

MAIS Strategic Plan Application Solutions

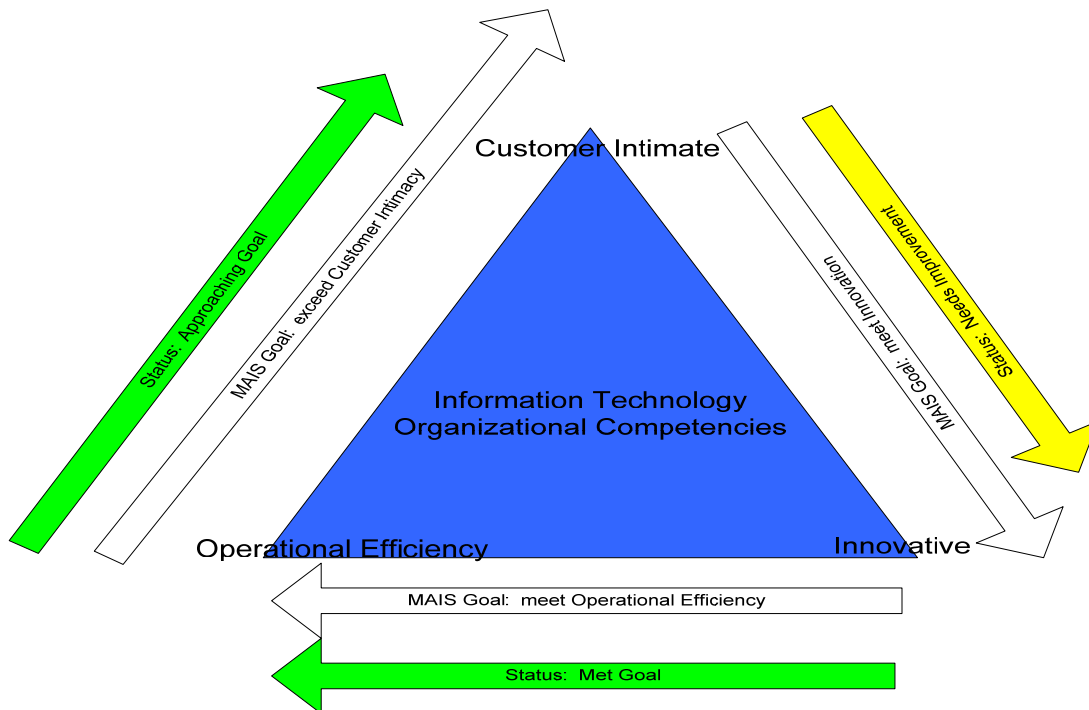
Background

Michigan Administrative Information Services (MAIS) was created to support and leverage the University's investment in M-Pathways in 2001. MAIS is the primary support organization for administrative systems¹ on campus. While MAIS provides information technology services, a decision was made *to incorporate business expertise into the organization* as well. Leadership felt that business expertise, coupled with information technology expertise, would better position the University to leverage the investment in the PeopleSoft applications and the resulting information asset.

There are several other key organizational design concepts to note to better understand the MAIS organization and its relationship to its partners and customers. They include:

- Become a *customer intimate* organization. Information technology organizations must be competent in three areas to be successful: customer intimacy, innovation, and operational efficiency. What they choose to excel in defines them. MAIS choose excel in customer intimacy to focus on better understanding the business needs of the University. This was consistent with the vision and expectations of leadership in 2001.

MAIS Competencies Diagram and Status



¹ Exceptions include systems for patient care and student systems on the Flint and Dearborn campuses.

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- Define an *appropriate budget* that will effectively operate and improve on our investment in administrative information technology. Initially, it was difficult to determine how much the investment in administrative information technology should be in this new world. Adding business expertise and whole product concepts to the support model, coupled with licensing costs for application software, meant a comparison to the old model would not work. MAIS has been successful in identifying and bringing down its *operational costs* and increasing its *discretionary capacity* in its first 5 years. The increase in discretionary capacity is how MAIS can add value to the University.
- Provide *whole product support* for systems, including training, documentation, Help Desk support, consulting, and communication services
- MAIS provides *enterprise-wide systems*. MAIS will focus its investments into systems and services that benefit the University as a whole and will not develop departmental specific systems.
- Become a *systems integration* shop rather than a systems development shop. Rather than build all of our software from scratch, the University felt that purchasing vendor software is more effective than building and maintaining software. Rather than focus on designing building functions for compliance (e.g., tax compliance, financial aid regulations, etc.) and common business needs (e.g., payroll, procurement), we can focus on adding features we can't easily acquire to make the unique solutions needed at the University. MAIS also invests in linking the various vendor products together to meet the University's needs.

Going Forward

The needs of campus as identified via the campus interviews and various discussions indicate the following for MAIS in the next 3-5 years.

- MAIS should continue to strive to be a customer intimate organization but should invest more into being competent in the area of innovation. MAIS should continually improve in the area of operational efficiency. The understanding of the business and closer partnership with campus is the most effective way to leverage the investment in information technology. MAIS has done a better job of partnering with central offices and must improve in its relationship with schools and colleges. In addition, MAIS needs to invest more in the area of innovation in key areas in order to help maintain the University's competitive advantage. While MAIS is moving all of the administrative systems it supports from the mainframe or client-server environment to the web, we are accomplishing this in a low risk fashion. MAIS and its business partners will selectively identify projects and technologies that will differentiate the University in strategic areas. Efficiency in operations must be an ongoing effort as more and more is added to the MAIS portfolio while seeing minimal increases in base budget.
- We assume the MAIS budget will remain fairly steady and do not anticipate a huge reduction or a huge increase. Increases and decreases to the budget will be based on strategic decisions based on solid business cases.

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- MAIS will continue to provide whole product support and will invest more in measuring effectiveness of those support services we provide and adjust accordingly.
- MAIS will continue to focus primarily on enterprise solutions but will invest more time into an IT Commons approach to supporting departmental or unit systems initiatives. A move to a services oriented architecture will help support this effort.
- MAIS will continue to be a systems integration shop but will invest more in systems development skills, tools and technologies. This is the primary method MAIS will use to become more competent in the area of innovation.

Our Application Portfolio

The University of Michigan has made a significant investment in administrative information technology over the past ten years. As with any investment, it requires constant management and rebalancing. Applications are the most visible and concrete portion of the investment. Applications are what campus users interact with to conduct the business of the University. There are three different types of applications needed to support the University: transactional (efficiency, cost cutting), informational (increased control, better information, better integration, improved quality, faster cycle control) and strategic (high value, customer focus, innovation, major change).

Prior to 1998, the University had a portfolio heavy in the transactional area and growing in the informational (e.g., data warehouse) area. There were some strategic applications delivered as well (e.g., self-service for students on the web). However, our applications were old and not designed for the way the University wanted to conduct business. In addition, the University's approach to administrative systems was to develop our own systems with a few exceptions (e.g., financial aid). This era of IT was prone to project failures, long design efforts and slow response to changing business needs. The Strategic Data Plan of 1995 was the impetus for the University to move to vendor solutions and the creation of MAIS as a systems integration shop. M-Pathways was the main vehicle for that change. Five years after our last major implementation of PeopleSoft and acknowledging the recent acquisition of PeopleSoft by Oracle, it is time to confirm or change our direction and to assess our portfolio.

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Current Status

First, we must understand our current application portfolio. Note that our ERP Solution is highly customized while many of the niche products are not customized locally (nor are many able to be customized).

Function	ERP Solution	Niche Product	Developed Internally
Relevant to all Administrative Systems		ImageNow Corpay SumTotal Systems	WA Gateway Data Warehouse
Data Delivery	Application delivers reports	Business Objects provides BI tools suite ; CLC Metrics	Development's Executive Information System
Development		DAC (supported BSR mainframe product) Kintera (Efundraising)	Web address updates
Financials	PeopleSoft	MarketSight Everest	Bank Depository
Human Resources	PeopleSoft	Deploy	
Physical Resources	PeopleSoft	FMS (Plant Ops)	
Research		eResearch	
Student Administration	PeopleSoft	Princeton Review Infinet	SAKAI (primary support from the Duderstadt Center and ITCS)

Trends Impacting Our Application Portfolio

As the University plans for the future, a number of trends have been identified that impact our Application Portfolio. They include:

- Oracle's acquisition of PeopleSoft* and its announced plan to *move to Fusion*. The current PeopleSoft applications and supporting technical architecture (tools and platform) will be supported indefinitely, but the technology will age and we believe the functionality will remain constant while Oracle invests in the new Fusion products. While our Financial System was just upgraded to the latest version of PeopleSoft, it will require one more upgrade (probably in 2009) before we can move to Fusion. We plan to upgrade our current Student Administration and Human Resource Management systems to the latest version of PeopleSoft by June 2008, then those applications, too, will be on a platform that allows transition to Fusion. Even though we can move gradually to the Fusion applications, the University needs to

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decide what to do with its core applications that are supported by PeopleSoft (and all of the implications downstream) between 2009 and 2013.

- In 1996, the promise of Enterprise Relationship Planning (ERP) software was to support your application and data needs with a single vendor on a common technical platform. The University has made decisions in the past five years that indicate it is *not fully supportive of the traditional ERP model*. For example, we chose Princeton Review for student recruiting and admissions; we chose MarketSight for web based strategic purchasing; we chose Sum Total Systems for training delivery and tracking; we are planning to use Deploy for employee recruiting and applications. Clearly the University is selecting best of breed functionality for strategic purposes when it doesn't impact the core applications (these are all applications considered on the outer edges that can be easily interfaced with the core systems). The industry seems to be moving to a new model as well. Systems of the future (e.g., Fusion) will be built using a *Service Oriented Architecture* model that will theoretically allow us to select the best applications (or maybe even business processes) and link them together.
- One of the goals of the Strategic Data Plan and M-Pathways was to create better information for decision-making purposes. Much progress had been made towards this end in the 1990's as a result of the Data Access Project. M-Pathways was pursued in part to provide an improved and integrated data resource. However, the transition to M-Pathways stalled efforts due to the transitional impact of the project. Now, the University is poised to *aggressively leverage its data resource for business insight*. All new application projects must consider their ability to contribute to business insight. Specific applications to support decision-making (seen as informational or strategic) are becoming a higher priority than applications that are simply transactional. For example, the need to understand how we utilize our physical plant is taking precedent over many other projects. We expect to see a higher level of investment in leveraging information than in improvements of our existing core systems than we have seen in the past.
- New application frontiers are being identified. Customer Relationship Management software has been identified as being of strategic importance in order to improve revenue for fundraising purposes or to improve the quality of our student body. These *applications support a new business need* and contribute to better business insight. Again, they are taking precedent over improvements or replacements to our existing core systems.
- *Common tools are being identified that can improve the user experience* overall. While the desire for a common user interface is diminishing (users seem to be more comfortable with different experiences as we mature in our use of the internet), we still like to be able to do some things in common. Single signon for security purposes is extremely popular and seen as a benefit. A common workflow and rules engine and the existence of a roles database will improve the user experience. A common approach to delivering alerts and monitoring events will increase effectiveness for all users. Projects like the Enterprise Directory help meet this need. Additional technologies to put in place workflow and rules engines would be required.

Application Platform Principles

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Management Principles

Area	Principle	Implications	Pros	Cons
Technology Risk	We will deploy only those technologies that are mature, stable, secure and proven in the field, unless they are of strategic value and the University is willing to accept the risk.	We may miss the boat on cost-reducing or customer enhancing technology.	<ul style="list-style-type: none"> Short term costs are reduced by avoiding investments in unproven technologies Upgrades are less likely to compromise service levels. Users are more likely to adopt the system 	<ul style="list-style-type: none"> May not be able to adapt to changing business needs as quickly Will not be seen as a leader in administrative systems May lose donors, faculty or students
General vs Optimized Solutions	We will adopt a primary and secondary target application environment in order to provide general solutions for those business processes we do in common and to provide optimized solutions where they add strategic value to the University.	MAIS will design its application infrastructure to optimize security, response time, performance, availability and access for key business processes. We will move to a J2EE and a .NET shop and away from proprietary solutions (i.e., move from PeopleSoft proprietary tools to Fusion J2EE).	<ul style="list-style-type: none"> Ultimately this is a reduction over our current situation More flexibility than our current environment; can better accommodate business needs Acknowledges trend on campus and in industry. Will allow us to be more nimble 	<ul style="list-style-type: none"> Will require greater commitment and investment in training and technology Budgeting and planning may be more complex Change management may be more difficult
Degree of Autonomy	Core common services will be provided centrally. Unique services will be provided using an IT Commons approach.	Recognizing the centralized / decentralized issue will always exist on campus, MAIS will focus on delivering central systems as it always has but will also deliver data and business rules using a web services/Service Oriented Architecture to support business intelligence and unit solutions.	<ul style="list-style-type: none"> Units on campus will be able to control their destiny on unit specific solutions when deemed strategic while continuing to leverage central systems when doing something locally adds little or no value Faster response to unit requests Control is in the appropriate place for each application 	<ul style="list-style-type: none"> MAIS will diminish its ability to deliver central systems to a degree Overall costs (technology and skills duplication) may be higher Roles, decision making authority, and ROI are less clear Data inconsistencies may evolve
Buy versus Build	We will purchase software when it is	Vendor software has proven to be	<ul style="list-style-type: none"> The University gets more choices 	<ul style="list-style-type: none"> Trying to be a systems

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	available in the market, meets business needs, and is in an area where we are not seeking a competitive advantage or where our skills are weak. MAIS will build software when we have strong skills or it is for competitive advantage.	advantageous to the University in many areas. We will continue to pursue and support this approach. When a vendor product is not available or cost effective and MAIS has strong skills or the need to develop those skills, we will build solutions.	and can leverage the appropriate solution to meet its needs	integration shop and a systems development shop will require additional investments in training, tools, and technologies
Process Methodology	We will provide mission critical solutions by following a formal methodology process. MAIS involvement in IT Commons-like solutions will follow a more prototype model.	We have a strong methodology that is proven to deliver high quality solutions on time and on budget. We will continue to improve this approach. We will have to develop additional techniques to allow it to participate in solutions using a prototyping approach.	<ul style="list-style-type: none"> • Continue to provide strong documentation for design specifics, decisions, etc. for mission critical applications • Continue to use a process that enforces strong organization, predictability and focus • Prototyping adds new techniques that will lead to faster life cycles and can be more responsive to customer needs 	<ul style="list-style-type: none"> • Formal methodology process is usually associated with longer cycles and higher cost to deliver • Design documentation can get out of sync with system • Prototyping can lead to churn, incompatible expectations, higher costs than anticipated, and lack of documentation • Organization may struggle with supporting both approaches

Vendor Principles

Area	Principle	Implications	Pros	Cons
Single Vendor vs Best of Breed	We will select each application based on a best-of-breed approach, as long as it fits our primary or secondary environment.	We will need to change our applications and supporting infrastructure over time. We will need to transition our infrastructure, tools, and skills. We will truly need	<ul style="list-style-type: none"> • Permits us to have best possible solutions in each area • Prevents lock-in to one vendor • Supports industry direction. • Supports trends on campus toward 	<ul style="list-style-type: none"> • Management and staff training is more difficult • More complex • More vendors involved may increase level of finger pointing • Data integration issues will

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		to excel at system integration. We assume SOA will mitigate some of these issues	best of breed	increase
Proprietary vs Openness	We will limit the implementation of single vendor technologies that limit our choices.	We will put flexibility and interoperability ahead of implementing bleeding/leading edge technologies. This principle curtails the best of breed principle to some degree and supports the primary and secondary environment principle.	<ul style="list-style-type: none"> • Use of standards would lower training and support costs • Acquisition costs should be lower due to increased competition • Technology should be more proven 	<ul style="list-style-type: none"> • May miss out on technology that provides a competitive advantage • Lower cost or more efficient solutions may be bypassed
Outsourcing	We will build, install, operate and maintain our own application services infrastructure with few exceptions.	We will continue to own/operate our own infrastructure and retain personnel to support that infrastructure. We will use outsourcing to support unique solutions that we cannot cost justify internally.	<ul style="list-style-type: none"> • Retain control over our infrastructure • Free to make changes to support needs • Can include unique features. • Less total cost of ownership given our size • Better control over audit, provisioning, configuration and security policies 	<ul style="list-style-type: none"> • Retaining skilled staff may be difficult • Support costs will be higher if technology is not mainstream • Management attention required to build and maintain infrastructure

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Application Approach Options

So where does our current situation, business trends, and application platform principles lead us? There is no simple and clean answer that will meet the diverse needs of the University over the next five to ten years. Rather, we need to adopt a direction that best meets the needs as we understand them and continually monitor our progress and alignment to the priorities and business needs of the University. While not simple, there are some key drivers that should be weighted more heavily in setting our direction. They include:

- Our investment in PeopleSoft applications and infrastructure must change by 2013². However, we believe that vendor purchased or community-sourced software is the most effective solution to meeting our needs. The University cannot afford to develop all the software it needs in the timeframe it needs it. However, it is not likely that a single application vendor can meet the various needs of the University. We will need to keep the number of vendors to a minimum but recognize that we are moving to a best of breed approach.
- The University has new application needs that are of strategic importance.
- The University must continue to leverage information for strategic business purposes.
- MAIS must increase the tools available in its toolkit. We need to move to an open standards environment using J2EE and .NET technologies and adopt a service oriented architecture approach as part of this transition.

What are the implications of aligning MAIS to support these business drivers?

To support these drivers, *MAIS has to get more efficient in its support of current systems* (decrease non-discretionary effort) and direct those savings and *redirect its discretionary capacity*. *MAIS must add or enhance its toolkit* (J2EE, .NET, SOA, web services), and at the same time standardize on a primary and secondary architecture (eliminate the mainframe and the PeopleTools environment). We must plan for the *move away from our current PeopleSoft environment* as our primary environment.

Trends in enterprise applications require that MAIS perform more traditional application development work as compared to a system integration focus in the past.

- We still desire to buy applications that we can customize, and more and more of those tools are based on core development environments like Java.
- PeopleTools was a proprietary development environment that enabled a lot of people to make system changes. It is likely that tools will emerge to make Java and .Net more accessible to non-developers, but for the foreseeable future, traditional programming skills and techniques will be needed to modify vendor purchased applications.
- Open Source applications are becoming more attractive to us. It is likely that we will purchase some (if not a lot) of open source infrastructure and applications. All of these require sophisticated programming experience (mostly in Java).

We should establish Java as our primary development environment.

- The majority of large enterprise applications are based upon J2EE.
- Open source development efforts are based purely on J2EE.

² Any kind of significant support for the PeopleSoft product is slated to end at this time.

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- There will be a large Java community for the foreseeable future.
- There is no obvious replacement for Java on the horizon (unless Microsoft can radically change the market).

We should establish .Net as our secondary development environment for point solutions.

- Niche products continue to be released using Microsoft architectures.
- Development time for .Net applications appears to be shorter than J2EE.
- .Net is likely to dominate in the departmental space.
- We have long term commitments to applications (eResearch) which are based on .Net.

We should establish a set of core infrastructure which will be at the center of most administrative systems.

- The core infrastructure will include messaging, identity and other core services which will need to span all systems.
- The core infrastructure will include a development and runtime environment.
- Applications selected in the future should either directly use this core infrastructure, or have a well defined approach for how they will integrate with this core infrastructure.

The core infrastructure should either be based on Oracle Fusion Middleware, IBM middleware, or open source middleware (e.g. Apache, JBoss).

- Gartner has identified four "Mega Vendors" in the application infrastructure space (Oracle, Microsoft, SAP, IBM).
- Except for IBM, these vendors are leveraging their applications to gain market share in the infrastructure space.
- There is no compelling reason to consider SAP Netweaver as core infrastructure at this time. We don't own any product from SAP. SAP has no products which have emerged as best of breed to our user community. SAP is the newest of the four vendors in the infrastructure space.
- Microsoft has had the least success in large scale enterprise applications. Their success has been in some specific applications, and in applications geared toward mid-range companies. There is a basic dislike for Microsoft that permeates some areas of higher education. A shift toward Microsoft as our primary platform would be received poorly by some of our campus constituencies.
- Due to our PeopleSoft applications, our commitment to the Oracle database and our participation in the HEUG, we have the closest relationship with Oracle of all of the vendors. Oracle has been in the middleware infrastructure market longer than the other companies. Oracle (and IBM) are committed to open standards. PeopleSoft applications will soon be certified on Oracle middleware, and in the future Oracle Middleware will be the preferred platform for PeopleSoft applications.
- IBM's infrastructure is more widely adopted than any other company (other than Microsoft) and could be attractive. The fact that IBM does not provide applications could put them at a disadvantage with some applications, but it also could be an advantage to us to have our infrastructure vendor be different than our application vendor. Oracle has signed an agreement with IBM, but it's not clear how much of the IBM product line could work with Oracle applications in the future. IBM doesn't feel like a compelling choice at this time, but shouldn't be ruled out yet.
- Open source infrastructure components are widely adopted by other parts of the University, and by other higher education institutions. Open Source infrastructure doesn't provide the breadth of products that some vendors do. Open Source infrastructure gives the most control to technical staff, and best facilitates integration and code sharing across systems. Open source may eventually prove to be the most cost effective solution, particularly if we can successfully support the architecture without adding staff.

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Applications selected in the future should either directly use this core infrastructure, or have a well defined approach for how they will integrate with this core infrastructure.

- Not all products will support our core infrastructure, but they should be required to support our key integration technologies such as work flow, messaging, and identify management.
- We will want to minimize other infrastructures, but business forces will probably require we run more infrastructures than our core infrastructure.

We should build our Business Intelligence “Web Reporting” application using our secondary platform (.Net).

- The Web Reporting development infrastructure will probably need to be in place by the start of FY07.
- It is too soon to pick the core infrastructure. Acquisitions and the shift to SOA have made the market confusing and difficult to predict. We need to wait to see how the market develops before committing to a particular architecture. We should wait until 2007 to commit to the core infrastructure.
- It appears that .Net applications can be built faster than Java applications.
- It appears to be easier to train developers to develop in .Net than Java.

We should embrace SOA, but not overly commit to soon.

- SOA has a lot of momentum now, but other design paradigms have had similar momentum and failed to be fully embraced.
- Instead of large organizational shifts at this point, we should first develop expertise and experience in web services.
- Even though our BI “vision” emphasized SOA, we shouldn’t let that long term vision get in the way of short term progress.

Michigan should commit to Web Services as a core delivery mechanism.

- It is highly likely that Web Services will continue to flourish, whether SOA continues to emerge or not.
- Anything we do with Web Services is likely to have a long shelf life, although some standards will change.

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So what does our target look like?

Likely Direction

Function	Open/Vendor Solution³	Niche Product (proprietary)	Developed Internally
Relevant to all Administrative Systems	Portal? Workflow BAM BEPL Enterprise Directory	ImageNow SumTotal Systems	WA Gateway Data Warehouse
Data Delivery	Application delivers reports	Business Objects	Web Reporting environment; Integration with unit systems (.NET)
Development		Kintera (Efundraising)	EIS
Financials	Developed in J2EE	MarketSight Everest	
Human Resources	Developed in J2EE	eMploy (Deploy)	
Physical Resources	Developed in J2EE	FMS (Plant Ops)	
Research	eResearch (.NET?)		
Student Administration	Developed in J2EE	Princeton Review Infinet	SAKAI (J2EE)

Transition Plan Options

The other major question to answer is “how long should we take to transition?” There are really two options. We can be aggressive or we can take our time. At one end of the spectrum, we could choose to hang on to our PeopleSoft applications for as long as possible, replacing it in pieces as better solutions arise and as part of a planned obsolescence to ensure we are off of PeopleSoft before support runs out. The other approach would suggest we select a single vendor and move as quickly as possible to that new environment. This is the approach Oracle or SAP would like us to select. In fact, this is what we did when we moved to PeopleSoft originally. A variation of this approach would be to identify best of breed products for each area and move to this option aggressively.

Based on our current situation, the business drivers, the need to leverage our existing systems for decision-making purposes and the need to add new, strategic applications to our portfolio as well as the unsteady state of the software industry, we *recommend a slow transition to our target environment.*

³ May not be same vendor for all functions in this column but should be kept to a minimum.

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Option	Description	Pros	Cons
Ride PeopleSoft applications as long as possible	Upgrade to the last version of PeopleSoft and plan to move off PeopleSoft for everything by possibly going to Oracle Fusion	<ul style="list-style-type: none"> • Better option for cash flow • Allows us to implement BI solutions • Allows us to add new applications to support strategic direction 	<ul style="list-style-type: none"> • Current PeopleSoft applications will fall behind best practice for 3-5 years • May need to develop some technology around PS to enable us to keep up with demand⁴
Aggressively pursue replacement of single vendor	Acquire new licenses from a single vendor and move to that software as quickly as possible	<ul style="list-style-type: none"> • Might get better deal as early adopter 	<ul style="list-style-type: none"> • Will lose momentum on BI and new applications • Cost may be higher; cash flow issues • Software will be untested • May not meet business needs as vendor may not deliver on vision • Vendor could be bought out by another vendor
Aggressive pursue replacement of best of breed	Identify the best of breed solution for each function, identify an integration strategy, and move to that software as quickly as possible	<ul style="list-style-type: none"> • Leverage best practice in each area 	<ul style="list-style-type: none"> • Will lose momentum on BI and new applications • Cost may be higher; cash flow issues • May need to build integration rather than wait for it to be delivered

⁴ Much like Mandarin was used to deliver the first Wolverine Access against the mainframe.

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Recommendation

It is important to define our target destination and guiding principles so that we can make decisions that move us in the appropriate direction. Moving in a common direction is more important than trying to guess the “right” answer. In general:

- Our target application environment will be based on a services oriented architecture.
- We will support both J2EE and .NET platforms.
 - J2EE will be used as our primary environment for our large mission critical applications.
 - .NET will be used for reporting and integration on campus or as a second option for applications when the functionality interests outweigh the technical interests.
- We will purchase applications rather than build them.
- We will limit the number of vendors as much as possible. When our main vendors cannot meet our needs we will: 1) look to niche vendors that fit our target application architecture or provide external hosting solutions, or 2) build it internally using our target architecture and development tools.
- We will begin to move to this new environment (development tools, technical architecture, development of staff skills, and development of methodologies and standards) immediately and will complete the transition by 2013.

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TimeFrame	Major Application Activities
2006	Upgrade Business Objects Start to build Web Reporting System Start to build 3-5 BI Applications (e.g., space, financial controls, human resources, push tech, Unit Management System) -Including starting to provide web services to support unit-developed solutions in support of web reporting and BI applications Implement eFundraising (CRM for development)
2007	Implement SRM solution (CRM for student admin) Implement remaining Financial modules Start HE 9 Upgrade Start planning for replacement of HE and FIN systems
2008	Complete HE 9 Upgrade Start Fin 9 Upgrade
2009	Complete Fin 9 Upgrade
2010	Decide on Replacement of HE and FIN as appropriate
2011	Start replacement of HE and FIN as appropriate
2012	Continue replacement of HE and FIN as appropriate
2013	Complete replacement of HE and FIN as appropriate

Assume product strategy planning and maintenance enhancements continue throughout except where resources are impacted by upgrades and replacement projects.

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Thoughts on Fin (appendix detail).

Possible scenarios for Financials using these recommendations:

- Make a decision on remaining PeopleSoft modules we want to implement and implement them asap in order to get the return on investment
 - Pro:
 - The infrastructure exists to support the applications
 - Staff knows the tool set
 - Probably means faster implementation
 - Products come with integration already designed
 - Con:
 - More products to convert
 - More costly to speed up implementation would need additional resources
- Buy non-Peoplesoft products that support these business needs that are in .net or Java2EE
 - Pro:
 - Would give us an opportunity to train staff on the new tools sets
 - Likely that only integration points would need to be converted
 - Con:
 - Staff would have to support to tools sets for a longer period of time
 - Would take longer to implement since we have few staff with .net or Java 2EE training
 - Another user interface
- Buy a hosted solution
 - Pro:
 - Likely that only integration points would need to be converted
 - Con:
 - Less control over pricing and modifications
 - Another user interface