luminis</td>
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<tr>
<td>Database</td>
<td>Oracle</td>
<td>Lotus Domino</td>
<td>mySQL Postgres</td>
<td>SQLServer</td>
<td>Proprietary</td>
<td>mySQL Postgres</td>
<td>Oracle</td>
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<tr>
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<td>LDAP</td>
<td>Active Directory</td>
<td>eDirectory</td>
<td>Open LDAP</td>
<td>SunOne LDAP</td>
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<td>AIX Windows Server</td>
<td>Redhat Linux</td>
<td>Windows Server</td>
<td>Novell</td>
<td>OS X</td>
<td>Solaris</td>
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<tr>
<td>Hardware</td>
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<td>P Series IBM Blade</td>
<td>IBM Blade</td>
<td>IBM Blade VMWare</td>
<td>IBM Blade</td>
<td>Mac Xserve</td>
<td>Sun Fire</td>
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</tbody>
</table>
## Solutions Architecture – Future Platforms

<table>
<thead>
<tr>
<th>Architecture</th>
<th>Oracle</th>
<th>LAMP</th>
<th>Microsoft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browser</td>
<td>Any</td>
<td>Any</td>
<td>Any IE</td>
</tr>
<tr>
<td>Web Server</td>
<td>OAS</td>
<td>Apache</td>
<td>IIS</td>
</tr>
<tr>
<td>Application Development</td>
<td>Oracle Forms PL/SQL Adobe Flex</td>
<td>PHP HTML Ajax</td>
<td>.Net ASP</td>
</tr>
<tr>
<td>Middleware</td>
<td>Oracle Fusion</td>
<td>None</td>
<td>ODBC</td>
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<tr>
<td>Database</td>
<td>Oracle</td>
<td>mySQL Postgres</td>
<td>SQLServer</td>
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<td>Active Directory</td>
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<td>Operating System</td>
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<td>Redhat Linux</td>
<td>Windows Server</td>
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<td>Hardware</td>
<td>P Series VMWare</td>
<td>IBM Blade</td>
<td>IBM Blade VMWare</td>
</tr>
</tbody>
</table>

### Benefits
- Fewer solution platforms
- IT cost management
- IT Staff development is focused
- Ability to be more agile in delivering solutions
- Allows for going “deep”
Initiatives Handling
The Way It Was…

- Projects stopped mid-stream
- Majority of projects from left field
- No priorities so resources spread thin
- Resources not concentrated on the main game
- Progress was not recognised
- Perception that DIT were blockers - what is the Division of IT doing???
### What people thought – 13 Projects

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Architecture</td>
<td>2006</td>
</tr>
<tr>
<td>Banner</td>
<td>2007</td>
</tr>
<tr>
<td>Alesco</td>
<td>2007</td>
</tr>
<tr>
<td>Casims</td>
<td>2007</td>
</tr>
<tr>
<td>Easts</td>
<td>2007</td>
</tr>
<tr>
<td>Ebox 2</td>
<td>2007</td>
</tr>
<tr>
<td>OLE (Interact)</td>
<td>2007</td>
</tr>
<tr>
<td>Assets</td>
<td>2008</td>
</tr>
<tr>
<td>Identity Management</td>
<td>2009</td>
</tr>
<tr>
<td>Research 2009</td>
<td>2009</td>
</tr>
<tr>
<td>Teacher administration 2009</td>
<td>2009</td>
</tr>
<tr>
<td>Architecture Staffing</td>
<td>2009</td>
</tr>
<tr>
<td>Customer Service</td>
<td>2009</td>
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</tbody>
</table>

### The Reality - 57 Projects

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Deselection / select period / CRUT update</td>
<td></td>
</tr>
<tr>
<td>OLS - IT Administration</td>
<td></td>
</tr>
<tr>
<td>OLS - Tools and Sites phase 1</td>
<td></td>
</tr>
<tr>
<td>OLS - Mandatory Site Information (MSI)</td>
<td></td>
</tr>
<tr>
<td>OLS - Online Submission/Assignment Handling (OSAH)</td>
<td></td>
</tr>
<tr>
<td>OLS - Phase Tool</td>
<td></td>
</tr>
<tr>
<td>Logical Object Management System (LOMS)</td>
<td></td>
</tr>
<tr>
<td>OLS - BI - Information Tools</td>
<td></td>
</tr>
<tr>
<td>OLS - Social Care Services</td>
<td></td>
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<tr>
<td>OLS - Specialist/Health &amp; AH requirements</td>
<td></td>
</tr>
<tr>
<td>Options in PEP</td>
<td></td>
</tr>
<tr>
<td>Administration/Security databases</td>
<td></td>
</tr>
<tr>
<td>Administration Systems Oracle &amp; SQR upgrade</td>
<td></td>
</tr>
<tr>
<td>Time Scheduling</td>
<td></td>
</tr>
<tr>
<td>Active Directory</td>
<td></td>
</tr>
<tr>
<td>UDS - BM</td>
<td></td>
</tr>
<tr>
<td>UDS - TVC</td>
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<tr>
<td>UDS - NAT</td>
<td></td>
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<tr>
<td>UDS - ALES</td>
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<tr>
<td>UDS - GroupSites</td>
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<tr>
<td>UDS - UDC</td>
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<tr>
<td>UDS - Telecom</td>
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<tr>
<td>UDS - NIT</td>
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<tr>
<td>UDS - BIS</td>
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<tr>
<td>UDS - GLUT</td>
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</tr>
<tr>
<td>OLS - Banner Decommission / defect period / CRUT update</td>
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<td>UDS - UDC</td>
<td></td>
</tr>
<tr>
<td>UDS - GLUT</td>
<td></td>
</tr>
</tbody>
</table>
Now

- Understanding – their project in context
- Understanding impact
- Focus on the main game
- Agility to refocus
- Transparency
- Informed decision making
- Optimal use of resources – financial and people
Core Processes Stream 1: LEARNING & TEACHING

**Accredit**
- Accreditee Co.
- Accreditee subjects
- Determine Academic Regs./Standards / Graduate attributes

**Prepare**
- Teaching strategies
- Learning materials
- Core Processes Stream 1: LEARNING & TEACHING

**Implement**
- Teachers
- Student Progress
- Course Coordination – Determining student progress

**Outcomes**
- Graduates
- Graduate employment
- Grad further studies
- Performance related funding
- Scholarship of Teaching

**Review**
- Course Review
- Graduate and Industry feedback
- Evaluate Learning & Teaching

Core Processes Stream 2: RESEARCH & GRADUATE TRAINING

**Plan**
- Determine policies, goals and priorities.
- Select/Accredit Research concentrations

**Prepare**
- Secure funding
- Develop Partnerships
- Develop resources – IT, Labs, Facilities.
- Select Research Higher Degree (RHD) Students
- Train supervisors

**Implement**
- Conduct Research
- Prepare theses
- Supervise RHD

**Outcomes**
- Publications, Reports, External Application
- Theses
- Performance related funding

**Review**
- Review performance and priorities
- Review partnerships
- Evaluate RHD programs

Overlay
Approved Projects
2008
‘To Be’

• The Initiatives Portfolio informed by:
  – Portfolio Management of all our assets
    • Process
    • People
    • Information
    • Application
    • Technology
  – Innovation
  – Strategic Vision
But wait, there’s more ...

Communication
Knowledge Management
yourCSU has been developed as a means of describing the complexity of the University and its structure. In short, this is the Who, What, Where, When, Why, & How of CSU.

This first booklet version is the precursor to a web-enabled version that will allow people to drill down into areas of the University to gain greater detail on stakeholders, process, structure, relationships.

This booklet is designed for you whether you are new to CSU or a long time employee. Use it to understand impacts of change on processes and areas, relationships between areas of CSU, how and where decisions are made and, ultimately, find out where you fit in.

The purpose of this document is to build upon the feedback from the University at large through surveys, notably the Climate Survey and the work of the Work Process Improvement (WPI) project. This will improve communication and information about CSU to assist in the decision making and participative processes of the University.

It is intended for the whole University to use, and it will serve as an induction resource and an aid in project management and change management.

This first version of yourCSU will be distributed in printed form to all CSU staff during November 2007. The booklet will also be launched online at www.csu.edu.au/yourcsu and all incremental updates will be posted to the website version. Notifications of updates to the booklet will be posted on What’s New & News, and staff will be able to print their own copies directly from the website.
EA in Higher Education
And services ...
**Note 1: Services**

**Resource Access**
- Document Delivery
- Inter-library lending
- Intercampus lending
- Distance Education
- Circulation Services

**Information Services**
- Enquiry services
- Reference Services
- Information Literacy
- Web site Development
- Publications
- Displays & Exhibitions

**Liaison Service**
- Academic Liaison
- Research Support
- Teaching Support/OLE
- Learning Commons

**Digitisation Services**
- eReserve
- Digital Theses
- ePrints
- ePress
- Digital object Repository

**Other Services**
- Photocopying & Printing
- Copyright Services

**Note 2: Infrastructure**

- Resource Management
- Infrastructure Management
- Learning Commons
Technology
BCIT’s EA Model

Strategy and Policy

IT Service Management

Business
Application
Presentation
Data
Infrastructure

Service Delivery and Support

Security
Technology Management

- Technology management is practiced differently in each IT Services group (central and decentralized)
  - creating silos of redundant technology – are we really funded well enough to do this?
  - critical information resided in technical experts’ heads instead of documented – high risk, approx 1/3 of our employees will be eligible to retire in the next 5 years!
Technology Management

• Technology documentation was kept in various formats
  – no consistency or ability to understand technology change impacts
  – no ability to articulate our complete catalogue of technology services
  – reactive changes caused unplanned interruptions in service when technology had to be upgraded
Technology Management

• No overall view to architect a solid IT foundation that can deliver technology services to support BCIT

  – unplanned changes in vendor technology caused delays in projects that were underway
  – results in clients having a more negative perception of IT Services
Building a Technology Standards Capability

Create Technology Matrix Template Sept 2006

Establish “Tech Watcher Role” Jan 2007

Add Domain Watchers for Web Arch Mar 2007

Add Technology Standards responsibility to the Solutions Council? Nov 2008

Pilot first matrix with Oracle Technology Nov 2006

Add other Vendor Watchers Feb 2007

Cycle of 6 month updates Ongoing
Technology Lifecycle

- R & D
- Invest
- Watch
- End of Life
- Contain
- Sustain
## Technology Lifecycle Definitions

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watching (W)</td>
<td>includes initiatives and technologies that are being watched for maturity in industry.</td>
</tr>
<tr>
<td>Research and Development (R)</td>
<td>includes initiatives and technologies that are currently under consideration, investigation, or evaluation for future implementation.</td>
</tr>
<tr>
<td>Investing (I)</td>
<td>includes initiatives and technologies that are the target of resources including financial investments and/or investments of human resources.</td>
</tr>
</tbody>
</table>
# Technology Lifecycle Definitions

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Sustaining (S)</td>
<td>Includes initiatives and technologies that deliver services identified in the Core Services Catalogue or in Service Level Agreements</td>
</tr>
<tr>
<td>Containing (C)</td>
<td>Includes initiatives that have been completed and technologies that are in the process of being phased out.</td>
</tr>
<tr>
<td>End of Life (E)</td>
<td>Includes initiatives and Technologies that are retired from service</td>
</tr>
</tbody>
</table>
# Technology Matrix

## Technology Matrix Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Technology Watcher</td>
</tr>
<tr>
<td>• Technology Name and Description</td>
</tr>
<tr>
<td>• Technology/Service Domain</td>
</tr>
<tr>
<td>• Technology Product and Release</td>
</tr>
<tr>
<td>• Technology Watcher’s Comment</td>
</tr>
<tr>
<td>• Six Columns with Technology Lifecycle Phase representing a 3 Year Rolling Window</td>
</tr>
</tbody>
</table>
The purpose of this document is to capture BCIT's investment in Oracle technologies. Oracle provides several technology services to the Institute and this document will be made publicly available for all BCIT stakeholders access.

<table>
<thead>
<tr>
<th>Service Name/Technology</th>
<th>Comment</th>
<th>2007 S1</th>
<th>2007 S2</th>
<th>2008 S1</th>
<th>2008 S2</th>
<th>2009 S1</th>
<th>2009 S2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise Manager - DBCConsole 10.1.2.02</td>
<td>plan to implement for fall 2007</td>
<td>I</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>DataGuard</td>
<td>Looking at for Disaster Recovery</td>
<td>R</td>
<td>R</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>RDBMS 9.2.0.4 (9i)</td>
<td>currently run in production for Autosys job scheduler</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>RDBMS 9.2.0.6 (9i)</td>
<td>currently run in production for ERP and BI</td>
<td>S</td>
<td>S</td>
<td>C</td>
<td>C</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>RDBMS 10.1.2.02 (10G)</td>
<td>plan to implement for fall 2007</td>
<td>I</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>C</td>
</tr>
<tr>
<td>RDBMS 11</td>
<td>just announced</td>
<td>W</td>
<td>W</td>
<td>W</td>
<td>W</td>
<td>R</td>
<td>R</td>
</tr>
</tbody>
</table>
# Technology Chg Report - Oracle

<table>
<thead>
<tr>
<th>Service Name/Technology</th>
<th>Comment</th>
<th>2007 S1</th>
<th>2007 S2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application Development</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDK 1.4.2_12</td>
<td>need to install for DST change</td>
<td>R</td>
<td>I</td>
</tr>
<tr>
<td><strong>Business Intelligence and Data Warehouse</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle Warehouse Builder 10g rel 2</td>
<td>plan to implement an R&amp;D project</td>
<td>W</td>
<td>R</td>
</tr>
<tr>
<td><strong>Client Software</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jinitiator 1.3.1.26</td>
<td>need to install for DST change</td>
<td>R</td>
<td>I</td>
</tr>
</tbody>
</table>
Technology Watchers

Internally recruit technical specialists to watch a vendor’s technology or an architecture domain

- 1 day/month, 12 days per year (to keep current)
- Technology watchers are the subject matter experts
- Technology life cycle changes are approved by IT Services Leadership team and IT Services Project Management and Change processes
Technology Watchers

Duties of a Technology Watcher:

• Responsible for populating and updating the Technology Matrix document
• Responsible to report on changes in technology status in a Semi Annual Status Change Report
• Responsible for providing environmental scans to support the updating of the annual Technology Plan (3 year horizon)
Technology Watching

Currently Watching:
– Oracle, Lotus, Cognos, Sungard HE, Novell, Web Architecture, Archibus/Workplace Management, Apple, Microsoft, IT Security

Planning to Watch:
– Network Architecture, Aruba, IBM, Learning Mgmt, Library, Bookstore, … and many more
Group Work

Please create an EA Stakeholder Model showing your EA Team’s relationship to:

– Customers
– Partners
– Suppliers
– Governors
CSU’s EA Experience

2005 - 2008
2005

• Structure - technical silos
• No EA
• Data Architecture Project
• ZM, Holcman, Burlton
• Senior Exec – Business Process Improvement …
• Understood IT at fundamental level
Stakeholder Model

Customers

- Students & Staff (end users)
- Organisational units that facilitate CSU processes

The Organisation

- Research
- Learning & Teaching

Strategic Importance

- Governance (internal/external)
- Partnerships
- Community Source
- Other Info Sources
- Vendors / Suppliers (internal/external)

DIT

- Products, Services, Information exchanges between all
- Relationship Expectations between all
Process Model

Core 1: Support Users
- Understand Services & Infrastructure Provided
- Provide Service Desk
- Manage Requests
- Manage Incidents & Problems

Core 2: Provide & Maintain Infrastructure & Services
- Determine Requirements
- Develop Solutions
- Build Services
- Maintain & Improve Services (Change, Release, Config mgmt)
- Retire / Replace Services

Core 3: Provide Advice & Strategy
- Research Ideas & Determine Requirements
- Develop Models, Standards & Information
- Provide Advice, Strategy & Education
- Optimise Models & Advice
- Retire / Replace Models

Understand the Enterprise & Technology
Current
Future

Maintain Relationships
3.1 Understand & Frame
3.2 Develop
3.3 Build / Maintain / Improve
3.4 Deliver

Core 1: Support Users

2.1 Understand the Enterprise & Technology
2.2 Develop Solutions

3.1 Determine Requirements

1.1 Understand & Promote
1.2 Receive & Manage Requests
1.3 Action Requests
1.4 Manage Requests & Problems
1.5 Monitor & Evaluate Incident Performance

Core 2: Provide & Maintain Services and Infrastructure

5.1 Maintain Relationships

Core 3: Manage the Enterprise Architecture

4.1 Research Ideas & Determine Strategies

4.2 Evaluate & Develop Analysis

4.3 Develop Strategy & Educate

Enabling Processes

Planning & Review Processes

Governance Processes

Program work

Develop Procedures, Policies & Stds

Manage Quality

Budget & Finance Management

Framework for Risk Management

Provide Facilities

Administer and manage contracts

IIT Service Delivery Processes - Service Level / Financial / Capacity / Availability / Continuity / Security

Provide Human Resources/Attract high quality staff

Provide Administrative Services

Manage & Develop staff

Develop & Utilises Methodologies

Corporate Governance Requirements

Introduction to EA

ITIL Service Delivery Processes - Service Level / Financial / Capacity / Availability / Continuity / Security

Legislation (OH&S, Records, Privacy, Copyright, FOI)

CHARLES STURT UNIVERSITY
Organisation: Processes and Structure

Siloed Structure

- Functional Alignment
  - Worst Practice

- Disconnected Activities
  - Focused on technical activities or platforms

Integrated Structure

- Process Alignment
  - Best Practice

- Coordinated Processes
  - Focused on outcomes and the end-user experience

- Multidisciplinary Team
2006 - Restructure around process

- Executive Director
  - Core 1: Customer Services
  - Core 2: Operations
  - Core 3: Architecture and Liaison
2006 Team

• Architects (4)
  – Infrastructure (What it sits on)
  – Integration (How it’s shared)
  – Information (What goes on/in it)
  – Application (How we build it)
  – Business Process

• Liaison
  – L&T
Very Early Experiences

- Obvious multi-disciplinary benefits
- Passion
- Greater understanding of EA
- Early models and roadmaps
- We experienced pain where we guessed
- Balancing act
What you need to do early on

Understand what you need to do

Promote what you do & your outputs

Do Stuff / Get results
EA Strategy V1.0

- Don’t build architecture for architecture’s sake - prioritise it for best benefit
- So trap what’s going on – CSU & Industry
- Put them on the table and weigh up common, best benefits > ALIGN IT

- … then do something about it
Core 1: Support Users

Understand Services & Infrastructure Provided
Provide Service Desk
Manage Requests
Manage Incidents & Problems

Core 2: Provide & Maintain Infrastructure & Services

Determine Requirements
Develop Solutions
Build Services
Maintain & Improve Services (Change, Release, Config mgmt)
Retire / Replace Services

Core 3: Provide Advice & Strategy

Research Ideas & Determine Requirements
Develop Models, Standards & Information
Provide Advice, Strategy & Education
Optimise Models & Advice
Retire / Replace Models

Understand the Enterprise & Technology
Current
Future

Maintain Relationships
This is going on & where it's headed
So we should do these things
Because …
So “heads up everyone”
The List

- 300 things that are going on that we’ve got to do something with / worry about

Approved projects, un-approved projects, unsuccessful project bids, interviews, committee decisions, working party outputs, rumours, innuendo, strategic plans, vendors, sector, technology trends, …
Later Experiences

• Enterprise Shock Syndrome

• Affirmation
  – Are we doing the right thing, the right way, how will we know, who else is doing this, why aren’t they doing this?
  – Only ones thinking so long term
  – “The benefits of this work won’t be seen for 2 years”
  – Who will pat you on the back?

• Should we go back and help at the coal face?
2008 EA Team

• Information
• Records
• Business Process
• Applications
• Integration
• Infrastructure
• Liaison
• Resource Analyst
What we said EA would do

May 2006
University

- Identification of high level business process improvements
- A plan for present and future system initiatives *
- Organisational wide consensus for future goals and business functions *
- A model of CSU ‘as-is’ and ‘should be’
- A communication, induction & alignment tool
- Who’s doing what
- Duplication, opportunities for clean up, competency centres, new agreements etc
- Who’s impacted by what goals
- UNDERSTANDING

* Source – Pinnacle Business Group
Faculties and Divisions

• Faculties and Divisions
• Better appreciation of where they fit and their interactions
• Their own understanding, alignment & planning spin offs (many independent of IT)
DIT

- Where systems are concentrated and where they aren’t – quick pickings
- Better understanding of business
- Better aligned systems & technology
- Less complexity
- Less applications
- Less project changes
- Less coding more engineering
- Less bottleneck
- Real portfolio mgmt
Tips

- It’s big & takes time (did we mention that?)
- Every approach will be different
- You’ve got to dedicate people to EA
- You can’t solve it all – stabilise the entropy at least
- How you might get started …
BCIT’s EA Experience

2004- 2008
Building a Strategic Practices Group

• What did we include in “Strategic Practices”
• Why did choose to bring them together
• How are we doing it
• Challenges / Issues
• Going forward.....
Strategic Practices – what is it (today)??

Framework to provide guidance, consultation and approval of IT investments

Identification and articulation of significant business processes and systems and the relationship between them

Disciplines, policies and processes to mitigate the risk of malicious attack & inappropriate use of data and infrastructure

Analyzing information to mitigate or contain any adverse affects on the Institute

A means to consistently provide valuable current, predictive and trending information to measure progress & value

I.T. Performance Metrics

Strategies to minimize disruption & mitigate any loss of IT systems, data or infrastructure

Business Continuity

Methodologies to ensure robust, consistent, and repeatable approach to planning and executing projects

Project Management

Risk Management

Enterprise Architecture

Business Architecture

I.T. Security
Strategic Practices Group—how does it fit???

- Horizontal alignment across all functions of an IT organization
- Provides the solid ‘foundation’ for effective, efficient, and mature IT practices

![Diagram showing alignment of IT functions and practices]
Why did we do it....

• Support Institutional strategic vision & plan – TEK
• Increase our ability to provide rigorous IT value to the organization
• Increase our ability to ensure we align with the Institute’s strategic initiatives
• Manage and tolerate the exponential growth and complexity of our environment
• No more ‘corner of your desk’ syndrome for important internal processes
IT Management Process – Capability Maturity Model

**Level 1**
- Chaotic
  - Ad hoc
  - Undocumented
  - Unpredictable
  - Multiple help desks
  - Minimal IT operations
  - User call notification

**Level 2**
- Level 1 reactive processes
  - Fight fires
  - Inventory
  - Desktop SW distribution
  - Initiate problem mgmt. process
  - Alert and event mgmt.
  - Measure component availability (up/down)

**Level 3**
- Level 2 proactive processes
  - Analyze trends
  - Set thresholds
  - Predict problems
  - Measure application availability
  - Automate
  - Measure problem, configuration, change, asset and performance mgmt. processes

**Level 4**
- Level 3 service processes
  - IT as a service provider
  - Defined services
  - Understand costs
  - Guarantee SLAs
  - Measure/report service availability
  - Integrate processes
  - Capacity mgmt.

**Level 5**
- Value
  - IT as strategic business partner
  - IT and business metric linkage
  - IT/business collaboration improves business process
  - Real-time infrastructure
  - Business planning

**Lead or follow...**

**Fall 2004 - Fall 2008**
<table>
<thead>
<tr>
<th>Heritage</th>
<th>Operational Technology Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deliver on promises; IT efficiency dominates</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aligned</th>
<th>Tactical Technology Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Align IT &amp; business operations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engaged</th>
<th>Strategic Technology Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enhance business; agility &amp; business value driven</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frontier</th>
<th>Information and Process Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transform business inside and out</td>
</tr>
<tr>
<td></td>
<td>Contribute to innovation and growth</td>
</tr>
</tbody>
</table>
### Attributes of IT Organizations

*(Adapted from Gartner.com)*

<table>
<thead>
<tr>
<th>Focus of Value</th>
<th>Conservative</th>
<th>Moderate</th>
<th>Aggressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology services</td>
<td>business services</td>
<td>information and process</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resourcing</th>
<th>Conservative</th>
<th>Moderate</th>
<th>Aggressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tactical</td>
<td>Multisourced</td>
<td>Partnerships</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IT Infrastructure</th>
<th>Conservative</th>
<th>Moderate</th>
<th>Aggressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>Reliability</td>
<td>Agility</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complexity</th>
<th>Conservative</th>
<th>Moderate</th>
<th>Aggressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eliminate</td>
<td>Manage</td>
<td>Tolerate</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Conservative</th>
<th>Moderate</th>
<th>Aggressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service management</td>
<td>Business alignment</td>
<td>Process &amp; innovation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IT Organization</th>
<th>Conservative</th>
<th>Moderate</th>
<th>Aggressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage or Aligned</td>
<td>Aligned or Engaged</td>
<td>Engaged or Frontier</td>
<td></td>
</tr>
</tbody>
</table>
A disciplined approach to creating the Strategic Practices Group

Tips from the four phases of building a GREAT organization\(^1\)......

<table>
<thead>
<tr>
<th>Disciplined People</th>
<th>Disciplined Thought</th>
<th>Disciplined Action</th>
<th>Build it to last</th>
</tr>
</thead>
<tbody>
<tr>
<td>• First decide the “who” – then the “how and what”</td>
<td>• Develop and foster a deep belief in what you are doing</td>
<td>• People don’t have jobs, they have responsibilities</td>
<td>• Build in systemic processes to stimulate progress</td>
</tr>
<tr>
<td>• Make sure you get the right people on the bus...and the wrong ones off</td>
<td>• Confront the most brutal facts head on</td>
<td>• Provide the freedom of working within the framework of those responsibilities</td>
<td>• Build it around the vision – not the leader</td>
</tr>
<tr>
<td>• And be ‘disciplined’ enough to leave a seat empty until you find the right person</td>
<td>• Operate under the “Hedgehog” concept – don’t dilute your potential</td>
<td>• Disciplined people who exercise disciplined thought within a well structured framework will achieve greatness</td>
<td>• Be willing to challenge ‘how you do things’, but not ‘what you stand for’</td>
</tr>
</tbody>
</table>

\(^1\): Adapted from “Good to Great” – Jim Collins
Putting the right people on the bus.....

• Selecting the right people for the right reason....
  – Skill vs. Talent
  – Perspective
  – Capacity
  – Big thinkers
Choosing Skills or Talents

- **Skills**
  - Create Structured Processes
  - Critical Thinking
  - And so on...

- **Talents**
  - Conceptualization
  - Innovation
  - Enterprise
  - Talent is significantly more important than skill – skills can be taught
  - “Get the right people on the bus”
    *Jim Collins – “Good to Great”*
  - Consensus building
  - Facilitation
  - Leadership
  - Communication
Strategic Practitioner Attributes

Scope of Roles and Assignments
(Adapted from Gartner.com)

Specialist
- Deep Skills
- Narrow Scope
- Peer-Recognized
- Unknown Outside Domain

Generalist
- Broad Scope
- Shallow Skills
- Quick Response
- Others Lack Confidence

Strategic Practitioner
- Deep Skills
- Wide Scope of Roles
- Broad Experience
- Recognized in Other Domains

Depth of Skill
What Why How Issues Next
How we approached it...

<table>
<thead>
<tr>
<th>Implementation Processes</th>
<th>Establish Starting Position</th>
<th>Design Change Program</th>
<th>Develop and Implement Change</th>
<th>Sustain Improved Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People</strong></td>
<td>Identify team Build case</td>
<td>Define new roles and alignment within organization</td>
<td>Start with key role (EA) that guides other activities</td>
<td>Resource other SP’s and provide guidance, leadership &amp; training</td>
</tr>
<tr>
<td><strong>Process</strong></td>
<td>ID existing processes that SP supports</td>
<td>Articulate required new processes</td>
<td>Implement and assimilate new processes to close the gap</td>
<td>Review, expand and improve processes</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>ID existing and new technologies required to enable SP’s</td>
<td>Determine technology plan to close gap</td>
<td>Build artifacts with existing technology to show value</td>
<td>Integrate new technologies as they emerge</td>
</tr>
</tbody>
</table>
Issues / Challenges

- IT Staff feel frustrated
- Staffing without additional resources
  - While considering the skill vs talent issue
- Credibility needs to be earned
- Adding process will be perceived as locking down staff choices
- Need to constantly sell value proposition
- Approach from top down – be strategic
- Embed practices into existing processes
Strategic Practices – Going forward..

- Continue to mature the practices along their CMM’s
- Create credibility by embedding SP into processes like Change Mgmt and Project Mgmt
- Show value at every opportunity – sell!!
- Eventually position as “Enterprise” services – leverage the value
CMM – Enterprise Architecture

Level 1 + ......
- Implements Zachman
- EA Guiding Principles
- EA Roles
- Explicit links to BCIT strategy
- EA Artifact Development
- EA Docs Centralized

Level 2 + ......
- EA Guiding Principles Published
- EA Roles Integr. EA Process Communicate
- EA Manages Artifacts
- Senior Mgmt support and endorse EA
- Explicit EA governance for BCIT IT purchases based on stds

Level 3 + ......
- EA GP & Stds recognized institutionally
- BCIT Capital Plan adjusted based on EA
- Senior Mgmt involved in EA review
- Domain Arch. Manages docs
- Explicit governance for managing IT purchase variances
- All planned IT purchases governed by EA standards

Level 4 + ......
- EA integrated in BCIT
- EA Standards & Waivers improve EA
- EA metrics support every decision maker at BCIT
- Explicit governance of IT purchases using EA Stds & Waivers
- Technology Investments Optimized with EA

Attributes

Descript.

Level #

Time

Value

EA Process Informal

EA Process Development

EA Process Defined

EA Process Managed

EA Process Optimized

April 2005 – Sept 2008

- EA ad hoc
- EA docs & stds created locally
- Tech Reqmts determine strategy
- No IT Service Culture

Value
# EA CMM in Excel

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Attribute 1</td>
<td>Level 2</td>
<td>Attribute 2</td>
<td>Level 3</td>
<td>Attribute 3</td>
<td>Level 4</td>
<td>Attribute 4</td>
<td>Level 5</td>
<td>Attribute 5</td>
<td>Level 6</td>
<td>Attribute 6</td>
</tr>
<tr>
<td>EA context for architecture domains</td>
<td>Architecture (governance) integration</td>
<td>EA context for architecture domains</td>
<td>EA context for architecture domains</td>
<td>EA context for architecture domains</td>
<td>EA context for architecture domains</td>
<td>EA context for architecture domains</td>
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<tr>
<td>EA process and standards created</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
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<tr>
<td>EA documents and standards created</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
<td>EA policy framework adaptation</td>
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</tr>
<tr>
<td>EA technology impact strategy</td>
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<td>EA technology impact strategy</td>
<td>EA technology impact strategy</td>
<td>EA technology impact strategy</td>
<td>EA technology impact strategy</td>
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<td></td>
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<tr>
<td>Technology requirements for integration</td>
<td>Integration requirements</td>
<td>Integration requirements</td>
<td>Integration requirements</td>
<td>Integration requirements</td>
<td>Integration requirements</td>
<td>Integration requirements</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lack of IT Service Culture</td>
<td>IT Service Culture</td>
<td>IT Service Culture</td>
<td>IT Service Culture</td>
<td>IT Service Culture</td>
<td>IT Service Culture</td>
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Measuring the Value – Where are we?

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EA Guiding Principles

Current

Guiding Principles

State

Goals

Architecture

Context

Future

State

Architecture
Guiding Principles

Guiding Principles are:

• simple statements of concepts
• that can be easily remembered
• used to guide the development of technology
• Aligned to the strategy and operating model for the Institute – guides EA development
Guiding Principles

The statements below represent the desired future state of BCIT’s Enterprise Architecture:

- Security
- Ownership/Stewardship
- Leverage Assets
- Reliability
- Accessibility
- Timeliness
- Standards
- Governance
Security

Technology shall ensure data and access security.

– Sensitive data must be protected in storage and in transit
– People will have single identity to all technologies (reduced sign-on)
– Usernames shall be consistent across technologies
– Access will be granted on a “least privilege” basis
Ownership/Stewardship

Clear and explicit ownership of enterprise data and data standards.

- All enterprise level data entities shall have a single identified authoritative source and a data steward
- Authoritative Data Sources will be managed by applications that provide role based and value based security access to enable data stewardship
Leverage Assets

Leverage existing services and capabilities particularly existing staff skills and implemented technology.

- Leverage capabilities in our existing investments where appropriate (Banner, Data warehouse, roles, etc.)
- Leverage and invest in the skills of our staff
- Reduced Complexity - "Doing Things Right"

“REUSE before AQUIRE before CREATE”
Leverage Assets

When deciding on architecture to implement, we will:

1. REUSE before ACQUIRE
2. ACQUIRE before CREATE
3. CREATE REUSABLE COMPONENTS

Definitions

ACQUIRE: add new components to the architecture either COTS or OS/CS
COTS: Commercial Off the Shelf / Vendor
CREATE: add new components to the architecture by creating a new component
OS-CS: Open Source or Community Source
REUSE: leverage existing architecture components (cost savings in training, infrastructure, etc)
Reliability

Implement IT Service Management Best Practices (in particular ITIL) will ensure reliable technology services.

- Enterprise technology will be centrally funded, controlled and supported by IT Services
- Departmental technology will be delivered by a partnership between the department and IT Services
- Innovative technology will be supported on a project basis with consulting from IT Services
Accessibility

Be aware of needs of all clients (location & disabilities) and promote ease of use.

- Technology must be accessible at anytime and from anywhere
- Technology shall support accessibility standards by leveraging user experience design
- The Institute Portal will be the main entry point to accessing technology services
Timeliness

Provision technology assets to support clients’ needs.

– Services will be articulated in the IT Services Core Service Catalogue
  • Catalogue articulates service, who is responsible, when it is available and service availability
– Data updates must support the timeliness of processes – 3 timeframes
  • “Real Time”
  • “Just in Time”
  • “Points in Time”
– Adoption of Disciplined Strategies to enable faster, simpler and more effective technology adoption – “Best Practices”
Standards

Promote consistency and simplification using enterprise architecture standards for people, process and technology.

- All new technology must adhere to Enterprise Architecture standards
- Use of open standards is recommended, while mainstream standards are acceptable (if delivering on strategy)
- Standards will be created and maintained in the Enterprise Architecture by the IT Services Solutions Council
Governance

Alignment of IT to BCIT's Education, Research and Business Strategy - "Doing the Right Things"

- Technology Governance occurs at Strategic, Tactical and Operational levels in the Institution led by key stakeholders
- Executive Authority resides with the Vice President of Learning and Technology Services
Enterprise Architecture Philosophy 100

EA 100 will apply the following tests as part of the EA review process:

– Does the proposed solution adequately meet the clients’ needs?
– Is the proposed solution fiscally responsible and sustainable?

If the above are true, when introducing new functions, features, or infrastructure, we will ALWAYS look at our current vendors and their products FIRST. This will:

– Ensure we are making fiscally sound decisions
– Allow us to leverage existing relationships and licenses
– Manage complexity focusing on delivering solutions with known technology that has adequate staffing and support
– Leverages native integration within existing vendors’ products, features and services
– Prevent further dilution of IT Services staff skill sets

If we pass these tests, then we WILL license/implement that solution.
EA Guiding Principles - Goals

Current
State
Architecture

Guiding Principles
Goals
Context

Future
State
Architecture
Goals

The following statements represent Enterprise Architecture goals of BCIT. These items must be considered in all Enterprise Architecture planning for current and future state architectures.
Goals

• BCIT shall support and communicate an Enterprise Architecture Strategy which aligns technology to the strategic goals of the complex community we work in.


• BCIT’s enterprise business rules, processes and data standards must be well documented and published.
Goals

- BCIT’s Enterprise Architecture standards must be well documented and published
- BCIT shall have a central repository (logical) for Enterprise Architecture and its Domains
- BCIT shall support an integration strategy that facilitates data sharing between technologies for teaching, learning, research and business processes.
EA Guiding Principles - Context

- Current
- State
- Architecture

Guiding Principles
Goals
Context
Future
State
Architecture
Future State Context

The following statements represent the teaching, learning, research, business and technology landscape for the next three to five years. Thus, these items must be considered when discussing the future state architectures.
Future State Context

1. Our client community is based throughout the world, and will require 24x7 access to our systems; the definition of the BCIT community will be amorphous, and will continue to evolve in support of the Institute’s strategy.

2. BCIT’s Enterprise Resource Planning systems will continue to serve the business needs (SunGard Higher Education Banner – Student, Finance, HR & portal; Archibus/FM – Workplace Management, INNOPAC - Library).

3. BCIT’s Reporting Environment (including Data Warehouse) will be the central repository for enterprise data; this enterprise data environment will continue to use Oracle architecture.
Future State Context

4. There will be increased integration between BCIT and other universities and HE institutions. There will be increased need for collaboration between members of the BCIT community and external community (e.g. other universities, hospitals, research labs, industry etc.).

Identity Management and Identity Federation are critical to the success of BCIT’s Future Enterprise Architecture.
Future State Context

5. The BCIT technology environment is heterogeneous and will remain so. BCIT’s EA will continue to look for opportunities to simplify by reducing the complexity of infrastructure delivering technology services.

6. The BCIT network will evolve to support needs of the enterprise. We will have many research networks, we will have an administrative, academic (wired) and wireless networks and VOIP networks and we will need differentiated services to better support client needs. The integration of voice technology into our Enterprise Architecture will be another transformative step in evolving our network architecture.
Examples of Guiding Principles

• The Open Group (TOGAF)
  http://www.opengroup.org/architecture/togaf8-doc/arch/chap29.html
• National Institutes of Health (NIH)
  http://enterprisearchitecture.nih.gov/ArchLib/Guide/EnterprisePrinciples.htm
• State of Wisconsin Department of Administration
  http://weat.wi.gov/section.asp?linkid=252&locid=9
• US Department of Education
• Massachusetts Institute of Technology – IT Architecture Group
  http://web.mit.edu/itag/eag-0.1/ContextAndPrinciples.pdf
• Duke University
  http://www.oit.duke.edu/tag/principles/index.html