TECHNOLOGY SERVICES ROADMAP
2015-16
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*Note to Reader: The information included in this Technology Services Roadmap was compiled from documents written by each of the members of the Leadership Team—based on planning discussions from the 2015 summer retreat.*
Executive Summary

As we await the new University Strategic Plan, the Technology Services department has assembled an operational roadmap for the coming year to communicate our priorities. We are adopting a new operating model called bi-modal, which will purposely designate efforts towards the efficient and reliable computing environment we have built and which we maintain for Loyola. At the same time, we will focus our attention on new, emerging trends in technology that are fast moving in nature and require agility and flexibility in our response.

Bi-Modal IT is the approach modern IT organizations are taking to provide reliable systems that support University business operations, as well as the vision and agility to respond to new strategic objectives and changing organizational needs. It provides both the rock solid foundation for existing systems, and the growth capabilities to enhance and expand University programs and services. It is this approach that Technology Services is embracing to assist with the upcoming initiatives identified by the new strategic plan.

This roadmap document includes all the components Technology Services will focus on to meet the upcoming opportunities afforded by the new strategic plan, and to maintain a high level of service, support, and system reliability. We will function in both Mode 1 (Reliability) and Mode 2 (Agility and Growth) simultaneously as the proven best practice of modern IT organizations.

Mode 1: Reliability

1. **Productivity Support**: Enabling our constituents to successfully use the Loyola technology environment in order to achieve their desired outcomes.
2. **Service Audit**: Examine the Service Catalog to determine services that are candidates for automation, retirement or outsourcing.
3. **Strategic Sourcing**: Determining the best avenue to secure resources (employees / contractors / outsourcing) allows for optimal use of IT funds to support University systems.
4. **Enterprise Resource Planning**: Maintenance and support of the University Enterprise Resource Planning System (ERP) and related systems is the backbone of digital business functions at Loyola.
5. **Teaching and Learning**: Empowering our faculty to leverage technology to accomplish their teaching and learning objectives is imperative into today’s higher education environment.
6. **Data Management**: The effective stewardship of University data is central to IT. This data must be made available in ways that enable reporting to support data-driven business decisions, while be protected at all times.
7. **Cyber Security**: The protection of proprietary information belonging to the University and our constituents is the most critical service we provide.

8. **Traditional Project Management**: The ability to effectively run projects according to established best practices allows for a solid, methodical delivery of results within established constraints.

**Mode 2: Agility and Growth**

1. **Vision**: Today’s IT organization contributes strategically to the University by translating strategic objectives into delivered results through a combination of analysis, process improvement, deployment of appropriate solutions, and the ability to recognize emerging trends.

2. **Strategic Partnerships**: Recognizing the value of shared effort and expertise, strategic partnerships with vendors, corporations, and other Universities allow for greater gains at lower expense.

3. **Analytics**: Diving deeper into predictive modeling, forecasting, strategic dashboards, and real-time, highly flexible reporting enables the University’s ability to make data-driven decisions easier and more agile. This is a function that will continue to grow as technologies mature.

4. **Constituent Relationship Management**: Managing relationships throughout the whole lifecycle of student engagement from prospect to student to alumni to parent via seamlessly integrated systems will enable increased engagement, relationship building and revenue generation.

5. **Mobile**: Anytime / anywhere capabilities allow for business to be conducted regardless of location or device and provides greater business productivity and continuity.

6. **Agile Project Management**: Embracing the new trend for project management that is not governed by traditional methods allows for rapid solution deployment for the appropriate projects.

7. **Interoperability**: Loyola’s systems will function together and exchange information transparently and seamlessly.
MODE 1: Reliability

1. Productivity Support  by Patrick Donohue and Jessica Smith

Definition
Enabling desired outcomes for our constituents without hindering actions or behaviors needed to reach their goals. We will do this by understanding their needs, providing value and forging strong relationships.

Constituent Profiles

Faculty
- Teaching – Class lectures, office hours, and other non-classroom activities.
- Research – Access to information, computing power, and effective collaboration tools.
- Advising – Access to information and effective collaboration tools.

Admin/Staff
- Operations – Recurring back-office activities and service delivery.
- Strategy – Forecasting, modeling, and projecting the future.
- Projects – Implementing changes to meet compliance or improve.

Students
- Learning – In-class activities, homework, and collaboration with peers/educators.
- Living – Life in residence halls, the campus, and personal growth.
- Engagement – Events, clubs, and opportunities for university involvement.

General Themes:
- Communication
- Information Sharing
- Dependability
- Assistance
2. **Service Audit** by Tom Podles, Louise Finn

**Statement of the Challenge**
Technology Services manages a portfolio of technology services for the University that has grown over time. As projects are completed each year, new services (systems) are brought online. In almost all cases, the new service (system) is not accompanied by additional, dedicated staff to support it. Instead, it is absorbed into existing daily operational support tasks. This results in operational staff members being expected to support a service portfolio that continues to grow. In addition, the operational staff supporting the service portfolio have less and less time to work their regular daily workload. An audit of the systems and services provided by the department will identify the activities we perform that are candidates for automation, retirement or outsourcing.

**Benefits**
- Ensure efforts are aligned with organizational needs
- Provide the basis for measuring the real cost of services
- Provide the ability to gather metrics regarding effectiveness in service delivery
- Provide a mechanism to retire obsolete services
- Provide realistic demands on existing staff
- Provide defensible costs and benefits to constituents that are competitive with outside sources
- Improve the quality of services through service efficiency

**Steps Needed** *(See figures 1 & 2)*
- Use the Tiebel Consulting method to determine the quadrant placement for current services based upon urgency and importance (Busy Work, Keep Things Running, Stop doing, Long Term)
- Get insights from staff on their responsibilities and the impact on the departmental success as it relates to the service quadrants in figures 1 & 2 below
- Re-engineer operations to move services to the “Stop Doing” quadrant when possible
- Retire services when necessary and make adjustments to service delivery to reflect any inefficiencies in the analysis
- Drive innovation and determine opportunities for automation or services that can be discontinued

**Move Forward**
1. Make tough decisions regarding current efforts/systems
2. Concentrate on the essential services and minimize focus on incidental services
3. Hold staff accountable for the new service model and realize the benefits
Current State (FY14)

<table>
<thead>
<tr>
<th>Busy Work</th>
<th>Keep Things Running</th>
</tr>
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<tbody>
<tr>
<td>7. $20,000</td>
<td>1. $180,000</td>
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<tr>
<td>3. $70,000</td>
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</tr>
<tr>
<td>5. $271,000</td>
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</table>

Stop Doing

<table>
<thead>
<tr>
<th>Long Term</th>
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</thead>
<tbody>
<tr>
<td>4. $10,000</td>
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<tr>
<td>2. $98,000</td>
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<tr>
<td>6. $24,000</td>
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</tbody>
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Importance

Figure 1

Resulting State

<table>
<thead>
<tr>
<th>Busy Work</th>
<th>Keep Things Running</th>
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<tbody>
<tr>
<td>5. $271,000</td>
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<td>4. $10,000</td>
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<tr>
<td>6. $24,000</td>
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Importance

Figure 2

1. Client Patching
2. Image Creation
3. Hardware Repair
4. Asset Management
5. Client Security
6. Migrating to Next OS
7. Non Standard SW Installation
3. **Strategic Sourcing** *by Tom Podles*

**Definition**
A sourcing strategy is a set of plans, directives and decisions that dynamically define and integrate internal and external resources required to continuously fulfill the technology objectives of the University.

**Technology Services Goals**
- Justify current staffing levels within Technology Services relative to peer institutions
- Challenge the centrality of Loyola computing to the distributed models of other organizations
- Measure traditional IT services against peer institutions to better understand our discrepancies
- Demonstrate current sourcing levels through “show-back” charges compared to outsourced cost
- Close the gap between Loyola sourcing levels and peer institutions as reported in the Core Data Services from Educause

**Steps for Implementation: Right Sourcing**
1. Define a future state for the sourcing structure of the department by researching various higher education institutions and industry-specific data
2. Define a desired balance between consultant support and internal support
3. Perform a Gap-Analysis between desired state and actual state. Use the data in the cost model as a basis for current state. Use the data from steps 1 and 2 as the basis for desired state
4. Take specific steps to close the gap between current sourcing and desired sourcing
5. Measure the new model and market success to executive leadership
4. Enterprise Resource Planning (ERP) by Dave Skica and Helen Aberle

Definition

ERP is a business management software system that integrally manages critical data relating to students, faculty, staff, administrators, alumni, friends, parents and any related constituencies. The system provides support to the core business processes of the University to meet its strategic goals.

Benefits of an ERP

Some of the primary benefits of an ERP system include scalability, improved reporting, data quality, lower cost of operation, better CRM, business analytics, improved data access, regulatory compliance, and reduce complexity.

Technology Services Goal

Our goal is to move from our current focus of technical work of system upgrades, patches, etc. which address our fragmented business practices, procedures and policies to an organization more supportive in developing standard, clear business policies and practices. Our attention will be less technical and broader, allowing resources to focus on the strategic goals. Ultimately our ERP solution will be cloud based and those daily operational tasks that have been commoditized will be redistributed, enabling staff to be repurposed to address and refine the business processes.

Enhancement of the ERP system

Several steps will be taken to improve our ERP and enable Technology Services to reach our goal, including:

- Elimination of data customization
- Implementation of profile management to manage secure access
- Solicitation of vendors to assist with best practice solutions
- Effectively structure architectural environment to support the applications
- Improve reporting and metrics
- Implement auditing
- Enhance training and adoption of enhancements
- Develop full disaster recovery capabilities

Several current projects: E-procurement, Timekeeping, HRIS, Self-service, Student success/planning, Decision support for all.
5. **Teaching and Learning Support** by Tracy McMahon

The goal of technology for teaching and learning is to take the best practices from the larger IT organization and apply them to the process of selecting educational technologies. We are consistently monitoring the technology hype cycle to identify new trends and to determine if a technology is a good fit for the Loyola community. The creation of our Faculty Technology Incubator allows us the opportunity to receive first hand input from faculty members. In this way, we can determine what problems they are facing in their classrooms (face-to-face and virtual) to determine what solutions we can put into place to aid in success. The goal is to help faculty with teaching and learning challenges, and find ways that technology can engage and enhance pedagogy within the structure of a particular faculty member’s curriculum.

From conversations with faculty members and input from Academic Affairs Leadership, several preliminary initiatives have been identified from various focus areas within the larger scholarship of the Educational Technology community. The focus areas are:

1. The digital pedagogy continuum
2. Research computing
3. Learning Spaces
4. Mobile first
5. The Next Generation Learning Management System
6. Open Educational Resources
7. Adaptive Learning Technology
8. Learning Analytics and Integrated Planning and Advising Services

In each of these focus areas, specific initiatives have been identified and prioritized within the Office of Educational Technology. Faculty members will be solicited to help validate this prioritization and to identify any additional needs. Within the Faculty Technology Incubator, focus groups and testing will help us fine tune solutions. The current initiatives identified are:

1. Create a stronger relationship between facilities, academic affairs, LNDL and Technology Services (learning spaces)
2. Identify and create full incubator classrooms at the various campuses (learning spaces)
3. Confirm that our educational learning systems are mobile friendly (mobile first)
4. Feature stories of effective mobile projects (mobile first)
5. Identify an oversight group for LMS decisions (Next Gen LMS)
6. Establish selection criteria for LMS plug ins (Next Gen LMS)
7. Are we on the right system? (Next Gen LMS)
8. Identify effective library partnerships for Open Educational Resources (OER)
9. Empower faculty to utilize Moodle course reports (Learning Analytics)

This is not a complete list. We will be soliciting input from faculty members through various means during the next several months to identify any gaps in our focus areas or initiatives.
6. **Data Management** by Dave Skica and Patricia Malek

**Definition**

The development and execution of policies, procedures, technologies and best practices to handle the data assets of the University through the entire data lifecycle, allowing it to be fully leveraged in support of institutional decisions.

**Benefits of Improved Data Management**

1. Eliminates data discrepancies
2. Improves data consistency
3. Effective data analysis
4. Improves business efficiency and effectiveness
5. Improve secure access to our data

**Technology Services Goals**

- Provide reliable and timely data and decision support
- Define and provide for recovery time and restore point objectives (DR)
- Provide single source data reporting – normalized across all systems, coming from one point
- Reduce reliance on unstructured data in favor of structured data for functional and security benefits
- Provide for a data warehouse to provide for decision support and KPI analytics
- Data Identification – Inventory and classify data in support of security, permissions and best practices for access controls
- Maintain compliance with regulatory and contractual requirements
- Provide for effective governance in establishing master data management
- Provide appropriate tools for the BI reporting of the University
- Establish and clarify appropriate policies (such as data retention) across all business areas

**Steps for Implementation**

1. Move all reportable information to managed Operational Data Stores
2. Move all access to reporting applications managed by single sign on via active directory groups
3. Move to encompass Federal and State compliancy regulations concerning the protection of all Personally Identifiable Information.
4. Collapse reporting tools to a single suite of software used by all business units.
5. Define and incorporate all University information to a data warehouse.
7. Cybersecurity: Development of Risk Management Program

by Patricia Malek

Definition

In today’s business landscape, organizations face an increasingly turbulent regulatory and technological environment. With these challenges, it is critical for an organization to develop, implement and maintain a mature risk management program. High performing information risk management programs integrate security as part of the core business and is an integral part of the organizational culture. It is integrated into key components of the organization including processes, systems, applications, technology infrastructure and people.

The program should implement processes, policies, and procedures to standardize measurement and tracking of risks and the controls that mitigate them. It ideally will answer the inevitable question: “What is our Security Posture?”

“The best risk assessment frameworks allow organizations to manage information risk in a structured, comprehensive and cost effective strategy.” - source “CEB IT Leadership Council”

Results of an Unstructured Security Program

• Informal, ad-hoc security planning resulting in security gaps as the organization fails to implement the right tools in the right order to maximize security.
• Neglecting to formally establish the business’ security requirements will result in failing to appropriately serve and protect the business. This can be costly in the long run leading to unwanted consequences such as breaches.
• The inability to identify risks and assess those risks to the business environment.
• Minimal integration and effectiveness between security technologies and policies resulting in sub-optimal operational security.
• Weak incident identification and response.
Goals of Risk Management Program

Adoption of formalized Risk Management Program will meet the following objectives:

- Provide a proactive, relevant security posture.
- Identify, classify and manage information assets.
- Understand the processes that control how information is processed, stored and transmitted and define the controls in place to protect those processes and assets.
- Establish and maintain information risk criteria, including risk acceptance criteria.
- An ongoing and consistent process of assessing the risks and determine how the risks can be controlled.
- A clearly-defined, implementable roadmap for security initiatives to reduce risks by defining and controlling threats and vulnerabilities.

RiskIT Framework developed by ISACA

The Risk IT framework is centered on IT risk, more specifically, business risk related to the use of IT. The connection to business is the effective enterprise governance and management of IT risk as defined by the following underlying principles:

- Always connect to business objectives.
- Align the management of IT-related business with overall Enterprise Risk Management.
- Balance the costs and benefits of managing IT risk.
- Promote fair and open communication of IT risk.
- Establish a successful tone from the top while defining and enforcing personal accountability for operating within acceptable and well-defined tolerance levels.
- Implement as a continuous process and part of daily activities.

The Risk IT process model is designed and structured to enable enterprises to apply the principles in practice and to benchmark their performance.
Carefully choosing a combination of both short-term, low-hanging-fruit projects that emphasize value and longer-term infrastructural and cultural change projects will provide incremental increases in program quality while strengthening executive support. Understanding and implementing the key components a high-performing information risk management program will ensure success.

**References**

8. **Project Management** by Rich Sigler and Scott Sax

**Definition**

Traditional project management follows a specific sequence of steps to go from the beginning of a project to the end. Traditional project management at Loyola, also called waterfall, goes through the following phases:

- Initiation
- Planning
- Implementation
- Transition & close

Since Loyola’s Project Management Office’s inception in 2009, the waterfall method has been the main method for managing projects. It is the method by which project managers have been trained and is familiar to most of the University. This method is effective for well-defined projects that have a set scope (with requirements that are known from the beginning the project). The project team includes a project manager who manages the projects, facilitates meetings, organizes the schedule, and is responsible for completion of the project. A project advocate works closely with the project manager and team to defining the requirements up front and plan the work. Then the project team works the plan. The project manager monitors and controls the project while the project advocate is kept up to date on the progress during status meetings and updates. For the executive team, traditional project management offers great reporting and forecasting. Informed decisions are able to be made based on solid data derived from the project plan. A formal change management process allows changes to be made to time, scope, and cost through a methodical process, identifying the impact that the change will have on other projects.

Loyola will continue to use traditional project management where appropriate while constantly improving the process and further leveraging the project portfolio management tool, Workfront.
<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Easy reporting and forecasting the status/progress of the project</td>
<td>• Documentation and process adds overhead to project work</td>
</tr>
<tr>
<td>• Clear definition of the project upfront</td>
<td>• Making changes to requirements, budget, scope, or schedule takes time to be analyzed and approved</td>
</tr>
<tr>
<td>• Clear expectations for the project team, project sponsor, project advocate</td>
<td>• Unidentified risks can have a large impact due to a lack of agility in the project plan</td>
</tr>
<tr>
<td>• All expectations are well documented and changes are made through methodical process</td>
<td></td>
</tr>
<tr>
<td>• Emphasis on planning, monitoring and controlling of the project</td>
<td></td>
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<tr>
<td>• Accurate budget and financial management</td>
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</tr>
<tr>
<td>• Set schedule with identified milestones</td>
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</tbody>
</table>

### Activities in the Project Phases

<table>
<thead>
<tr>
<th>Initiation</th>
<th>Planning</th>
<th>Implementation</th>
<th>Transition &amp; Close</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Business case</td>
<td>• Kick off meeting</td>
<td>• Solution design</td>
<td>• Risk/Issue register close</td>
</tr>
<tr>
<td>• Project Charter drafted</td>
<td>• Charter sign-off</td>
<td>• Procurement</td>
<td>• Transition to operations</td>
</tr>
<tr>
<td>• High level schedule</td>
<td>• Requirements finalized</td>
<td>• Solution build</td>
<td>• Service package</td>
</tr>
<tr>
<td>• Initial budget defined</td>
<td>• Service impact survey</td>
<td>• Training</td>
<td>• Budget close</td>
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<tr>
<td>• High level requirements gathering</td>
<td>• Scope document</td>
<td>• Testing</td>
<td>• Lessons Learned</td>
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<tr>
<td></td>
<td>• Schedule sign off</td>
<td>• Documentation</td>
<td>• Project closing survey</td>
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<tr>
<td></td>
<td>• Status meetings</td>
<td>• Risk/Issue register population</td>
<td>• Close project</td>
</tr>
<tr>
<td></td>
<td>• Risk/Issue register population</td>
<td>• Execute items on schedule</td>
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<tr>
<td></td>
<td>• Budget updates</td>
<td>• Monitor/control</td>
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</tr>
<tr>
<td></td>
<td>• Monitor/control</td>
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</table>
MODE 2: Agility and Growth

1. Vision by Louise Finn, Rich Sigler and Jessica Smith

Definition

The world is changing, with technology as a major driving force. In order to remain competitive, we are responsible for monitoring the changing landscape and presenting Loyola with opportunities to capitalize on trends that present opportunities for strategic and competitive advantage. We need to be sure we are always looking several years down the road in order to position Loyola to best leverage these opportunities.

We have a number of resources available to us that we can use to stay on top of current trends and help us to determine the direction of IT at Loyola. These include:

Technology Services Leadership Team

Technology Services’ Leadership Team has an annual summer retreat where the team reflects on the past year, engages in team building activities, and plans for the year ahead. The tasks and deliverables that come out of the retreat help to focus the group’s initiatives for the upcoming academic year. Using their expertise and industry knowledge, the leadership team engages in the ongoing execution of initiatives and strategic objectives that are identified at the retreat as well as at regular meetings.

Loyola’s Strategic Planning Workgroups

As our department exists to support Loyola’s overall strategic initiatives, our active participation in strategic planning work groups will ensure that we are aware of how the new strategic plan is taking shape, as well as have an opportunity to allow us to help the planning committee understand how technology can help with innovative initiatives to uniquely position Loyola in the market.
EDUCAUSE

“Through various programs and activities, EDUCAUSE and its members contribute to thought leadership on major issues, help clarify the current environment, document effective practices, and highlight how emerging trends and technologies may influence the evolution of IT in higher education.” (http://www.educause.edu) We can (and do) take advantage of EDUCAUSE professional development events, electronic publications such as “Top 10 IT Trends”, research and more to help us to remain at the forefront of new technology developments.

Gartner

“Gartner is the world's leading information technology research and advisory company. We deliver the technology-related insight necessary for our clients to make the right decisions, every day.” (http://www.gartner.com/technology/home.jsp) We can use Gartner’s research and publications including hype cycles, strategy maps, and market clocks to see trends that are driving technology innovation, find out where our current solutions are in the technology life cycle, and help decide what technology to invest in.

CIO Executive Council

The CIO Executive Council’s mission is “to facilitate robust interactions among our global leaders in order to bring measurable value to their organizations and to support their professional development.” (http://council.cio.com) They offer professional development activities, a knowledgebase, communities of practice, and more for CIOs to exchange information and discuss challenges and opportunities.

Association of Jesuit Colleges and Universities (AJCU)

We can use our network of fellow Jesuit schools to discuss current technology trends and the impact they have on our unique communities. The Conference on Information Technology Management (CITM) is a yearly conference that “exists to promote the productive use of information technology on the member campuses and to facilitate collaboration between member institutions. The organization helps members to better understand and fulfill the proper role and function of computing, telecommunications and information services and technologies for teaching, learning and research within the Jesuit educational experience.” (http://www.ajcunet.edu/)
2. Strategic Partnerships, by Louise Finn, Patrick Donohue and Ryan Servant

As a technology service provider at a Jesuit institution, placing a renewed emphasis on a deeper understanding of the means and modes of different clients is not only an organizational priority, but is also central to our culture. For individual service providers within the Technology Services organization, this calls for a revised individual emphasis on “cultivating” the conversation and engaging our varied stakeholder base.

With the diversity of partnerships within our university, it’s important to consider the fiscal and organizational pressures that each department faces that contribute to their needs and organizational approach. As service providers, it’s our responsibility to identify these pressures and adapt our service conversations to better accommodate for specific needs. A developed strategy of increased engagement and understanding must be developed and implemented by Technology Services in order to be successful in our service objectives. Those objectives can be best addressed with a renewed focus towards three key areas: active attention and engagement, a more comprehensive customer understanding, and active development of an enhanced stakeholder experience.

Active attention to stakeholder needs first requires active engagement. Active can be defined by regular (weekly/monthly, depending on scope of service required) meetings with stakeholders to determine not only if there are issues that can be addressed, but to cultivate relationships and strategic partnerships that can better serve departmental objectives. From these interactions, it is possible to better understand some of the subversive issues the stakeholder faces and understand what impediments may arise in the future though a better understanding of departmental processes and objectives.

In addition to engagement, collection of data and information is vital for process improvement and establishing service objectives. This type of data can be collected though departmental profiles, which can answer level one objectives (based off the SixSigma/Kirkpatrick model) such as, “Are the stakeholders generally happy? When are they happy? When are they frustrated?). From there, those answers can be further explored to address deeper questions and more accurately determine root causes (relying on such models as the “5 Whys – iSixSigma”).

From data collection and analysis, it is then possible to craft a new stakeholder experience with individually crafted models of service. Such models would be engaging to the stakeholders as well as addressing and meeting previously established service level objectives. Though these enhanced models, Technology Services would be able to meet stakeholder needs with not only a more deftly defined service model, but a renewed attention to the evolving needs of each stakeholder as they exist within the higher education spectrum.

Technology professionals must evolve beyond line technicians to become practical consultants. This requires a shift of attitude and mindset.
1. **Engage with Customers**
   a. Increase the number of times we interact with customers
   b. Attend their meetings
   c. Labor with them
2. **Truly Understand Customers**
   a. Develop a profile of departments
      i. Why they exist at Loyola?
      ii. When are they happy?
      iii. When are they frustrated?
      iv. What do they wish for?
   b. Ask deeper questions - 5 Why's
3. **Create a New Experience**
   a. Attitude of gratitude
   b. Sincere service
3. Analytics for Higher Education by Dave Skica

Analytics for Higher Education is aggregated information that is shared across educational systems that can provide actionable insight to allow institutions to link student, educator and institutional performance, and provide stakeholders with insight into student progress and institutional value. – source “Harnessing Data for Better Educational Outcomes”, Dr. Kathleen Reid-Martinez, Provost, and Michael Mathews, CIO, Oral Roberts University, Okla., 2015, e.REPUBLIC., 100 BLUE RAVINE ROAD, FOLSOM, CA 95630

Benefits of Improved Analytics
1. Analyze, track, and predict student performance
2. Analyze, track, and predict institutional performance
3. Analyze, track, and predict departmental performance
4. Analyze, track, and predict educator performance
5. Adjust teaching strategies for just-in-time intervention
6. Improve student retention and course completion/graduation rates
7. Discover inefficiencies in administrative processes

Technology Services Goals
1. Provide a multi-sourced, logical view of data that is easily accessible for generating reports that provide dashboards and portals showing key performance indicators for predictive modeling and predictive analytics.
2. An Enterprise Data Warehouse that will provide a consolidation of instructional and institutional based information for decision support.
3. Implement a Master Data Management plan that identifies the key information of the institution and provides a single source of the truth involving its logical view, its relationships, and its interactions.
4. Provide the necessary tools and technologies that will permit data discovery to provide key information for decision support.

Steps for Implementation
1. Provide a common database technology for all enterprise systems so that resources, processes, and cost can be focused on a minimal set of components. That database technology is Microsoft SQL Server v2012.

2. Move to have institutional transactional systems feed a common data store with implementation methodology that facilitates the sharing of information and supports a common set of reporting tools.
   a. Our data reporting tools are Informer, Business Objects, Synoptics and Excel. This needs to be reduced to one common tool that meets the needs for all reporting.

3. Move the Operational Data Stores for Loyola’s transactional systems to a point-in-time data warehouse with the ability to support our data mining activities in providing predictive analytics and predictive modeling.

4. Implement a Master Data Management plan that provides for the integration of Loyola’s operational data into a consistent view that is the only one permitted for reporting purposes, regardless of the organization or department.
   a. Ellucian Integration Hub, StarRez Realtime Interface, TSM Interface, eThink, Loyola Time and Leave, eProcurement.

5. Implement a data/algorithm approach to providing answers to the following:
   a. What is Loyola’s value proposition in what we provide services to help students succeed?
   b. How does Loyola “work”? And how can we improve on that effort?
   c. How can Loyola improve its ability to make decisions on its investments?
   d. How can Loyola improve on its management of risk?
4. Customer Relationship Management (CRM) by Louise Finn, Dave Skica, Patricia Malek, and Robin Smith

Definition

Customer relationship management technologies are tools that track and manage relations with constituents, including prospective as well as enrolled students, parents, alumni, corporations, benefactors and other friends of the institution. A university’s relationship with its students lasts a lifetime, and CRM systems can help schools nurture these relationships—from the first contact in high school, through students’ on-campus years, all the way to alumni outreach. At every stage, personalized touches are key to success, for students and institutions alike.

Currently Loyola utilizes CRM technologies in both admission offices very successfully. The opportunity to monitor and communicate with each student regarding their academic success, engagement in university life specific to their year, program, travel abroad choice, athletic life and more exists as a retention tool for personalized communications with students. CRM systems are now using their trove of student data—often layered with additional data—to reach out to alumni for more effective fundraising and more.

We have the opportunity before us to increasingly use CRM technologies to gain insights on relationships from cradle to grave. CRMs will provide data points across the student life cycle and intelligence across all interactions. The next five years will be about turning that information into business intelligence to make better institutional decisions, while carefully managing the relationships with our prospects, students and alumni, at every stage of their life cycle—to increase loyalty, retention and satisfaction with the university’s programs and services.
5. **Mobile** by Scott Sax and Jessica Smith

**Definition**
Mobile is a popular term for pervasive access via many types of devices. Mobile is not simply a synonym for mobile smartphones or tablets. Mobile in education includes use in all aspects of the institution – administration, education, and research.

According to EDUCAUSE, a mobile strategy starts with “recognizing the needs, culture, and desires of the institution’s community” (Mojgan Amini, Blair and Takaoka). Technology Services alone cannot decide the mobile strategy for Loyola University. We need to partner with other groups such as Marketing & Communications, Enrollment Management, Academic Affairs, and more to develop a strategy that will best serve the university.

As more people adopt mobile technology, the demand for not just functioning mobile access, but optimized mobile access will increase as well. Our mobile strategy needs to include how people will access their workspaces, in addition to accessing the content we are providing. Will we provide them with an environment that looks the same, no matter how they are accessing content, or where they are located?

Loyola serves multiple audiences; students, faculty, staff, administration, prospective students, alumni, parents, and more all consume the information we provide. Each of these groups has different preferences. If we look at the audiences above, we are really talking about internal vs. external users.

In addition to multiple audiences, there are multiple levels of “mobile.” The most basic would be providing static content that uses responsive web design (RWD) so that people on many different types of devices see content that is optimized for their device. This would be up-to-date information that is not interactive (such as news, course schedules, dining hours, etc.). Moving up a level would be providing the community with customized content, such as access to the password-protected systems they use (checking their Evergreen balances, grades, etc.). The next level would also provide mobile access to password-protected systems, but would include transactions (depositing funds, class registration, etc.). These applications would need to be scaled to fit a mobile device and optimized for the user.
After identifying our goals, we need to make determinations about the resources we will use to accomplish these goals. We need to talk with the vendors of our heavily-used systems, such as Ellucian, to find out what their mobile strategy and roadmaps look like, so that we can determine when we expect further developments.

Two other critical pieces of our mobile strategy must be security and accessibility. Our Security Operations Center needs to be heavily involved in our mobile strategy to ensure that whatever we develop or procure is a secure solution. This is especially a consideration as we move into providing access to password protected systems. Our legal team will need to be consulted, to make sure solutions are vetted for liability, approval, acceptance, and authentication.

Additionally, whatever mobile solutions we decide to implement must be accessible. While smartphones do provide a number of accessibility features, we need to ensure that any apps we create or websites we configure for use on a mobile device are also able to be accessed by people who may have disabilities.

Any mobile solutions we implement should be piloted by our stakeholders. We need to go back to the groups we talked to in the beginning of the process and make sure we’ve developed what they need/want. Improvements can then be made before we roll solutions out to the rest of the campus.

As mobile devices are constantly changing, we need to be mindful of the fact that this strategy will not “complete.” We need to stay on top of the changing mobile environment and repeat this process as new devices and technologies change the way our customers expect to access information.

**Summarized from EDUCAUSE article** (Mojgan Amini, Blair and Takaoka)

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**Mobile Strategy - Level 1:** Optimized access to static content (news, campus maps, course catalogs, dining schedules, etc.)

**Mobile Strategy - Level 2:** Optimized access to personalized content (checking grades, Evergreen balances, etc.)

**Mobile Strategy - Level 3:** Optimized access to perform transactions on a mobile device (registration, depositing funds, etc.)
Determining our mobile strategy

What audience do we focus on first?  
What does that audience expect/want?  
What do we already have? Where are the gaps?  
What level of mobile strategy should we start with?

Are the solutions we will provide accessible?  
Are the solutions we will provide secure?  
Does our infrastructure support what we want to do?  
Will we develop solutions in-house or outsource?

Pilot mobile solutions  
Feedback from stakeholders  
Improvements made  
Roll out to campus


6. Agile Project Management by Rich Sigler and Scott Sax

Definition
Agile project management follows an iterative path focused on getting something into the customer’s hands very early in the process in order to get quick feedback and additional direction. Agile project management is very “hands-on” with the customer or advocate working very closely with the project team to prioritize the features and modify deliverables and scope on the fly. Agile methodologies are less structured and very people focused. It is often highly effective for software development projects, web development projects, and projects where there is less need of a structured development process and more unknowns. The project is seen as a series of small tasks, delivering the product in an adaptive manner and is not fully pre-planned from the beginning. Instead, there is constant planning, developing, and testing that happens on a recurring basis throughout each iteration. In order to effectively utilize agile methodologies the project team needs to be focused primarily on the project and not spread across numerous initiatives. The resulting product is more likely to be “exactly what the customer wanted” because the customer is involved every step of the way.

Using Agile Project Management
Not every project is appropriate for agile methods. Some characteristics of a project appropriate for agile are:
• Project Manager and Project Team are comfortable with agile project management
• Software is being developed or modified
• Definitive high level requirements exist, with fluid or undefined low level requirements
• Fast and reoccurring testing and feedback would be beneficial
• The would benefit from incremental releases and constant customer feedback
• Project does not have an externally imposed hard deadline
• There are no other projects that depend on incremental deliverables

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<th>Pros</th>
<th>Cons</th>
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<td>• Delivers product interactions to the customer quickly</td>
<td>• Requires a change in mindset for functional managers, project managers, and customers</td>
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<td>• Easily manages shifting priorities</td>
<td>• It is often difficult transition to using agile methodologies in an organization</td>
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<tr>
<td>• Easily manages change on a project</td>
<td>• Reporting and forecasting can be difficult. Delivery dates are fluid based on feedback from the customer.</td>
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<td>• Puts the power and trust into the hands of the project team</td>
<td>• The project team must be committed by management to the project and cannot be spread across numerous priorities.</td>
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<td>• Deliverables are tested and moved into production early and quickly</td>
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<td>• Constant communication with the project stakeholder/product owner</td>
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7. **Interoperability** by Dave Skica

**Definition**

The ability for information managed by any enterprise applications can be shared among the applications in real-time, system environments and web-based display technologies.

**Benefits of Improved Interoperability**

1. Reduces operational cost and complexity
2. Enables best of breed deployments
3. Leverages existing investments
4. Better reliability of resources

**Technology Services Goals**

1. Allow the sharing of information between Enterprise Applications where changes can be immediately reflected ensuring that information provides the same picture in managing the business.
2. That we support a common system environment for supporting faculty, staff and administration in the fulfillment of their responsibilities regardless of device or system.
3. That we support a common system environment for supporting the students attending Loyola University regardless of device or system.
4. That the display of application based information for the University is independent of device or web browser.

Steps for Implementation
1. Migrate FTP functions for exchanging data for enterprise applications to the Ellucian Higher Education data model supported by the ECMA – 404 standard for data interchange (JSON model).
2. Supporting a common work environment allowing access to enterprise application information initially supported by:
   a. VDI or Citrix environment
   b. Checkpoint VPN
3. Develop a common work environment allowing access to enterprise application information that is not dependent on device, operating system, or web-browser.
4. Migrate web-applications to the support for HTML 5 standard.
Enterprise Application Interoperability Stages

Stage 1

Stage 2

Stage 3

Stage 4
Conclusion

It is incumbent upon the leadership of Technology Services to provide a robust, stable and secure computing environment for the various academic and business needs of the university, while keeping an eye on the future for emerging technologies, trends and requirements. Through a bi-modal approach, we believe we can address both stability and reliability, while using agile approaches to quickly identify new trends and capabilities that are coming to market, evaluate their fit for Loyola and when appropriate, recommend implementation.