

Lessons Learned Analysis: Six Large-Scale Projects from 2006 - 2017

Office of the Chief Information Officer

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Executive Summary

The OCIO is in the unique position to see patterns across the enterprise and has summarized lessons learned reports from individual projects to benefit future projects. Lessons learned is the learning gained from the process of performing the project” (Rowe & Sikes, 2006) and “can be used to improve future projects and future stages of current projects.” (Rowe & Sikes, 2006)

An examination of lessons learned reports from 2006 to 2017 was performed for six (6) enterprise projects. In general, similar issues were raised throughout: organizational change management (OCM), executive sponsorship, contract/vendor management, project management, requirements, technical, staffing and go-live or production support.

All projects stressed the importance of organizational change management (OCM) and adequate OCM resourcing cannot be overemphasized. All projects also indicated the importance of strong executive sponsorship.

Project management fundamental principles were featured heavily: schedule, status reporting, budget, and scope management. In five of the six projects there was a “reset” triggered by challenges. Mid-stream evaluation could be considered inevitable and built into the schedule and. In several of the resets, restructuring the efforts as programs, “projects grouped together managed in a coordinated way” (PMI.org) was seen as a key success factor.

Another interesting focus area was go live and production support: go live readiness; go live cutover support; Identifying production support resources early; and, in the case of phased or iterative releases, adequately staffing to support the new production system while continuing project activities.

Approach

The approach was a qualitative review of the lessons learned reports from six large-scale projects. Large-scale is defined as large budget or enterprise-wide or cross-agency.

The selected large-scale projects have the following characteristics:

- Five of the six projects included an Enterprise resource planning (ERP) systemⁱ or administrative or financial business functions
- Project end dates ranged between 2006-2017
- Budget information was not available for every project

Agency	Project Name [project abbreviation]	End Date	Budget
State Board for Community and Technical Colleges	ctcLink Remediation [ctcLink]	12/2017	\$100M
Consolidated Technology Services	Shared Service Email Project [SSEmail]	2012	Not available
Office of Financial Management	Time, Leave and Attendance [TLA]	10/2015	\$34M
Department of Personnel	HRMS Human Resource Management System [HRMS]	2006	Not available
University of WA	UW HR/Payroll Modernization [UW-HR/P]	12/2016	\$68M

Health Care Authority	Benefits Administration and Insurance Accounting System [BAIAS]	2009	Not available
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Analysis

Key findings from the lessons learned project reports were captured as verbatim statements to maintain the original intent. Each statement is followed by [ABC] that indicates to which project it is associated. Statements were then compiled and collated into themes, which were based initially on the Critical Indicators of Project Performance (Washington State OCIO, 2018) and emerged through examination. The table below illustrates how many projects discussed each theme.

Descriptions of each theme are included in the Lessons Learned Reports Findings section below.

Number of projects	Themes
6 of 6 (all)	Organizational change management – <i>*heavily*</i> emphasized in most
6 of 6 (all)	Executive sponsorship
5 of 6	Contract / vendor management
5 of 6	Project management
5 of 6	Requirements management
5 of 6	Technology
4 of 6	Staffing
4 of 6	Go live & Production support

Lessons Learned Reports Findings

In each section below, a theme is described in *blue italics* and statements from project lessons learned reports are listed. Each statement is followed by [ABC] that indicates to which project it is associated.

Organizational Change Management (OCM) - 6 of 6 projects

According to the Association of Change Management Professionals, change management is “The practice of applying a structured approach to transition an organization from a current state to a future state to achieve expected benefits.”

ALL projects placed emphasis on various areas of organizational change management (OCM), such as stakeholder engagement, communication, and training. The people have different titles: change managers, change agents, readiness coaches, transition team. All of them are distributed / embedded in all stakeholder units. Adequate resourcing cannot be overemphasized.

OCM is important for internal and external people. People-focused (rather than systems and processes) change management approach from the start. [UW-HR/P]

Change Managers and collaborative relationships with all stakeholder entities critical to the success of the program. [UW-HR/P]

Stakeholder engagement

Emphasize / focus on communication stakeholder leadership. Build a fundamental understanding of the significant shifts to business processes. [UW-HR/P]

Key business partners and customers need to be brought in early to help develop and support the vision. [BAIAS; SSEmail]

Communication

Managing communication to **all** external stakeholders is critical; communicating at all levels. Establish consistent communications among all stakeholder groups, tailored for each group. Use multiple venues / modes including face-to-face customer meetings to address service issues, and to allay concerns. [HRMS; SSEmail]

Training

Training should equally prioritize changes in business process with change in application software. [HRMS]

Provide customized training, including classroom, lecture, and recorded video delivery options developed by role. [UW-HR/P]

Establish mechanism for “testing” trainer, super user and user knowledge. Establish super users for each function at each school. [ctcLink]

Build cross-training into the project schedule so that the staff have time to train others. [SSEmail]

Executive Sponsorship - 6 of 6 projects

Executive sponsor is a role in project management, usually the senior member of the project board and often the chair. (PMI.org) “... having a C-level sponsor is a key requirement for success. There are a number of reasons: The sponsor makes sure that the project’s goals are aligned with overall company strategy, garners support (and overcomes resistance) from other senior executives, and provides ongoing direction as the effort unfolds.” (Harvard Business Review)

ALL projects placed emphasis on various areas of executive sponsorship, such as leadership vision, culture, and governance.

Leadership must understand and cultivate the necessary enterprise support for everything from securing funding, to supporting implementation and accepting the future system. (Particularly key stakeholders) resource. [BAIAS]

Establish a single Executive Sponsor with clear accountability (i.e., “the buck stops here”) for resolving issues related to policy or resources working with other stakeholders as needed. [ctcLink]

Leadership vision

Leadership / team building - Periodically re-anchor team member to clear mission statement that everyone can understand and embrace. [HRMS]

Leadership should lead the transformation effort and not expect the Program to do it on its own. Stay focused on vision for business change and intentionally drive actions that maintain alignment. Maintain commitment and momentum when turnover occurs among leadership or staff. [UW-HR/P]

TLA - All big, complex projects are business transformation projects, not IT projects. New technology impacts the way the agencies do their business, big transformation needs to be sponsored and led by business leaders and supported by IT leaders.

Culture

Develop capacity to make good decisions as a team when under tremendous pressure (e.g., information overload, deadline, budget, political and so on). [UW-HR/P]

Establish a culture that values voice, collaboration and the courage to make course corrections as circumstances change; and the belief that together we are one team. [SSEmail]

Governance

Business leaders (Human Resources, Finance, etc.) need to make up the majority of the steering committee and represent a broad range of stakeholders from across the enterprise, not just the pilot agencies and one token agency. [TLA]

It was often not clear who was making the ultimate decision regarding the project. There seemed to be multiple executive sponsors. A clarity of roles and responsibilities would have led to greater success for the project. [TLA]

Assign accountability for determining project priorities and recommending changes to scope, schedule or budget to an ERP Steering Committee. [UW-HR/P]

Contract / Vendor Management - 5 of 6 projects

The Wikipedia definition of contract management is, “the management of contracts made with customers, vendors, partners, or employees.”

Gartner describes vendor management as, “a discipline that enables organizations to control costs, drive service excellence and mitigate risks to gain increased value from their vendors throughout the deal life cycle.”

Contract and vendor management are critical roles that need to be staffed with experienced people. [TLA]

Schedule consistent availability and/or on-site work for technical support vendors. Escalate early and often to ensure vendors meet commitments. [SSEmail]

Reduce risk of missing or faulty deliverables by fleshing out acceptance criteria in advance and reviewing vendor work products to ensure they meet the acceptance criteria. [ctcLink]

Take measures to hold vendor accountable for providing all deliverables specified in Statement of Work as well as Functionality and Performance Warranties related to Business and Technical Requirements as specified in vendor contract. [SSEmail; ctcLink]

Engage appropriate vendor resources early in the design. Technical staff on the project team worked side-by-side with vendor experts to design the system. This vendor partnership that was established early in the process helped ensure project success. During the design period, detailed requirements were clarified as necessary. [SSEmail]

Strive for contract language that is a win/win for both the vendor and the state. [TLA]

Include comprehensive stabilization deliverables in future implementer RFPs and contracts. [UW-HR/P]

Project Management - 5 of 6 projects

Per the Project Management Institute (PMI.org), “Project management, is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.”

Fundamental project management practices were seen as critical success factors: risk and issue management, schedule, scope management, prioritization.

Fully staffing the project with the right people, with the right project management skills and experience is necessary. These people need to be capable of and willing to constantly validate/challenge “absolute” constraints. Evaluate fundamental assumptions, and assess what happens if those fundamental assumptions are not met. [HRMS; SSEmail]

Ensure alignment between scope and budget, with full-loading of budget elements, should be paramount. [UW-HR/P]

Reduce likelihood that risks are overlooked or underestimated with resulting operational disruption at schools by implementing more robust and more objective risk management process. [ctcLink]

Critical path (and therefore project structure and resourcing) should include communications, agency readiness, operational readiness & training. [HRMS]

Realistic estimates

Have resources performing the work validate effort-to-completion estimates for each task in the plan and adjust the schedule to align to expected resource capacity. [ctcLink]

Create realistic timeframes for critical project activities (design, dev, test, OCM, etc.). Reduce scope instead of compressing schedule. [HRMS]

Rigorous, program-wide prioritization was another contributing factor to the Program's success and its ability to meet its various time commitments. [UW-HR/P]

Change management

Using a well-established change management system helps with scope management, and engages stakeholders in the process. [SSEmail]

Thorough validation of design and requirements for each scope change / change order with agency stakeholders as well as project leadership. [HRMS]

Project controls

Status tracking / communication needs to focus on business process in addition to data accuracy. [HRMS]

Increase transparency into the Program, "tools" (i.e., measures, tracking and monitoring methods, performance dashboards, repositories) for managing and reporting on the program's activities. This allows everyone to better understand what is occurring in the Program's various activities. [UW-HR/P]

Implement project controls with quantitative reporting of budget performance, planned vs. actual hours and deliverables due vs. deliverables completed. [ctcLink]

Iterative project design

Start with simplicity. [TLA]

There is significant value in conducting a prototype test that includes user acceptance earlier in the process, enabling opportunities to refine and subsequently develop a stronger final product. [UW-HR/P]

Requirements Management - 5 of 6 projects

According to the PMI, "The requirements process generally includes a needs assessment, elicitation and analysis of requirements, monitoring and controlling requirements and evaluation of solutions."

While individual functional requirements were clear, overall product requirements were not clearly defined or documented. As a result, we picked a technological solution that could handle a single agency's requirements, but could not handle all agencies' different requirements at the same time. Specifically, it was not a multi-tenant solution. [TLA]

Understand the State's requirements and constraints (old technology) that are not readily available nor documented. [UW-HR/P]

Business process design

Map current state processes to help define the change impact to adopt future state. Gather all IT systems and source data. [UW-HR/P]

Upfront business process design and continual OCM regarding the business process changes. Do not let the technology solution drive the business process design. [HRMS]

Make sure business process design and gap analysis is accepted and resourced before setting schedule. [HRMS]

Stakeholder engagement

Involve more customers in the overall design details from the beginning. [UW-HR/P]

Capture critical agency requirements. Do not let the technology solution drive the business process design. [HRMS]

Traceability

Clarify statewide business requirements and audit the system configuration to determine if and where (what design document...etc.) requirements were fulfilled. [ctcLink]

Hire IV&V with expertise & credentials for business process and system design. [HRMS]

Technology - 5 of 6 projects

Although most of the topics in this theme are actually technical requirements, five of the six projects identified specific technical/technology topics as critical lessons learned. This indicates a focus area for future projects.

Leverage tools and processes that reflect typical SDLC. [UW-HR/P]

Approach the design from an end-to-end perspective. [UW-HR/P]

Data and data governance

Have both functional and technical specifications for conversions well documented. [UW-HR/P]

Establish formal data quality programs at the pilot schools and for future implementation waves. [ctcLink]

Interfaces and integration

Spend adequate time on design of data interfaces. [HRMS]

Early in the project, determine list of applications that need integration/interfaces. Involve outside resources at the very beginning of the design stage and throughout the project is a key to success. [SSEmail]

Leverage the guidelines for integrations developed during the HRPM program. [UW-HR/P]

Reports

Spend adequate time on design of reporting. [HRMS]

Automate data collection activities and leverage tools to build reports from the outset. Need tool other than Excel. [UW-HR/P]

Staffing - 4 of 6 projects

Various categories of staffing (or resourcing) was a significant issue for 4 of 6 projects. In the other two projects, resourcing was mentioned for specific roles.

Capacity

An enterprise-wide program requires the authority to resource (hire external or from other agencies); provide the resources required to deliver envisioned scope on deadline; otherwise reduce scope. [UW-HR/P]

Assess agency capability (and capacity) prior to project budget approval. [HRMS]

Determine where backfill can be employed and develop specific plan for procuring backfill resources (which requires lead time that must be factored into the plan). [ctcLink]

Highly technical work required significant resources to complete, and took quite a bit of effort. Less visible areas of technical projects need sufficient attention and resources to be completed effectively. [SSEmail]

Capability

Engage in thoughtful selection of and negotiation for project team members to help ensure the goals of the project can be met. [SSEmail]

Before program inception, address gaps, such as inexperience with large, complex statewide program and shortage of expertise in payroll processing). [HRMS]

Retain an experienced, independent, project manager to support the ctcLink Project Director. [ctcLink]

Resource availability

Provide resource forecast to units performing the work and confirm that they can supply the required quantity in the specified timeframes. [ctcLink]

As much as possible, provide advance notice to part-time resources when their skills will be needed, to avoid incurring delays in the project due to resource availability. [SSEmail]

State solution architect with an integration focus. [HRMS]

Co-locate team

Relocate project team to a centralized area in close proximity to each other to improve collaboration. [SSEmail]

Creating pods (smaller working groups dedicated to a particular area of subject matter expertise). Pods should include a change manager, and a training team involved from the beginning. Moving into a team-like environment with Pods being co-located and embedded in the program made a positive difference. [UW-HR/P]

Two-in-a-box approach: Pairing a UW employee with a Huron consultant in leadership roles, resulting in knowledge transfer and collaborative, agile problem solving. [UW-HR/P]

Go Live and Production Support - 4 of 6 projects

“Go live”, also known as “cutover”, is the point at which the system is deployed from the development environment to the production environment and. It is when the system is available to be used. The need for “production support” begins when the system is moved to production, is in use, and therefore must be

supported: end-users require support, unexpected system issues such as performance problems and bugs must be addressed.

Enterprise projects and programs often employ a strategy of multiple releases, which has its own inherent risks to be managed. Parts of the system move to production (go live) while project work for additional releases continues. A project can be at risk when the initial release is not properly transitioned to an operation support model. In these cases, the project team has to support a newly deployed application while managing subsequent releases.

In 4 of the 6 projects Go Live and Production Support are featured.

Go live - readiness

Reduce risk of operational disruptions by establishing clear go-live procedure. Establish specific gate criteria for go-live decision and conduct verification that criteria are met prior to cutting over. [ctcLink; HRMS]

Contingency plan with pre-defined trigger criteria to be invoked if system experiences significant problems following cut-over. [HRMS; ctcLink]

Production support

Establishing production support services early in the project, was seen as a critical factor. Several different strategies were suggested.

Integrated Service Center (ISC) - Launching the ISC at the same time as Workday, instead of earlier, was unavoidable but not optimal. Start any major organizational changes as early as possible in the project's lifecycle in order to avoid disruptions or distractions later on in the project's activities. Fully resource the production support function. [UW-HR/P]

For a project that has a long implementation period, running concurrent with project work, reduce the project workload during the implementation period to allow staff to help address implementation issues. [HRMS; SSEmail]

Establish a single point of contact for each agency within the project to give customers the consistent support and tracking they need. [SSEmail]

Mobile Support Units (MSU), often staffed by change managers and technical/applications experts, were incredibly valuable post-go-live. [UW-HR/P]

Production support - knowledge transfer

Establish positions for post-implementation support before needed, to allow sufficient time for knowledge transfer. [SSEmail]

Establish early knowledge transfer processes between project staff and operations to minimize the impact of production support on project staff. Implement throughout the project life cycle, not just at the end. [SSEmail]

Additional Comments

Several additional lessons stood out as important for extra-large efforts.

Independent verification & validation (IV&V)

“Verification and validation (V&V) processes are used to determine whether the development products of a given activity conform to the requirements of that activity and whether the product satisfies its intended use and user needs.” (IEEE, 2017)

One project mentioned IV&V and another project hired IV&V. Although only two projects mentioned it, IV&V is an important risk mitigation strategy for extra-large efforts. Requirements traceability is one function performed by IV&V.

Hire IV&V with expertise & credentials for business process and system design. [HRMS]

Hire professional integrator

Two projects indicated the need to hire a professional integrator. In one case, the state attempted to fill the gap and in the other, the software vendor served as integrator for their own product.

An outside integrator brings necessary expertise and experience to the state. An independent integrator that understands the product, as well as the business of the state. [UW-HR/P; TLA]

Program structure

Large efforts require not only adequate project management staffing with experienced and qualified people but also a “program” infrastructure.

Unify related projects into a single program, managed under the PMO, enabling use of common tools, templates, and better integrated design and testing. Established a Program Enablement Office to manage the program plan, support the tools/templates, and to enforce compliance. [BAIAS; UW-HR/P]

End Notes

ⁱ Enterprise Resource Planning (ERP) is defined as an integrated computer-based system that manages internal and external organization resources. These resources include tangible assets, financial resources, materials, and human resources. At the same time, ERP is an application and software architecture that facilitates information flows between various business functions inside an outside an organization and, as such, is an enterprise-wide information system. Using a centralized database and operating on a common computing platform, ERP consolidates all business operations into a uniform system environment. (Bidgoli, 2004)

References

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