

**PROJECT MANAGEMENT WORKING GROUP**

**REPORT**

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## **Table of Contents**

Executive Summary .....	4
Background and Scope .....	8
IT Project Management in Peer Institutions .....	9
Project Management Institute (PMI), PMBOK and PMP .....	12
The Project Management Institute (PMI) .....	12
The Project Management Book of Knowledge (PMBOK).....	12
Project Management Professional (PMP) Certification.....	13
Agile Development and Project Management .....	14
Overview.....	14
Basic concepts.....	14
Project structures and controls .....	16
Picking a framework .....	17
Considerations.....	17
References.....	18
Priorities Committee .....	20
Definition .....	20
Context.....	20
IT Governing Bodies.....	21
IT Governance at McGill .....	21
Sample Models.....	22
Project Management Plan and the Roles of the Project Sponsor.....	24
Project Management Plan .....	24
Roles of the Project Sponsor.....	25
Tracking Project Costs and Resource Allocation .....	27
Use of timesheets in McGill's IT Units .....	27
Project Costing in McGill's IT Units.....	27
Project Management Solutions .....	28
Project Management Institute (PMI) Practices .....	32
Key Performance Indicators (KPI) .....	33
Prototyping.....	35
Overview.....	35
In the McGill context.....	36
Questions to pursue.....	36
References.....	36
Project Budgeting.....	37
Projects vs. Operations.....	39
Specifications Management .....	42
Overview.....	42
In the McGill context.....	43
Questions to pursue.....	43
References.....	44
Communications and Training.....	46

Appendix A. Carleton University discussion topics ..... 51  
Appendix B. Peer Group Review..... 53  
    G13 Canadian Universities ..... 53  
    AAU (Empirical) American Universities ..... 59  
Appendix C. NCS Project Management Plan Template..... 67

## Executive Summary

This summary contains the list of recommendations that were formulated by the Project Management Working Group.

### *IT Project Management in Peer Institutions*

**Recommendation #1.** The group endorses the decision to establish an IT PMO although we note that the majority of Universities in our peer groups do not have a separate PMO office, but do have established project management methodologies.

### *Project Management Institute (PMI), PMBOK and PMP*

**Recommendation #2.** The group recommends that we establish a “train the trainer” approach. One individual who is certified as a PMP should train other project managers in the PMO (and selected individuals in other IT units) in the PMI standard methodology. These individuals will, in turn, become certified. We believe that eventually all project managers within the PMO should be certified as PMP.

**Recommendation #3.** Individuals within the PMO should act as coaches and mentors to other IT staff on the standard project management methodology.

### *Agile Development and Project Management*

**Recommendation #4.** The PMO should pick out the philosophical elements that match our strategic IT goals, the techniques that address the problems we see in our own projects, and the mechanisms that might be workable in our environment. The PMO should be advised that parts of this approach are better suited for certain project types than others: for example, for development work more than for vendor implementations, for software and process development more than for hardware. In general, we see an opportunity for the Agile principles to be applied within McGill IT. In many cases these principles are already being used in our current projects.

**Recommendation #5.** There should be an emphasis on “just enough structure, but not more”, utilizing whichever project management tools the PMO chooses. This will keep effort directed toward the work itself while producing only as much overhead and documentation as is required by executives or auditors, or is helpful to get the project done well.

**Recommendation #6.** Agile Software Development principles should be investigated further by the Applications groups who do this kind of work. Specific sub-topics to examine include: Scrum, Crystal, Extreme Programming, Test-Driven Design, Agile Database techniques, iterative work cycles, adoption of automation and advanced development tools, internal collaboration techniques and collective coding.

### *Priorities Committee*

**Recommendation #7.** We recommend the creation of an IT Executive Council to be chaired by the CIO. The membership of this Council will consist of the IT Directors. The Council will have control over the IT projects done by the IT units, including the resourcing of all “projects”. This council can also generate project proposals for the IT Priorities Committee to consider.

**Recommendation #8.** We recommend the creation of an IT Priorities Committee that is composed of the Directors (or their delegates) in the key areas served by IT (e.g. Finance, HR, ARR, research, Libraries, etc.). The Committee will decide what projects will be approved based on proposals brought to the committee by potential sponsors and/or by the IT Executive Council. The approved projects will then be prioritized. This committee would be chaired by the CIO and the PMO Director would sit as a member.

**Recommendation #9.** Consideration should be given to the creation of several advisory committees whose function would be to advise the IT Priorities Council on the industry directions and standards in strategic areas (e.g. content management, e-learning, e-business, web developments). The advisory committees would assist the IT Priorities Committee by providing important background to make informed decisions on project priorities.

### *Project Management Plan and the Roles of the Project Sponsor*

**Recommendation #10.** We recommend that all projects under the mandate of the PMO have a project management plan and identified project sponsor(s). The project goal(s), objective(s) and charter should be submitted to the Priorities Committee to be reviewed. Project sponsors could be self-identified champions for the project who will present the project to the Committee for approval. The remainder of the project management plan may be created after this approval has been obtained.

### *Tracking Project Costs and Resource Allocation*

**Recommendation #11.** Our group does not recommend re-implementing timesheets at this time. However we do need some way to approximate the total cost of a project (including labor costs). We believe that the defined timelines and the percentage of time that a project team member works on the project during the period can be used to identify the approximate project cost for that resource. Project managers must include this calculation in determining the overall project budget.

**Recommendation #12.** The PMO should select and implement a project management tool to provide consistency in managing projects and a central repository for managing project documents. We are not recommending any specific PM tool.

### *Key Performance Indicators (KPI)*

**Recommendation #13.** We recommend that the PMO define a small number of KPI that will be used in measuring all projects executed by the PMO. KPI may be multi-leveled but should roll up to the top-level common set of KPI.

**Recommendation #14.** We recommend that KPI be established for measuring the performance of the PMO overall.

### *Prototyping*

**Recommendation #15.** We recommend the establishment of a project management framework that encourages early delivery of one or more primitive versions of every project for the purpose of feedback and reflection. In the case of software projects this early version may be called a “prototype” or some other name. In the case of hardware projects or vendor selection it may be a “proof of concept”.

**Recommendation #16.** We recommend the inclusion of user testing for all software and vendor implementation projects when a new interface or interaction warrants such tests. User testing is highly valuable in software development including web-based applications, but may also have a place in the area of new hardware, operating systems and networking. User tests should be done early in the process using prototypes, and be repeated if the tests or client revisions necessitate substantive changes to the interfaces.

### *Project Budgeting*

**Recommendation #17.** A fairly rigid budget model should be developed by the PMO that includes formal itemized costs, including project resources (internal IT people), consultants, travel and training (if any) and hardware, and software purchases and licensing costs.

### *Projects vs. Operations*

**Recommendation #18.** We recommend that as new systems are introduced and handed over to the Operations group, either old systems must be retired or the Operations group must grow proportional to the additional functionality and complexity of the new systems. This must be clear to the IT Priorities Committee when it is in the process of approving new projects and prioritizing them.

**Recommendation #19.** We recommend a periodic review of the roles and responsibilities of the Operations group and that consideration be given to rotating people out of maintenance roles into project roles. This may be easier to do in smaller groups.

### *Specifications Management*

**Recommendation #20.** This topic should be expanded, and *Requirements Management* or *Business Goals Management* should be put before Specifications Management. The overall “business requirements” of the user and development team (taken together) should be the driver of all projects and the basis for measurement of success. Specifications, in whatever way they are managed, should follow from there.

**Recommendation #21.** We recommend an approach that allows for modification of specifications, wherever practical, so that development efforts may follow evolving conditions. This follows Agile principles and offers the best chance of meeting the end user’s business goals.

**Recommendation #22.** We recommend that a flexible Specifications Management framework be established that can be used across widely varying project types; for example, hardware or software projects, vendor implementations or a straight development, an internal IT project or for a McGill end user. Overall IT project planning will be easier if all project specifications are managed via the same framework.

### *Communications and Training*

**Recommendation #23.** A website should be created and maintained for the PMO for dissemination of active project status, archived project information, project documentation, training manuals, tools and templates. In the short term, the PMO could use a tool like Sharepoint for each project to provide an environment for collaboration and document sharing among project team members.

**Recommendation #24.** All project managers should take the Project Management course offered by HR as a minimum.

**Recommendation #25.** The PMO should work with HR (or an external firm) to develop an advanced project management course or a series of advanced project management courses. These courses could help project managers in the PMO to achieve the PMP certification.

## Background and Scope

This document represents the work of six individuals, each one being a key member in one of the IT units. We worked on creating this document from August through November. Given the already full workloads of each of contributors this was a very much a part-time effort during the time period.

The group was formed following an action item from the CIO's retreat on June 20<sup>th</sup>. The action item was to attempt to formulate a standard project management methodology and priority setting mechanism that would work within the context of IT at McGill.

We created a work plan in August that would result ultimately in the creation of this report, our deliverable. During this time frame the CIO announced the formation of a Project Management Office (PMO) and appointed Larry Tansey as its new Director (14 August 2007). A number of major projects and project managers were assigned to the PMO.

On August 23 the Project Management Working Group and the new PMO Director visited Carleton University to learn from the PMO group there how it operated. The discussion topics for that day are attached as Appendix A.

The work group decided to continue its research and present a series of recommendations to the CIO and the new Director.

## IT Project Management in Peer Institutions

In this section we provide summaries of information found on institutional websites of the G13 group of Canadian Universities, and of the AAU Empirical group of American Universities relative to formalized project management methodologies, Project Management Offices (PMO) and priority setting mechanisms. In many cases there is no explicit mention of a PMO in the respective IT organizations although it is clear that there are project methodologies in place (for example, there may be references to a project charter or project plan). In other cases the information on the various websites seems quite dated and may not reflect the current reality of an IT organization.

By way of definitions the “AAU Empirical” group of American Universities are those American Universities that we can reasonably compare with McGill today. They have roughly the same student population, and number of staff (both academic and administration), and revenues. The “AAU Aspirational” group consist of those Universities that we “aspire” to be benchmarked against and that typically have much larger revenues, etc. We will not focus on the AAU Aspirational group of American Universities.

***Table 5.1.1 List of G13 and AAU Aspirational and Empirical Institutions***

<b>G13</b>	<b>Website</b>
McGill University	
McMaster U	<a href="http://www.mcmaster.ca/">http://www.mcmaster.ca/</a>
Queen's U	<a href="http://www.queensu.ca">http://www.queensu.ca</a>
U de Montreal	<a href="http://www.umontreal.ca">http://www.umontreal.ca</a>
U Laval	<a href="http://www.ulaval.ca/">http://www.ulaval.ca/</a>
U Alberta	<a href="http://www.ualberta.ca/">http://www.ualberta.ca/</a>
U British Columbia	<a href="http://www.ubc.ca/">http://www.ubc.ca/</a>
U Waterloo	<a href="http://www.uwaterloo.ca/">http://www.uwaterloo.ca/</a>
U Western Ontario	<a href="http://www.uwo.ca/">http://www.uwo.ca/</a>
U Toronto	<a href="http://www.utoronto.ca/">http://www.utoronto.ca/</a>
U Calgary	<a href="http://www.ucalgary.ca/">http://www.ucalgary.ca/</a>
Dalhousie U	<a href="http://www.dal.ca/">http://www.dal.ca/</a>
U Ottawa	<a href="http://www.uottawa.ca/">http://www.uottawa.ca/</a>
<b>AAU Aspirational</b>	
U California - Berkeley	<a href="http://www.berkeley.edu/">http://www.berkeley.edu/</a>
U Illinois - Urbana Champaign	<a href="http://www.uiuc.edu/">http://www.uiuc.edu/</a>
U Michigan - Ann Arbor	<a href="http://www.umich.edu/">http://www.umich.edu/</a>
U Minnesota-Twin Cities	<a href="http://www1.umn.edu/twincities/index.php">http://www1.umn.edu/twincities/index.php</a>
U North Carolina - Chapel Hill	<a href="http://www.unc.edu/">http://www.unc.edu/</a>
U Texas-Austin	<a href="http://www.utexas.edu/">http://www.utexas.edu/</a>
U Washington - Seattle	<a href="http://www.washington.edu/">http://www.washington.edu/</a>
U Wisconsin - Madison	<a href="http://www.wisc.edu/">http://www.wisc.edu/</a>

Ohio State U - Columbus <http://www.osu.edu/>

**AAU Empirical**

Indiana U-Bloomington <http://www.iub.edu/>  
 Rutgers U <http://www.rutgers.edu/>  
 U Arizona <http://www.arizona.edu/>  
 U Colorado-Boulder <http://www.colorado.edu/>  
 U Iowa <http://www.uiowa.edu/>  
 U Missouri-Columbia <http://www.missouri.edu/>  
 U Pittsburgh <http://www.pitt.edu/>  
 U Virginia <http://www.virginia.edu/>  
 U California - LA <http://www.ucla.edu/>

**Summary of Findings**

<u>Institution</u>	<u>Status</u>
McMaster University	Details on PM methodologies and PMO operation sketchy. Considered a Foundation Project for 2007.
Queens University	Mention of agile project management. Templates and checklists available.
U. de M.	Some templates
Laval U.	No public information available.
University of Alberta	Peoplesoft Projects module with templates, and guidelines. No separate PMO.
University of British Columbia	e-Strategy framework. No separate PMO.
University of Waterloo	Project templates, password protected. No reference to a PMO.
University of Western Ontario	No obvious reference to a PMO.
University of Toronto	No PMO; Sharepoint portal used to store project files.
University of Calgary	University of Calgary IT (UCIT) Project Office established in April 2007. A series of templates are available.
Dalhousie University	No PMO
University of Ottawa	Projects but no PMO
Indiana University - Bloomington	Projects and project managers but no PMO.
Rutgers University	IT Project Governance Committee but no PMO.
University of Arizona	No obvious reference to a PMO.
University of Colorado - Boulder	ITS Project Office. Project updates posted on a monthly basis.
University of Iowa	Project Management Task Force, and Project Management Advisory Group. In 2006-2007 these groups worked to develop a framework for project management.
University of Missouri - Columbia	No PMO
University of Pittsburgh	No PMO

University of Virginia	PM website, PM policy statement, PMI based. No separate PMO.
UCLA	Governance committees established. Framework for project management established. No separate PMO.

The details of the peer group review (including descriptions of priority setting) can be found in Appendix B.

## **Project Management Institute (PMI), PMBOK and PMP**

### **The Project Management Institute (PMI)**

The PMI has existed for decades and is the de facto leader in terms of organizations representing the project management profession. There are nearly 242,000 holders of its credential – the PMI Project Management Professional (PMP) globally. PMI engages in advocacy for the profession, setting professional standards, conducting research and providing access to information and resources. PMI promotes career and professional development and offers certification, networking and community involvement opportunities.

#### **Regional Service Centres and Representative Offices**

The PMI operates two Regional Service Centres outside the United States in Brussels, Belgium, and in Singapore. It also has two representative offices in Beijing and in Washington D.C..

#### **PMI Membership**

<http://www.pmi.org/Pages/default.aspx>

Membership in the PMI is free. After completing a profile an individual has access to member resources. This membership provides tools, exclusive services, and information and networking opportunities.

Members-only content on PMI website includes;

- Knowledge sharing and networking opportunities through PMI communities,
- Leadership and volunteer opportunities through PMI components and communities, certification program, research program, standards program and other areas,
- Access to A Guide to the Project Management Body of Knowledge (PMBOK<sup>®</sup> Guide),
- Access to PMI's career framework.

### **The Project Management Book of Knowledge (PMBOK)**

Now in its third edition, A Guide to the Project Management Body of Knowledge (PMBOK<sup>®</sup> Guide) is regarded as one of the profession's most essential resources — a global standard for the industry. It can help project management practitioners prepare for credential examinations, or assist organizations in creating and shaping their project management system. The PMBOK<sup>®</sup> Guide is not designed to function as a step-by-step

how-to book, but rather to identify that subset of the project management body of knowledge that is generally recognized as good practices.

The PMBOK<sup>®</sup> Guide - Fourth Edition will be published in the fourth quarter of 2008. The most recent edition (Third edition) is available in electronic form from the McGill Libraries.

## **Project Management Professional (PMP) Certification**

The Project Management Professional (PMP<sup>®</sup>) certificate is granted to individuals who demonstrate a proficient level of project management leadership skills.

To be eligible for a PMP credential, you must meet specific guidelines that objectively measure experience, education and professional knowledge. You also must agree to adhere to the PMI Code of Ethics and Professional Conduct and pass a multiple-choice examination that assesses your abilities in project management.

There are additional eligibility guidelines including 35 hours of specific project management education, and actual work experience as a project manager.

The PMP Examination is a four-hour examination that measures knowledge, skills and techniques used in project management. The examination is routinely reviewed and revised to ensure the best and consistently objective assessment.

The steps to obtain the PMP credential are:

- Complete an online application or download an application and submit via mail,
- If you meet the eligibility requirements, you must register to write the exam and successfully complete the exam.
- Individuals who attain a credential from PMI will be added to PMI's Online Credential Registry and may immediately use the credential designation.

The test site for the PMP examination in Montreal is;

Thompson Prometric Test Center  
800 Rene Levesque West, Suite 1530  
514-876-8818

Project management courses can be found at:  
<http://www.learningtree.com/certification/7133.htm>

## Agile Development and Project Management

### Overview

Agile Project Management is a project management approach that stresses lightweight structure and adaptive processes. Agile Project Management is a generalization and extension of Agile Software Development, a movement formed among software professionals in the 1990s in reaction to the perceived weaknesses of traditional software project frameworks.

Agile Project Management and Agile Software Development are each both a general approach or philosophy, and a family of specific methods and frameworks for project work. They aim to improve the overall performance of projects and the conditions of the people who work on them. They reject the exhaustive and rigid up-front planning of traditional project methods, exemplified by the PMI. Instead the Agile methods are geared toward allowing “adaptation” and “evolution” along the course of a project’s life. This recognizes the constantly shifting environment of the business world and the imperfection of human foresight, and then tries to identify the methods that work best within those constraints.

### Basic concepts

At the base of the Agile approach is a distinct philosophy on how business projects should be run. The Agile approach addresses the nitty-gritty of project management, but also has things to say about the relationships and organization. Various Agile tactics and methods follow from these ideas.

The Agile approach has much in common with Lean Manufacturing, famously pioneered by Toyota, and with the studies of Emergent and Adaptive Systems. These stress the importance of evolving with changing conditions. For further details on the history of Agile, see the Agile Alliance web site ([www.agilealliance.org](http://www.agilealliance.org)). See the resources below for various clear explanations of the Agile approach and how it purports to improve on the traditional framework.

As an overview, these are selected points from the Principles of the Agile Manifesto (see [www.agilemanifesto.org](http://www.agilemanifesto.org)) that we feel are pertinent to the McGill PMO. Under these points are some real-life effects that are intended to result.

- “Customer satisfaction by rapid, continuous delivery of useful software”
- “Working software is delivered frequently (weeks rather than months)”

- Agile projects are planned around iterations or cycles that are several weeks long. This is a departure from the traditional model with several major milestones spaced months apart.
  - The emphasis on early and frequent delivery means that Agile methods produce quicker initial results, and give the user more updates and feedback points. This replaces the traditional, climactic (and risky) “reveal” at each milestone. The end users and developers stay coordinated along the way, and there is less risk of the project straying off course and needing costly rework.
  - Agile emphasizes that while each delivery may only include a subset of the final scope, it should be fully functioning and defect-free. The development team achieves this through Agile development methods, including testing and integration at *every* interval instead of only at the end. This cultivates better discipline among developers and is said to produce a more robust product.
  - Regular delivery allows the project planners to set a more definite timeline. A specific iteration is chosen as the “end” of the project, and the Agile cycle ensures that whatever has been built will be in working, deployable condition at that point. This eliminates the risk of overruns due to last-minute testing and integration. The user always has the option to extend more cycles, if more specifications remain on the list.
- “Working software is the principal measure of progress”
    - Frequent delivery improves the transparency into work effort. The current status of a project is tangible and can be precisely calculated; it is no longer just an estimate in the mind of the project manager.
    - Agile processes include a notion of “velocity”, i.e., how much progress is being made on each iteration. When this is collected from all projects, it becomes easier to do accurate resource planning and overall project selection and prioritization.
  - “Regular adaptation to changing circumstances”
  - “Even late changes in requirements are welcomed”
  - “Simplicity”
    - Agile frameworks all specify some mechanism for taking feedback at each iteration, including the addition or changing of project specs. This is repeated at every cycle, up to the end.
    - It is understood that in project life, the business environment changes quickly and the users gradually refine their understanding of what they really need. This is treated as a natural part the process, rather than something to be guarded against or tagged with a high cost to the user.
    - The end users and developers decide together which specs will be built in the next iteration. This forces the end users to reexamine their priorities at every cycle. They gain a clearer sense of what is a core need and what is a luxury, and begin to cut down on unnecessary frills and features.

- “Close, daily, cooperation between business people and developers”
- “Face-to-face conversation is the best form of communication”
  - Because of the cyclical development process, both sides of the project (users and developers) meet more frequently and are accountable to each other more directly.
  - The Agile philosophy advocates developing a cooperative relationship between users and developers, rather than adversarial. This is not unique to the Agile world, and Agile methods are no guarantee that this will happen, but it is likely that the Agile cyclical process restores some balance to the user-developer relationship.
  - The traditional paradigm (at its worst) has the end users making blue-sky demands at the beginning of the project, then only re-appearing at major milestones to refute what the development team produced under unclear or imperfect specifications. The Agile cycle demands more engagement and self-examination from the end users, and probably gives the developers more of what they need to get the job done.

Other principles and techniques of Agile Project Management and Agile Software Development may be less appropriate to McGill IT, because they are intended for mid-to-large scale commercial ventures. These include mixed-function development teams, office/workspace design, and others. More details are available from the Agile Alliance and from the individual frameworks.

## Project structures and controls

Agile management comes with a set of structures and controls, just like traditional project management. These include budgets, timelines, status reports, specifications, design, documentation, etc. From the Wikipedia entry on Agile Software Development (October 2007):

Agile methods are sometimes characterized as being at the opposite end of the spectrum from "plan-driven" or "disciplined" methodologies. This distinction is misleading, as it implies that agile methods are "unplanned" or "undisciplined". A more accurate distinction is to say that methods exist on a continuum from "adaptive" to "predictive". Agile methods exist on the "adaptive" side of this continuum.

As these project “artifacts” are largely the same in both approaches, the difference lies in the way they are used. In general, Agile management stresses the use of *just enough structure, but no more*. This is an effort to reduce the amount of time and effort sunk into the creation and maintenance of project artifacts, because it is assumed they will be (1) imperfect from the start, and (2) constantly changing over the course of the project. Agile does not reject project structure outright, but stresses that the goal of any project is the result, not the artifacts themselves.

For example, it is a common phenomenon for a traditional project team to begin with a painstakingly constructed Microsoft Project plan, full of dependencies and time windows, only to realize several weeks into the project that conditions have changed and the burden of keeping up the plan is no longer worth the benefit. Out of overhead-fatigue and the urgency to get work done, the project plan is then left behind to collect dust while the project marches on without an up-to-date plan. A team practicing Agile management may still use Microsoft Project or any other planning tool, but only for blocking out the project at a very high overall level. It would spend less time on details and precision up front, and would spend *just enough* time and energy to keep it up to date over time.

Because Agile methods use the same project artifacts, just differently, the PMO should have the flexibility to try Agile management on a small scale within whatever framework is adopted. This could be done one developer at a time, one team at a time, or one project at a time; there will be no need to jump into Agile Project Management on any large scale. Further, while some Agile frameworks are very specific about structures and how they are used, the PMO should feel free to figure out how much detail is useful to keep its projects working well.

## Picking a framework

At the moment the field of Agile management is still in its infancy. It is considered a provocative topic, in that it questions the “management science” that has formed the basis of project management for over 50 years. As a result the body of literature (books, blogs, and presentations available online) is currently very polarized.

There are a number of “mature” Agile frameworks currently used in the industry, some of which have communities, conferences, books, custom tools, and even training and certification programs. (See the Wikipedia article and the Agile Alliance web site for names and details.) Some are intended for general Project Management and some are specific to Software Development (individuals or teams).

Some of these frameworks have devoted, even fanatical followings. However, there is already a counter-movement of managers who take a more tempered, pragmatic approach to Agile. They adopt Agile methods where they seem to improve things, and stick with more traditional methods otherwise. (See the article “Post-Agilism: Project Skepticism” below, and the section on “Post-Agile” in the Wikipedia article on Agile Software Development.)

## Considerations

The following factors should be taken into consideration when assessing the role of agile development with a project management framework;

- Closer, more cooperative collaboration between end users and development teams (already in relatively good condition).
- Planning and delivery in smaller iterations, and a feedback/change mechanism that encourages productive change along the life of the project.

It is acknowledged that certain Agile practices are difficult to adopt, and can generate “culture shock” among IT staff who are used to a more traditional approach. Therefore, we stress that in order for any these mechanisms to be successful, they would have to be underpinned by a philosophy that is vocalized centrally and actively cultivated among IT staff.

## References

### General background on Agile

The Agile Alliance, organization and full reference materials. [www.agilealliance.org](http://www.agilealliance.org)

The Agile Manifesto, a statement of Agile values and processes. [www.agilemanifesto.org](http://www.agilemanifesto.org)

Wikipedia - [http://en.wikipedia.org/wiki/Agile\\_software\\_development](http://en.wikipedia.org/wiki/Agile_software_development)

Jim Highsmith, *Adaptive Software Development*. (book)

Alistair Cockburn, *Agile Software Development: The Cooperative Game*. (book)

### Popular Agile frameworks and methodologies

Crystal: Alistair Cockburn,  
[http://alistair.cockburn.us/index.php/Crystal\\_methodologies\\_main\\_foyer](http://alistair.cockburn.us/index.php/Crystal_methodologies_main_foyer)

Scrum: Ken Schwaber, [www.controlchaos.com](http://www.controlchaos.com), [www.scrumalliance.org](http://www.scrumalliance.org)

Adaptive Software Development: Jim Highsmith, [www.adaptivesd.com](http://www.adaptivesd.com)

Extreme Programming (XP): Kent Beck, [www.extremeprogramming.org](http://www.extremeprogramming.org)

Agile database development: Scott Ambler, [www.agiledata.org](http://www.agiledata.org)

### Discussions of Agile vs. Traditional

Jonathan Kohl, blog article, “Post-Agilism: Process Skepticism”, June 2006. Available at <http://www.kohl.ca>.

Glenn Alleman, blog article, “Agile Project Management”, 18 February 2006. Available at *Herding Cats*, <http://herdingcats.typepad.com>.

Damon Poole, “Breaking the Major Release Habit”. *Legacy Systems* magazine, October 2006.

Laplante and Neill, “‘The Demise of the Waterfall Model is Imminent’ and Other Urban Myths”

Kathleen Hass, PMP, “The Blending of Traditional and Agile Project Management”. *PM World Today*, May 2007.

Jim Highsmith, “Does Agile Work?”. *Dr. Dobb’s Journal*, March 2002. <http://ddj.com>

## Priorities Committee

### Definition

Project prioritization is an issue in almost every large organization and McGill is no exception. IT governance refers to the infrastructure put in place to prioritize and monitor projects thus increasing the likelihood that projects chosen are aligned with the goals of the institution and therefore increases the likelihood of success.

**“IT governance implies a system in which all stakeholders, including the board, internal customers and related areas such as finance, have the necessary input into the decision making process. This prevents a single stakeholder, typically IT, being blamed for poor decisions” WIKIPEDIA**

Other definitions (broader and narrower):

**"Specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT." (Weill and Ross)**

**"... the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategies and objectives." (IT Governance Institute)**

### Context

As the technical infrastructure of these institutions gets more complex and the pressure is exerted on these institutions to be current, more and more financial and human resources are required to maintain and develop this technical infrastructure. In the past, it was not rare to see system life cycles of 20 years or more whereas today, a 10 year old hardware architecture or software application is considered suspect.

Software is under the same pressure to stay modern. While the functionality of a given system may still serve its constituents, presentation and delivery of this functionality will require much shorter system life cycles in order to satisfy the insatiable hunger for modernization.

Project types:

- Infrastructure (hardware, programming languages, database version upgrades, operating system upgrades, purchased software version upgrades). Often, these are characterized by lots of testing, weekend downtimes and no real benefit to the end users in terms of functionality. Success is often measured by minimal interruption of service and no surprises.
- CIO initiatives (usually large and servicing the entire institution regardless of functional silo)

- Projects initiated in or for the traditional silos requiring IT resources (e.g. FIS, SIS, HRIS)
- Bug fixes, maintenance and minor enhancements (non-project status)

All of this work is to be managed by the same IT resources, who are expected to be flexible and adequately expert in all aspects of IT and who possess the business acumen relative to the business domains served by these applications.

Thus, sound IT governance policies and infrastructure are perhaps the only way to get the most from today's IT dollar. Clearly, IT resources in this marketplace are much too costly to waste.

## IT Governing Bodies

There are probably as many models as there are Universities when examining IT governing models in this sector. However, there are some common components in those models that emerge when reading through the published models on the web of other institutions.

There is typically a committee composed of senior administrators (e.g. Registrar, Comptroller, etc) entrusted with the task of authorizing and prioritizing those projects aimed at continuous improvement of the application systems and ensuring that they support the overall goals for the institution, often articulated in the form of strategic plans or white papers on directions for IT. There is also often a committee responsible for setting the overall direction for IT architecture and infrastructure. And finally, there are often several advisory committees specialized in areas like Teaching and Learning, web and content management, academic computing whose expertise in these subjects is used to advise and guide the governing bodies so that they may make educated decisions in an ever-evolving technical environment.

## IT Governance at McGill

There does not seem to be any document available on the McGill web site as to the role of IT governance at McGill. However, there is a lot of material on IT Governance from other institutions which are included as references in the section "Sample models".

### *Short History of IT Governance at McGill (for ISR formerly UMS)*

Pre 1991

The Board of Governors had a subcommittee called the "Budget Planning Group (BPG)". Essentially, this group would decide the allocation for the IT units which would include funding for projects and ongoing development. The UMS Priorities Committee was composed of senior administrators (e.g. Registrar, Comptroller, etc.) and would decide which projects would be funded by the allocation for UMS. The Associate Director

(Systems) would then allocate resources to these projects with the help of the senior managers in UMS.

#### Post 1991 until BANNER

A system was put in place whereby funding for major projects was provided centrally and the rest of the work was prioritized in the functional areas. These projects and enhancements were “paid” for using ISR dollars which was a budget allocation managed in ISR but allocated to the functional units. Monthly statements were produced based on carefully tracked time sheet entries made by all developers. When the ISR dollars ran out, so did the work done for that unit.

#### Today

It is not clear how major projects are decided upon today. From the development silos point of view, the priorities are developed in line with the priorities of the functional areas that oversee those areas (Finance, HR, Student). IT (as a service unit) and the functional areas are partnered and the priorities are set in the functional areas. With respect to infrastructure, upgrades are decided upon within ISR and the functional areas are solicited to participate in these upgrades.

## Sample Models

The following is a list of reference documents available on the web of how IT governance is administered at several institutions. These documents typically list and describe the various committees and their hierarchical reporting structures that determine the IT direction for the institution with different bodies representing different interests all reporting up (typically) to an executive committee.

#### *Carleton University*

<http://www.carleton.ca/senate/documents/docs-2007-01-26/IT%20Governance%20May%202005.doc>

#### *University of Calgary*

<http://wcm2.ucalgary.ca/busadmin/node/88>  
<http://www.ucalgary.ca/pmo/>

#### *University of Saskatchewan*

<http://www.cs.usask.ca/faculty/bunt/documents/ICTGovernance2006.pdf>

#### *Auburn University*

[http://www.auburn.edu/oit/it\\_governance.php](http://www.auburn.edu/oit/it_governance.php)

#### *Indiana State University*

<http://www.indstate.edu/oit/itgov.htm>

*University of Memphis*

<http://is.memphis.edu/about/governance.htm>

*University of Southern Mississippi*

<http://www.usm.edu/itgovernance/>

*Colorado State University*

[http://www.acns.colostate.edu/?page=it\\_governance](http://www.acns.colostate.edu/?page=it_governance)

Additional resources:

This reference document was prepared by the University of Rochester and lists the URLs of several major institutions for documents related to strategic planning of IT initiatives and is a valuable resource.

[http://www.rochester.edu/itgc/meetings/StrategicPlans\\_PeerEXAMPLES.pdf](http://www.rochester.edu/itgc/meetings/StrategicPlans_PeerEXAMPLES.pdf)

Educause (2004) research paper on IT Governance at University of Cincinnati (case study)

<http://www.educause.edu/ir/library/pdf/ers0403/cs/ECS0404.pdf>

## **Project Management Plan and the Roles of the Project Sponsor**

### **Project Management Plan**

The Project Management Plan can be used as a focal point for communications about the project. What is the project? What will be achieved by the project? Who has mandated the project, and on what basis? What will the project deliver, in what timeframe, and at what cost? Who will be impacted by the project, and how will they be involved? What are the assumptions and constraints upon which the plan is based? How will the status of the project be communicated and at what stages? When the project is completed how will it be transitioned into operations and what resources will be required to maintain it? Appendix C contains an overview of the NCS project management plan template.

In general the project management plan should contain the following main components;

- **Project goal**  
The overarching goal of the project should be stated in simple business terms. The way in which the project fits within the IT strategic “vision” and the overall strategic plan of the University should be described.
- **Objectives**  
The objectives are the specific achievements that fall within the project’s mandate. One or more objectives will ultimately combine to reach the project goal. Typically a list of deliverables defines the project’s objectives.
- **Charter**  
The charter formally establishes who has the authority and responsibility for the project and the role of the project manager. It may identify the sponsor(s) and stakeholder(s). It should reference (or describe) the business case and the business need for the project. It may be complex and/or important enough to merit a document separate from the plan itself in order to ensure that roles are clearly understood and agreed upon.
- **Statement of Work**  
The statement of work defines the deliverables in more detail, the steps required to produce the deliverables, and the timelines. It may also describe interim deliverables such as project status reports, presentations and demonstrations.
- **Critical Success Factors**  
The critical success factors are the determinants of project success. They may include for example resource requirements with specific technical expertise. The

factors could also take the form of a list of assumptions made during the planning process in order to ensure that the plan can be accomplished.

- **Project Success Criteria**  
The project success criteria are the metrics that will be used to define whether the project has been successful or not. It might include both qualitative and quantitative measures, for example, to judge whether the project is on time and on budget.
- **Project Communications**  
The plan should describe how the project status, achievements and problems will be communicated to key stakeholders, the project sponsors and other interested individuals. It should specify the frequency and channels of communications.
- **Project Schedule**  
The list of key activities should be described along with who is responsible for each activity, the deliverables, and who is responsible to review and accept these deliverables. A list of resources and commitments (eg. number of hours) required for each key activity should be presented. This information is necessary to determine the overall project budget.
- **Project Budget**  
How much will the project costs? Costs typically include labor, equipment, consulting, and training, among other cost elements.
- **Quality Standards**  
The quality standards should describe how testing will be performed, at what level and by whom as well as the acceptance criteria.
- **Risk Assessment**  
The risk assessment will detail the types of risks facing the project. A risk ranking is determined by assessing the probability of the event occurrence and the potential impact if it does happen. If the risk is assessed as a high risk then a risk mitigation strategy could be included.
- **Project Closure**  
The types of documents that should be maintained after the project has completed should be listed, for example, a project book (including project status reports), lessons learned, project metrics and other key documents. The types and numbers of resources that will be needed to maintain the project deliverables should be identified.

## **Roles of the Project Sponsor**

The roles of the project sponsor relative to the overall success of the project cannot be underestimated. They are:

- **Accountability**  
The project sponsor should meet regularly with the project manager to review the project timeline, key milestones and outstanding issues. The project manager and project sponsor share accountability for the project. The project sponsor must advocate for the project to avoid scope and schedule creep.
- **Strategic Fit**  
The project sponsor will assure that the project is in line with the organization's strategic goals and monitor the political environment to help the project adjust priorities if necessary.
- **Resources**  
In many instances the project sponsor will aid the project manager in getting cross-functional resources and commitments and will protect these resources from being pulled into other projects.
- **Project Finances**  
The project sponsor may provide or locate funding for the project and ensure that the project is tracking its status in terms of budget.
- **Lead Political Change**  
The project sponsor may provide the formal endorsement of the project on behalf of the organization and arbitrate and resolve conflict that the project manager escalates.
- **Own the Final Product**  
The project sponsor will ensure that the project is delivering on outcomes, and may sign off on any project documents. The sponsor will recognize the team for progress and contribute in the post-project evaluation of lessons-learned.

## Tracking Project Costs and Resource Allocation

Questions to be considered include;

- Should we be capturing resource utilization via timesheets to track total project costs?
- If we do not use timesheets what types of project costs should be tracked and how?
- How do we estimate and document project costs?
- Do we need any project management solution to assist the PMO in managing projects?

### Use of timesheets in McGill's IT Units

Timesheets were employed in ISR and NCS in the past. In ISR the product used for timesheets was a DOS-based system called Microman (early 1990s). Timesheets were viewed negatively as an additional (and unnecessary) administrative burden. The requirement to document time spent on various activities represented in some people's minds a kind of policing activity. People did not accurately record time spent on various tasks and consequently the information on project resource utilization was ambiguous at best and in the worse case inaccurate. The staff that performed normal system maintenance and enhancements would enter the same time codes week after week.

The use of timesheets was eventually abandoned although groups (e.g. the e-Business group in ISR) that charged for customized services continued to use timesheets after the practice was dropped by most of the other staff.

An alternative to timesheets might be the allocation of a time period (say two weeks) to an individual with a deliverable at the end of this period.

### Project Costing in McGill's IT Units

Since individuals do not report the time that they have spent on project activities and their salaries are committed in the annual operating budgets of the IT units there is no easy way to estimate or track the labor costs associated with any project. Since labor costs represent most of the cost of a project this is a serious deficiency both in terms of estimating and tracking. The project costs that are estimated are relative to new hardware and software purchases and licensing. In some cases we have a 3-year Total Cost of Ownership (TCO) estimate for hardware. Consulting fees, travel and training could also be included in the project estimate.

For large projects (the cutoff is not clearly defined) a separate fund is opened and budget is transferred to this fund at the beginning of the fiscal year once the budget has been

approved by the CIO. In terms of tracking the only check is when a project fund is over-expended and additional funds are required or at the end of the fiscal year in which the annual budget was allocated.

## **Project Management Solutions**

In this section we review three popular project management solutions (Primavera's P6, Microsoft Project and HP Project and Portfolio Management Center) that are used to track project costs and resource utilization and highlight some of the functions that are provided by each system. It is worth noting that all three systems have resource utilization and financial components.

NCS has installed a version of Microsoft 2003 central server software and is working with it to some extent. Other than NCS there is no IT unit that is actively managing projects using a project management software solution.

### **Primavera P6**

The information on the Primavera P6 product was taken from its website;  
[http://www.primavera.com/products/p6/time\\_sheets.asp](http://www.primavera.com/products/p6/time_sheets.asp)

#### **Timesheets**

Timesheets may be used to track and analyze time for increased visibility into resource use. Organizations may track, capture, and analyze the time that team members spend on a project or program. Project team members work with timesheets that are automatically populated with their own resource assignments across all projects. They may record both project time spent working on each task, as well as non-project time such as personal time off. They may provide additional information directly to the project manager, such as document updates, status notifications and any other notes or pertinent feedback.

Team members can mark off steps as they are completed, which can automatically progress the percent complete for the activity. Timesheets can be submitted and then approved by multiple resource and project managers. This ensures timely approvals before time gets applied to the project(s). Time entry is fully web-enabled. Team members can generate paper timesheet or activity status reports.

#### **Primavera Cost Manager**

The P6 Cost Manager integrates detailed cost information with the program schedule. It combines project performance data from cost systems (like ERPs or account systems) and from schedule data adding complex burdening rates, and tracking committed costs.

The hierarchical Performing Organization Breakdown Structure (POBS) is used to map a matrix organization and responsibility assignments. Full fiscal calendar support helps in specifying the cycle of baselines, performance and actual cost inputs and reporting the

results. The rate structure and burden templates are employed to calculate project costs using the direct and indirect costs per resource. The rate structure defines the hierarchy of enterprise cost elements, labor and non-labor resources, overhead objects, burden templates and indirect burden objects. Earned Value analysis and Estimate At Completion (EAC) calculations can be used to determine if a project is ahead of schedule, behind schedule, over budget or under budget. Organizations may also import actual costs from their accounting or ERP systems through an import template. A re-estimation of Estimate to Completion (ETC) tracks the variances between what was budgeted and how the project is being executed. The ETC can be used to predict completion costs and take appropriate corrective actions. Graphical displays, interactive graphics and OLAP data cubes can be used to communicate the project's Earned Value and other Key Performance Indicators.

### **Technical Overview & Supported Platforms**

Hardware requirements vary significantly depending upon a variety of factors including the size of the organization, deployment methods, modules being used and platform selection. In terms of general software guidelines Primavera P6 can be configured to run with Oracle 9i as well as Microsoft SQL 2000 and 2005.

### **Microsoft (MS) Project**

Microsoft has allowed other vendors to produce timesheet systems that integrate with Microsoft Project for tracking costs. These systems provide what could be viewed as a fairly standard set of functions. Some of the functions are described briefly below.

The timesheet is a primary method for viewing and working with assigned tasks, and reporting task updates made by team members to their project managers. Web users can review their timesheets or their resources' timesheets. A team member can remove tasks from a timesheet view. Resource managers can access and approve team members' timesheets via the web, and modify a team member's submitted (and approved) timesheet if required.

The timesheet can be used to quickly and easily scan assigned tasks. If a team member is assigned to tasks in more than one project, all of the tasks for all of the projects can be viewed in the timesheet. There are a number of options to organize the information in timesheets including sorting, grouping, selecting a subset, and auto-filtering.

### **Overview of Project Cost Information using Microsoft Office Project 2007**

MS Project can calculate a variety of types of costs as the project progresses. The following types of costs can be entered and tracked;

**Rate-based cost** is a cost that is calculated based on the pay rates that are specified for a resource and the amount of work that has been assigned to that resource.

**Per-use cost** is a cost that is incurred either once each time that a resource is used, or once for each completed task that the resource is assigned to.

**A fixed cost** is set for a task and not for a resource and does not change, regardless of task duration or the work performed on the task by a resource.

**A cost resource** is used to accumulate one-time or periodic costs that belong to a task. Cost resources might include airfare and lodging. This is typically a one-time cost per task, although there can be several separate entries for this cost over the life of a task.

**A budget resource** is applied toward the project as a whole. Budget resources represent the maximum capacity for a project to consume money, work, or material units. However, this doesn't mean that a project can't exceed its budget. Rather, a budget resource is used to compare planned numbers with actual costs, to track the fiscal health of a project.

### **How are budgets created and costs tracked against them?**

Budgets can be created and tracked from either of two directions, by using either a bottom-up approach (an estimating method in which the base costs of individual work items or resources are calculated into task, resource, and project cost totals.) or a top-down approach (an estimating method that uses the actual costs of a previous, similar project as the basis for estimating cost totals of a current project. This method is often used when there is limited information about the project.). Microsoft Office Project supports both methods.

### **HP Project and Portfolio Management Center**

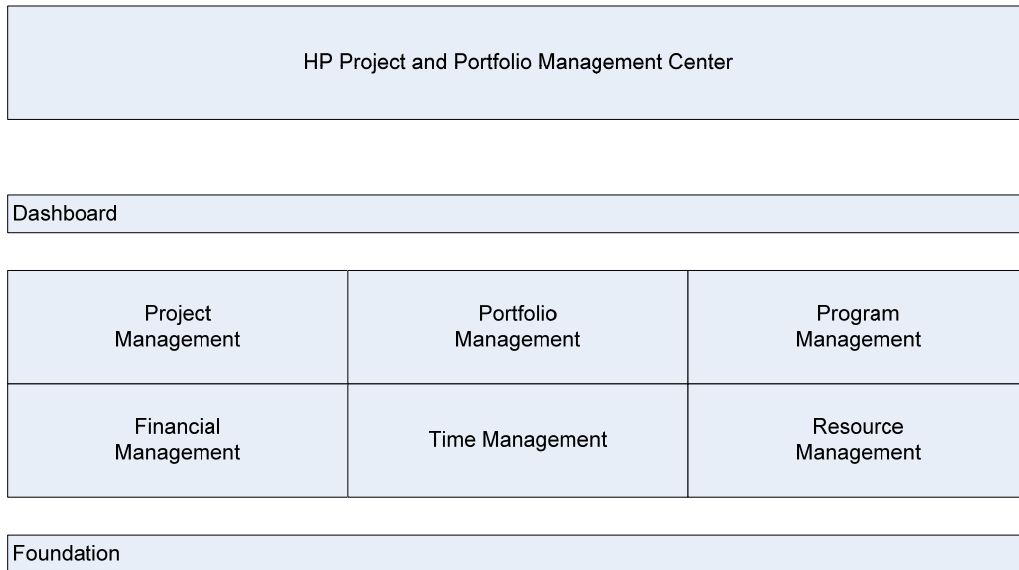
More information on HP's PPM Center can be found at the following URL;  
[http://h71028.www7.hp.com/enterprise/cache/454071-0-0-39-121.html?jumpid=reg\\_R1002\\_CAEN](http://h71028.www7.hp.com/enterprise/cache/454071-0-0-39-121.html?jumpid=reg_R1002_CAEN)

A project management system "Mercury" from "Mercury Interactive" (bought by Hewlett-Packard) has strong functionality in many areas including;

- Portfolio analysis,
- Project Management,
- Program Management,
- Resource Management,
- Cost Management,
- Project Inventory Management,
- Tactical Analytics,
- Strategic Analytics,
- Integrated budgeting,
- Resource Forecasting,

- Graphic Reporting,
- Configurable Metrics,
- Integrated Project Management Planning,
- Integrated Methodology.

The Mercury product line has evolved into the HP Project and Portfolio Management Center and is divided into a number of components.



### **Time Management**

There is a simple, intuitive web-based user interface that allows task owners to report time through traditional timesheets or through a simple “My Tasks” dashboard portlet. All timesheet entry and approval actions are performed using a web interface, and can also appear via e-mail. Role-based views and personalized dashboards contain work items. Timesheets are pre-populated with assigned and expected activities. Charge codes can be selected to allocate time across multiple activities. Each user and approver is defined and once a timesheet is completed approvals are performed online. The data captured in Time Management can be transferred easily via web service API to an ERP for project accounting and other financial-reporting activities.

### **Financial Management**

The Financial Management module enables calculations for Return on Investment (ROI), net present value (NPV), the cost of capital, earned value, and charge backs. It provides visual comparisons of budgets to actual costs across the entire portfolio of projects or any subset of projects. Projects can be flagged based on cost and schedule performance. “What if” scenarios can be explored as well as “slice and dice” portfolio analysis across multiple categories, including capital budget, operating budget, resources, expected benefit, and project and asset class. The module provides real-time updates to

performance metrics. There is a risk management component that allows project managers to document and manage risks as they are identified.

## **Project Management Institute (PMI) Practices**

The Guide to the Project Management Book of Knowledge (Third edition), also called the PMBOK, refers to "work performance indications" (that include resource utilization). Work Performance Information is information on the status of the project activities being performed to accomplish the project work and is routinely collected as part of the project management plan execution.

This information includes, but is not limited to:

- Schedule progress showing status information,
- Deliverables that have been completed and those not completed,
- Schedule activities that have started and those that have been finished,
- Extent to which quality standards are being met,
- Costs authorized and incurred,
- Estimates to complete the schedule activities that have started,
- Percent physically complete of the in-progress schedule activities,
- Documented lessons learned posted to the lessons learned knowledge base,
- Resource utilization detail.

Performance Reports are used in the "Schedule Control" process that is that is part of "Project Time Management" knowledge area and also in "Cost Control" process that is part of "Project Cost Management" knowledge area. The guide does not describe how the details of resource utilization are determined and does not mandate the use of timesheets.

The guide has an entire PM knowledge area devoted to Project Cost Management. There are three processes associated with project cost management, namely, cost estimating, cost budgeting and cost control. The cost management plan may be part of the overall project management plan and may be formal or informal but it should establish the precision level for estimating, the units of measures, the type of earned value analysis to be used, and the requirements to report actual costs.

## Key Performance Indicators (KPI)

One key to the success of a project is good management information. Thus while monitoring quality, project deliverables, timelines and resource utilization, a project manager also should review regularly a project's Key Performance Indicators (KPI).

Key Performance Indicators are quantifiable measurements that reflect the critical success factors of a project. Based on beforehand agreed measures, they reveal a high-level snapshot of the "health" of a project. They vary depending on the kind of project they characterize.

Thus before any Key Performance Indicators are selected, it is vital to identify what the project's goals are, which are in turn dependent upon the project plan and its stakeholders. Consequently, KPIs act as a measure of progress towards these goals. Whatever they may be, they must be critical to the success of the project.

The application of Key Performance Indicators provides the project manager, IT Directors, project stakeholders and sponsors, and the CIO with a high-level, real-time view of the progress of a project. They may consist of any combination of reports, spreadsheets and charts. They may be actual budget vs. projected budget, estimates to complete, number of approved change requests, schedule variance or any other long-term consideration which may be essential in gauging the status of a project. However, it should be noted that Key Performance Indicators should not only reflect the project goals but should also be quantifiable.

For a Key Performance Indicator to be of any value there must be a way to accurately define and measure it. A KPI may meet the criteria of reflecting a project goal, which may for instance pertain to supporting students. However, since supporting students can not be measured or compared to other indicators, this kind of KPI would be useless.

Considerations regarding how a Key Performance Indicator is to be measured should also be established in advance. Definitions as to exactly how the indicator is to be calculated and whether it is to be measured in dollar amounts or units should also be specified. Moreover, it would be imperative that the PMO stick to these definitions from year to year in order to allow for project comparisons.

After the Key Performance Indicator has been defined and a way to measure it has also been determined, a clear target has to be demarcated which should be understandable by everyone. The target should also be specific so that every individual can take actions towards accomplishing it.

To achieve a particular target level of a Key Performance Indicator for a project, every project member has to work in synergy towards it. Project members should define their

respective KPIs which should in turn work towards accomplishing the overall KPIs of the project.

After Key Performance Indicators and their relative components have been identified, they should be used as a performance management tool. The variance (from the target levels) should be defined, thereby ensuring that everyone working on a project is focused towards meeting target levels of the Key Performance Indicators.

Key performance indicators should meet the following essential criteria:

- Be direct (no complex calculations),
- Be objective,
- Be adequate,
- Be quantitative,
- Be practical,
- Be reliable.

Developing key performance indicators is best done in a kick-off meeting during the planning phase of a project. This involves the following steps:

- Carefully consider the results desired,
- Avoid overly broad results statements,
- Develop a lot of possible indicators during a short brain storming session,
- Assess each indicator against the above criteria (be direct, be objective...),
- Select the best performance indicators.

It can be an iterative process: if the resulting indicators do not seem appropriate, restart a new brain storming session.

## Prototyping

### Overview

Prototyping refers to the delivery of an early, often rough version of a project at some point along the way to the final delivery. In software development, a prototype is typically either a purely visual representation (mock screen shot or a diagram on paper) or a real software package with incomplete functionality. In hardware deployment, early Development and QA environments may be considered the equivalents of prototypes. The overall value of prototypes is established, but there are still open questions about what tools to use and how best to fit the prototype into the greater project lifecycle.

### Overall value

A prototype is the IT embodiment of the adage, “an ounce of prevention is worth a pound of cure.” A prototype is above all a feedback mechanism, presenting the development team and end user with something concrete to react to, early in the project lifecycle. This makes it a valuable point where both sides can revisit their initial expectations and make their first tradeoffs. No matter how few features may be built, or how far they may be from the final requirements, delivering an early version (whether called a “prototype” or not) gets the project started in the right direction. The more time goes by between project inception and first delivery, the greater the risk of having to correct course later on at a much higher cost.

### Evolve vs. Discard

The most efficient use of a prototype is when it is used and then *becomes* the real product (“evolutionary prototyping”). This is only a possibility if you prototype with your existing development tools (servers, applications) and not with a dedicated prototyping tool. This minimizes wasted effort, but assumes that mature processes are in place to keep the prototype clean as it evolves from prototype to real deliverable. If this is not the case, then building on top of the prototype may actually increase risk for the future problems.

Less efficient, but equally effective as a feedback technique, is when the prototype is discarded but the team carries what it has learned forward to the real build (“throw-away prototyping”). This is a much cleaner method, with less risk of “buggy” prototype elements causing problems in the final product, but it takes greater effort this way to faithfully transfer the *approved* elements into the real project.

Worst is when no prototype is delivered, and the opportunity for early feedback is lost.

### Choice of tools

Valid prototypes may be created with simple office supplies (paper/pen, index cards, whiteboard, easel pad), existing development tools, or 3<sup>rd</sup> party software. Each option presents a different combination of efficiency, permanence, and transparency. It is best to weigh the learning curve of the tool, its efficiency at building, and the learning impact of the prototypes it can build. The overall value of a prototype diminishes if the resources spent on building it (learning the tool set, time spent building, time spent porting that to the real product, etc.) are greater than the value derived from having built and delivered it.

## In the McGill context

It is already general practice in McGill IT to deliver early versions of projects to the users. This is typically arranged between the development team and end users on a case by case basis. The nomenclature varies (prototype, demo, proof of concept, beta), and the timing and contents are not regulated in any common way.

On large, coordinated projects where hardware and software and services are involved, the supporting units (NCS, ISR, ICS) may have legitimate opposing preferences on how to go about the prototype (see questions below). For example, one may prefer to build a throw-away prototype and start the real project with a “clean slate”, another would prefer to use the prototype as the early product with limited functionality and build upon it in later phases.

## Questions to pursue

The PMO should consider the following questions on prototyping:

- Will a prototype be a required deliverable on all IT projects, or only recommended for certain situations?
- Will there be a recommendation to build on top of the prototype or discard the prototype and rebuild the real project?
- Will there be a recommended time or method for delivering the prototype?
- Which prototype development tools will be recommended?
- How will prototype feedback be gathered and fed into the development process?

## References

Philip A. Laplante and Colin J. Neill, “The Demise of the Waterfall Model is Imminent’ and other Urban Myths”. *Game Development* magazine, February 2004.

“Software Prototyping” article at Wikipedia.org.

## Project Budgeting

This section describes a number of scenarios for project budgeting along with the pros and cons of each scenario. Two questions that need to be addressed are one, where should the budget originate, and two, is there an established methodology for fund distribution for projects at McGill? The scenarios considered are;

- Project sponsor obtains and provides the funds,
- Special accounts or funds are established at the CIO level and allocated to a project?
- Individual IT units provide services and produce a chargeback model for those services?

- *Project sponsor obtains and provides funds*

### **Pros**

Non-IT units become more involved and secure funding.

### **Cons**

Individual projects may focus on localized solutions leading to global inefficiencies and waste.

Long term maintenance and management becomes difficult once the project ends yet the service is still in use.

- *Special accounts or funds are established at the CIO level and allocated to a project*

### **Pros**

A single, consistent vision may be imposed over a broad spectrum of projects.

### **Cons**

Sponsors may disagree with CIO.

Funds may be directed towards projects rather than at global infrastructure, again leading to inefficiencies.

- *Individual IT units provide services and produce a chargeback model for those services*

### **Pros**

This may provide an easier way for the auditing of where and how funds are used.

Funds may be used locally to build robust and efficient infrastructures.

Infrastructure still receives appropriate funding and support and it is easier to plan and prepare for support once project terminates

**Cons**

There are increased overheads at unit levels to research, produce, and maintain costing structure and tracking methods.

The perception of the unit paying may be that IT is a cost center that does not deliver value.

## Projects vs. Operations

### Definition

A “project” for purposes of this document has been defined as a body of work with a beginning, middle and an end.

To achieve potential “project” status, other criteria (to be chosen by McGill PMO) to be considered might also include:

- Cost (hardware, software, developer resources, etc),
- Time required to complete the project (e.g. 3 person months),
- Number of affected participants or functional offices,
- Risk,
- Other.

For an example of what some of the criteria that might characterize a “project”, please refer to the following definition from Carleton University.

[http://ccsweb03.carleton.ca/ccs/gen/projectoffice/pm\\_methodology/WhatIsAProject.pdf](http://ccsweb03.carleton.ca/ccs/gen/projectoffice/pm_methodology/WhatIsAProject.pdf)

A “project proposal” should be made to the appropriate IT governing body where it must be sanctioned, resourced and prioritized in order to achieve “project” status.

All other work not achieving “project” status could be considered Operations. This should not include “project proposals” that were rejected or deferred by the governing body as those projects were not deemed to be strategic. All other work including bug fixes, minor enhancements, scheduled recurring procedures (e.g. salary policy, T4 production, Accounting Year End, annual government reporting, etc.), could be characterized as Operations.

We must be careful to not apply the same Project Management methodologies to all projects and not even the same Project Development methodologies. Smaller projects may be better suited to a less formal project methodology and a less structured development methodology.

### Projects vs. Operations (working environment comparison)

<b>Projects</b>	<b>Operations</b>
Large deliverables but longer time between delivery dates	Usually smaller set of deliverables but constant improvement denotes weekly deliverables

Pressure is not always constant and is concentrated during phased go-lives	Must have someone on call 24/7 for production problems. Must react quickly and efficiently to system downs and reported bugs which compromise service
Opportunities to learn new technologies with training often delivered as part of the scheduled project plan	Training is not always provided
Developers must become expert in the business solution and the technologies that support the specific solution	Developers must have solid grounding in all business solutions and all technologies that comprise the pool of applications owned by the portfolio

### Resourcing

There is no absolute rule for the allocation of IT resources to projects versus operations. Both types of tasks are essential and of equal importance. For developers, the preference is almost always towards projects as they tend to have long periods between deliverables and often offer opportunities to learn new technologies. Also, new deliverables are much more glamorous than just keeping the trains running on time and thus offers interesting career opportunities.

Developers in operations are less appreciated. They must be very flexible and are asked to multi-task, dealing with many programming languages and many business solutions at the same time. The work is characterized by bug fixes and minor enhancements and smaller initiatives with short turn around times. Operations developers are always on call (24/7) for the production systems which they oversee.

Ideally, developers could be rotated between projects and operations but in reality, developers in operations become “jacks of all trades” and are very resourceful whereas developers coming back from a project are often an expert in that application but are out of touch with the day to day requirements associated with the inventory of systems they are commissioned to maintain; the trademark of good operations developers. So, we often see project developers recycled from one project to the next while the operations developer remain in that role.

Also, the operations developer must be able to adapt to the delivery of a completed project into the pallet of other applications that s/he is tasked with maintaining. In other words, as projects are delivered, the inventory of applications gets larger and no new resources are ever added to the pool of operations developers.

So, what is the best formula for resource allocation?

The portfolio manager should have a rough idea about how many resources and what kind of operations developers are required to maintain that portfolio. Because the portfolio has an inventory of systems that cover many technologies, he must be careful to

ensure that these skill sets are present in or available to his team. Measured output will go up or down depending on the number of resources available to the portfolio manager but there would be a bare minimum required just to keep the inventory of systems running and healthy. This number should probably increase by 20 - 25% of the number of developers assigned to the project in its development phase. That is, for every 4 or 5 project developers assigned during the development and implementation phase of the project, one operations developer (hopefully one of the 5 project developers) should be added to the Operations team unless, of course, the application being delivered is a replacement application that is already resourced.

There are two ways to allocate developers and other resources to a “project”. Candidates can be seconded or assigned to the new project, or parts of the project can be embedded in the Operations area. Of course, additional resources with specific and appropriate skill sets can be hired on a temporary basis during the development and implementation phase of the project. At the end of this cycle, perhaps 20% of these resources can be added to the portfolios development team to compensate for the increased workload implicit with the maintenance of the newly delivered system.

## Specifications Management

### Overview

Specifications Management refers to the way in which requirements for a project are created, recorded, updated, and referenced. The specifications themselves are functions or features a product must have, according to the needs of end users or of the development team. Specifications may be given at various levels of granularity, referring to a specific feature or a general area of a project. They may be referred to as “specs” for short, and the term “scope” is often used to collectively refer to the specs of a project.

Project methodologies agree that collection and documentation of user specs is necessary to complete projects well. They differ, however, on how the specs should be collected and documented, who keeps ownership, and whether or how they may be updated over the life of the project.

### Who contributes

The PMO should draft recommendations on which parties contribute to the specs (stakeholders, end users, managers, developers, etc.) and how they should be archived or posted for reference. Further, it may be helpful to recommend who has rights to maintain the specs, or even veto them if necessary.

### Balance against Budget and Time

Project Management frameworks traditionally teach that Scope is one of three dimensions of a project, the other two being Budget and Time. It is a popular notion that, due to the unpredictability of project work, at most two of the three can be “locked” on the way to a successful project. One must yield if the others are to succeed as planned. The PMO will have to consider, if it believes this premise, whether Scope will be the dimension to yield to Budget and Time. This is the explicit recommendation of the Agile Project Management school.

### Accommodating change

With the emergence of the Agile project approach, there has been much discussion on whether and how to accommodate change along the life of a project. Traditional project frameworks emphasize the “locking” of scope, allowing modifications only at the beginning or at a few planned milestones. This attempts to minimize the impact of change on the developers (“scope creep”) but raises the risk that the result will not meet the final needs of the end users. The Agile approach is built around a process of controlled, incremental change, following the idea that it is natural and inevitable for the scope of a project to evolve. It attempts to balance the comfort of the developers with the users’ changing understanding of their needs.

Both approaches use a spec list. They differ in how the specs are managed and whether, how, and by whom they are updated. Each makes different demands of the users and developers, the Agile method being more demanding but also more collaborative and potentially producing “better” results.

## In the McGill context

### Current methods

Currently there is a mix of ad hoc approaches to Specifications gathering and management across McGill IT. Methods used by individual project managers and analysts include: screen shots, verbose descriptions, sample data. These are usually gathered in Microsoft Word or Excel format and may or may not be kept or archived in an organized way.

Since 2006 all ISR analysts and programmers have been required to keep all spec documentation and changes inside the Change Control system for auditing purposes. It is not clear if these are evaluated or monitored systematically.

### Meeting the needs of auditors

One of the most important considerations for McGill is the presence of auditors who have in the past insisted on seeing records of project specifications. ISR’s current Spec Management practices, for example, were heavily influenced by specific auditor recommendations in 2006.

## Questions to pursue

The PMO should consider the following questions on Specifications Management:

- Should the topic of Specifications be expanded to include Business Requirements? The connotation is that Business Requirements reflect the overall strategic goals of the user and development team, and therefore precede a project’s Specifications. The specs are then managed as the tactical means to meeting the business goals.
- On vendor implementation projects, will there be a link between the specs included in the RFP process and the specs that are kept during implementation?
- Who will have the ownership of a project’s specifications? Who has the right to draft, edit, sign, and/or lock them? How will contention be resolved, between the developers and the users or between back end units?
- Will there be a process to revisit or revise the specs over the life of a project, or will specs be frozen in some way?

- What kind of documentation, versioning, and archiving of the specs will be required? Is a software solution needed? If so, will McGill build or buy?
- What practices are necessary to meet the requirements of auditors?

The role of the development team should be explicitly endorsed as a contributor to specifications, especially where one of the technical options could critically hurt the project. Otherwise, technical considerations should be subordinate to the Requirements.

There should be a mechanism for archiving and tracking spec changes over time. This will meet auditing requirements and allow IT managers to learn from project history.

## References

The Project Management Institute: <http://www.pmi.org>

The Capability Maturity Model (CMM), developed by the Software Engineering Institute (SEI) at Carnegie-Mellon University. <http://www.sei.cmu.edu/cmmi/general/>

Ken Schwaber, *Scrum Musings*. 2004. This and other white papers available at [www.controlchaos.com](http://www.controlchaos.com), home of Ken Schwaber and the Scrum methodology.

Laplante and Neill, “‘The Demise of the Waterfall Model is Imminent’ and other Urban Myths”

## Third party tools

A partial list of available 3<sup>rd</sup> party requirements-management tools, collected July 2007. Some of these cross genres into defect tracking, customer service request tracking, or general project management:

- OnTime 2007 by Axosoft
  - More than Bug Tracking: A Project Management Solution
  - <http://www.axosoft.com/products/ontime.aspx>
- BaseCamp by 37 Signals:
  - Project collaboration, management, and task software; 37 Signals is a leader in the web development community
  - <http://www.basecamphq.com/>
- FogBugz by Fog Creek Software
  - Complete project management system for software teams; Fog Creek is a leader in the software development community
  - <http://www.fogcreek.com/FogBugz/>
- Bugzilla - open source from Mozilla Foundation
  - Mixed reviews; some people find it limited
  - <http://www.bugzilla.org>
- RT Request Tracker - open source by Best Practical Solutions

- Used at McGill DAUR for feature requests and bug tracking.
- <http://www.bestpractical.com/rt>
- Trac – open source written in Python
  - Multi-featured internal support platform, includes bug tracking, request tracking, timelines, wiki documentation, version control.
  - Used by McGill WSG for the web development platform
  - <http://trac.edgewall.org/>

## Communications and Training

The management of communications is a critical element in any project's success. There are a number of processes that need to be considered including;

- Communications planning – determining what information should be communicated to whom,
- Information distribution – ensuring that this information is available in a timely manner,
- Performance reporting – collecting and distributing status reports, progress measurements, and forecasts,
- Managing issues, changes and actions.

The groups with whom the PM must communicate include:

- The core project team,
- Project stakeholders,
- Project sponsors,
- The CIO and IT Directors,
- User groups affected by the project,
- Other groups impacted by the project (for example students),
- Vendor(s) and/or contractor(s).

Early in the project the project scope and plan must be communicated. There are various media available to communicate the plan – via for example a memorandum, a presentation, a teleconference, or an e-mail. The project manager must decide the appropriate means to reach the various groups and manage expectations and requirements. As the project progresses additional information may be distributed via portals, collaborative work management tools, web conferencing and web publishing.

A sample communication matrix below details some of communication that the PM must perform regularly throughout the project life cycle.

<i>Target Audience</i>	<i>Message</i>	<i>Typical Channel</i>	<i>Frequency</i>
Core Project Team	Detailed; task related, project status; activities performed during the time period; activities scheduled and not performed and justification; problems. These meetings should be documented.	Meetings	Regularly scheduled (at a minimum once a week)
Project stakeholders	Overview of the progress of the project; key issues, and changes	Presentations	Regularly scheduled (quarterly) and/or when there are

			major issues and/or changes
Project sponsors	Overview of the progress of the project, key issues, and changes; performance reporting including time and cost reporting; approved change requests, and estimates to completion	Presentations	Regularly scheduled and/or when there are major issues and/or changes
CIO and IT Directors	As per project sponsors		
User groups affected by project	Requested changes, corrective actions, issues log	Meetings	As appropriate
Other groups impacted by project	Project status	Meetings, Presentations, on the Web	As appropriate
Vendor(s) and/or contractor(s)	Vendor performance review, requested changes, issues log	Meetings, teleconference	As appropriate

Depending on the project the project manager may communicate with a vast array of constituents including professors, the general student population, the Libraries, the decanal staff, senior administration, student associations, public relations, and distributed support staff.

The table below could be used to track the communications.

<i>Message</i>	<i>Channel</i>	<i>Date / Event or Frequency</i>	<i>Audience</i>	<i>Responsible</i>
Overall project schedule and plan	Various listserv and campus newspaper	TBD	All professors, students and staff  LAN administrators Deans and decanal staff	CIO, PMO, ICS
Etc.				

### **HR Staff Development Course - Project Management**

HR offers a staff development course on project management that is designed to provide a generic “5-step” framework for managing projects consistent with the “Project Management Institute Book of Knowledge”, and that can be applied on any project. It seeks to teach the skills and methods that can be applied by project managers immediately.

At the end of the course project managers will be able to position their projects and deadlines, quickly map out an action plan for moving the project forward, and use and adapt key templates and processes. Students will understand the role and challenges of the “project manager” function and understand how technology can be used to facilitate the function.

The course is open to all staff members from faculties/units seeking results through project management and would be of particular interest to those who currently manage or coordinate ‘projects’ or expect to in the near future

### **Recommended website links and readings**

#### **Web Links:**

[www.pmi.org](http://www.pmi.org)

[www.pmimontreal.org](http://www.pmimontreal.org)

[www.pmibookstore.org](http://www.pmibookstore.org)

[www.projectsatwork.com](http://www.projectsatwork.com)

[www.pmforum.org](http://www.pmforum.org)

#### **Readings:**

PROJECT MANAGEMENT – A MANAGERIAL APPROACH, Jack R. Meredith & Samuel J. Mantel, John Wiley & Sons, 5<sup>th</sup> edition

PROJECT MANAGEMENT, H. Kerzner, Van Nostrand Reinhold Company, Litton Educational Publishing, Inc., ISBN 0-442-24348-0

PROFESSIONAL PROJECT MANAGEMENT – A PRACTICAL GUIDE, J.R. Adams & M.D. Martin, Universal Technology Corporation

NEW PROJECT MANAGEMENT, J. Davidson Frame, Jossey-Bass Inc., ISBN 1-55542-662-X

WHY TEAMS DON'T WORK, H. Robbins & M. Finley, Peterson/Pacesetter Books, ISBN 1-56079-497-6

A GUIDE TO THE PROJECT MANAGEMENT BODY OF KNOWLEDGE. Project Management Institute Standards Committee, ([WWW.PMI.ORG](http://WWW.PMI.ORG))

A SURVIVAL GUIDE FOR PROJECT MANAGERS, James Taylor, McGraw Hill, 1998, ISBN 0-8144-0337-9

Other courses that could be useful are;

- Advanced Project Management,
- Cost reporting, and
- Change Management.

The Advanced Project Management course would build on the Basic Project Management course. It would be an intensive course addressing advanced topics in project management for larger, more complex projects. It would cover methods to initiate plan and control projects by applying advanced tools and techniques and cover key areas such as:

- Specifying scope – business context, stakeholder roles, and goals for project success,
- Effective leadership – managing collaboration, workflow and productivity of teams,
- Techniques to complete the project on time and budget,
- Advanced project planning – the Work Breakdown Structure (WBS), risk response, and project communication.

A project management web site could be created showing information on active and archived projects, documentation, tools and templates with best practices examples, contacts, etc.

A Change Management course would focus on managing change, helping people cope with changes in the workplace and getting them through the transition period from the current to the future state with as few disruptions as possible. Change management training involves techniques for staff in dealing effectively with change and developing strategies for accepting it with a minimum of stress and anxiety. Key elements include:

- Understanding how change affects employees and the different stages to acceptance: denial, resistance, exploration, commitment,
- Methods of dealing with the emotional aspects of change, and techniques for minimizing anxiety and stress,
- Communications and training strategies.

Change Management training is especially critical during times of a major change to the way an institution conducts its business; i.e., position changes, changing from a manual, paperwork process to an online, automated process, etc., or when there are minor changes but they are constant and occur over a protracted period of time (change fatigue).

### **Other Training**

Informal, interactive training sessions could be offered based on specific requests, or identified by the Project Management Office based on the needs of project staff. Topics could include risk analysis, cost estimation, developing and managing a Work Breakdown Structure, developing scope and success criteria, etc.

### **Training Material & Support**

Training manuals and documentation could be posted on the Project Management Office web site. This website would provide another source of assistance for providing examples of project reporting and tracking, as well as historical data and lessons learned from archived projects. The PMO staff could provide mentoring and coaching on any aspect of the McGill's IT project management methodology.

## **Appendix A. Carleton University discussion topics**

### Brief history of the PO at Carleton

- Could you briefly describe your IT organization (various offices and the reporting structure)
- Who championed the creation of the Project Office at Carleton?
- Upon creation of the PO, how was it originally perceived/received?
- What kind of communication plan was used to advertise the services of the new PO?
- How long did it take to develop your first phase of your methodology and all the tools and templates that support it

### Project definition

- What constitutes a project and how does a project proposal receive active project status?
- When does a project become large enough to require PM formal methodology?
- How do you distinguish between maintenance, enhancement and full fledged project (at what point does your office get involved)

### Project Prioritization

- Who sits on your Priorities committee and how do they operate?
- Who do they report to?

### Sponsor Committee

- Who is typically elected to a sponsor committee and what is the role and the responsibilities of the sponsor committee?
- Who is typically seen as the project champion and are they always a member of the Sponsor committee?

### Project Management Methodology

- Do you insist on/suggest/teach the PM tools used to actually manage the project (i.e. MS PROJECT, collaboration tools) or just the tools/templates to report progress?
- Do you provide timesheet tools to track hours?

Accountability and transparency

- What are the KPIs that you use to measure success/failure and are they common for all projects?
- Do you use any measure of chargeback to the client or are project budgets covered centrally?
- How do manage customer expectation wrt the overhead required to manage a project in this fashion.
- What are the expectations of customer involvement with respect to projects managed this way.

Training and Communications

- Could we see your course plan and course syllabus (maybe they are available online)

## **Appendix B. Peer Group Review**

### **G13 Canadian Universities**

#### **McMaster U.**

The Chief Information Officer at McMaster has a dual report to the Vice-President (Administration) and to the Provost and Vice-President (Academic). The Project Management Office is shown as a Foundation Project in the CIO's 2007 Annual Report to the University Planning Committee but there is no further mention of it in this document.

The priority setting mechanism for budget allocation rests with a University Technology Committee. Generally, all proposed technology initiatives to be funded from the University Technology Fund with an investment of over \$100,000 in staff resources or expenses for hardware, software and consulting require submissions to and consideration by the University Technology Committee. The Committee uses a University-wide perspective to assess submissions and recommend priorities and funding consistent with the framework provided by the University Technology Strategy and Refining Directions. The membership of the committee seems fairly ad hoc and may be based more on the skill sets of members than on their actual positions.

The Committee is supported by the Director of the Project Management Office. The PMO Director circulates an agenda and supporting documents (draft templates, criteria, business cases, project status reports) in advance of the meetings. The Chair manages the meeting. Recommendations are fact-based and achieved through consensus. Evaluation criteria to be used in evaluating possible projects for funding are listed on the web. Minutes of the meeting are prepared by the Director, Project Management Office, for approval by the Committee.

There is little other information available on the public website about the composition, the methodology or the success of this PMO.

#### **Queen's University**

University Information Systems (UIS) is a group of 20 people and reports to the Director of Technology Services who in other places is referred to as CIO. This individual in turn reports to the Vice-Principal (Operations and Finance).

UIS is developing a set of methods and practices for managing projects and developing applications based on Agile Development and Agile Project Management strategies. There are templates, practices and other useful tools that UIS or its clients may use when managing their work available on the UIS website.

The priority setting and budget allocation for UIS appears to be handled through an Administrative Computing Steering Committee.

### **Administrative Computing Steering Committee**

The Administrative Computing Steering Committee's mandate is to make recommendations with respect to the allocation and use of ITS resources in the support of the University's administrative computing systems. The Committee primarily deals with recommendations regarding:

- selection and priorities for systems development and enhancements,
- establishing and reviewing priority setting criteria,
- reviewing project progress,
- policy related to administrative systems issues,
- acquisition of hardware and software for the support of the administrative systems,
- allocation of resources to enhance the efficiency and effectiveness of UIS and end-user computing.

### **U. de Montreal**

Ghilaine Roquet est responsable de l'ensemble des systèmes et infrastructures technologiques de l'Université de Montréal. À ce titre, elle dirige la Direction générale des technologies de l'information et des communications (DGTIC) et relève du vice-recteur exécutif.

There are some templates available (e.g. how to begin a project) but no specific mention of a Project Management Office.

### **U Laval**

There is little (no) information on the website about the structure and organization of IT Services at U. Laval.

### **University of Alberta**

The Vice-Provost Information Systems has a dual report to the Vice-President Finance and Administration and to the Provost and VP (Academic). The Director of Administrative Information Systems also has a dual report to the Vice-Provost Information Systems and the Vice-President Finance and Administration.

The priority setting mechanisms and funding decisions appear to be based in the Administrative Information Systems Steering Committee – AISSC. The AISSC is a standing committee of the Provost and Vice-President (Academic). It is a broadly based representative group of stakeholders of the University of Alberta's administrative information systems (PeopleSoft and others). Together with the AISSC Executive

Committee, it defines the overall direction, strategy and priorities for the University's administrative information systems. AISSC is responsible for making recommendations to the AISSC Executive Committee concerning policy.

To effectively manage the University's capital construction and growth, the University of Alberta acquired the PeopleSoft Projects module. These tools encompass and are used to manage the breadth and complexities of project management and planning activities. The PeopleSoft Projects module contains various templates and guidelines.

The University of Alberta does not appear to have a stand-alone IT PMO.

### **University of British Columbia**

The CIO (and Associate Vice-President Information Technology) reports to the Provost (and Vice-President, Academic). UBC's Information Technology Department provides IT-related strategy, applications, infrastructure, and support services to the UBC community as well as partnering and planning services. The e-Strategy Framework is a guiding framework to align UBC's technology initiatives with the university's strategic goals. Through UBC's e-Strategy, IT collaborates with other groups on campus to research, plan and implement technologies that will enable students, faculty and staff to excel.

#### **e-Strategy Components and Initiatives**

e-Strategy includes a range of projects and initiatives that are grouped under the following key components:

1. Projects in [e-Learning](#), [e-Research](#) and [e-Community](#) use technology to enhance UBC's core activities and resources: learning, research, community and people.
2. Projects in [e-Business](#) use technology to transform administrative processes and ensure they support UBC's strategic goals.
3. [e-Connectivity](#) provides access to advanced regional, national and international research networks that are essential to the success of e-Strategy.

#### **Project Development**

UBC's e-Strategy funds and develops projects. It connects people across UBC who manage projects on behalf of their departments and faculties and have adopted e-Strategy goals and principles. e-Strategy also links people in other units and groups across UBC working on technology issues and projects by providing information and resource sharing opportunities.

Apart from this e-Strategy initiative there appears to be no separate PMO structure or methodology in UBC's IT Department.

### **University of Waterloo**

IST at the University of Waterloo is headed by an Associate Provost, Information Systems and Technology. There are a series of project management templates that are password protected but no clear reference to a project management office.

Planning is an on-going activity in IST. It is led by the IST management team with input from IST staff and the University community through the many formal and informal information technology committees and discussion forums. The development of this plan begins with the annual IST management retreat in the spring of each year and is completed during the summer. Updates are made throughout the year to track progress on each item of the plan.

### **University of Western Ontario**

Information Technology Services reports to the Provost and Vice-President (Academic) and there is no obvious reference to a PMO.

### **University of Toronto**

Administrative Management Systems (AMS) reports to Vice President Business Affairs who in turn reports to the President, U. of T. AMS offers divisions/departments a cost recovery service for IT development and has a pool of technical experts skilled in project management.

Communications	Pilot Microsoft Sharepoint: Pilot the use of Microsoft Sharepoint portal software within the department of AMS to better organize and share project files and change requests between team members. Use results of pilot to demonstrate use of the software for other applications.
Sustainability	Continue to offer AMS contract development services to divisions, under the following areas: <ul style="list-style-type: none"><li>• Project management services</li><li>• PC/Web development</li><li>• Business Process Reviews</li></ul>

There is no further reference to a Project Management Office or methodology.

As an academic institute U of T offers a Project Management Initiative in its Professional Development Centre that consists of a full range of courses.

### **University of Calgary**

The University of Calgary IT (UCIT) has a Project Office (as of April 2007) with a staff of five that reports to the CIO. Although the project office has just been established UCIT

has been following standard project discipline for the past couple of years for many IT initiatives.

Templates are available from the project office and are divided into the following categories for ease of reference;

- Mandatory templates,
- Supporting Templates,
- By Phase,
- Navigate by Life Cycle,
- By Category.

Not all initiatives need to complete all phases, and not all initiatives necessarily need to create all of these documents. The actual documents are defined through consultation with the Project Office as the nature and scope of the project is understood.

### **IT Definition and Delivery Methodology**

**Opportunity Assessment** - The initial document to capture the nature of the issue/opportunity to be addressed. (Opportunity Assessment Usage Guide)

**Business Case** - The document that defines the value proposition for creating a solution for the issue/opportunity to address a defined scope.

**Solution Concept** - The document that describes at a high level the various pieces of the solution required to address the defined scope.

**Project Charter** - The document that defines the project that will deliver the targeted solution.

There are two versions of a Project Charter - a full version that should be used for all projects where labour costs are > \$7500 and a slim version for projects where labour costs are < \$7500.

**Requirements Document** - The document that identifies the details all of the requirements of the various stakeholders that the solution may address. This includes the functional requirements of the customers, the non-functional (generally service level related) needs of the customers, as well as the needs of the various groups and individuals to enable the solution to be supported and sustained over time. Not all requirements will necessarily be met by the solution, but this document provides a basis for understanding the needs and wants, and for determining the scope and specifications of the solution to be developed.

**Project Change Order** - The document that defines and is approved for any changes in scope, schedule or cost from the original approved Project Charter. Although not

mandatory, Change Orders should be tracked in a Change Order log so that there is a history of all approved changes to the project.

**Project Turnover Document-** The document that provides sign off by users and the support organization to confirm the solution provided meets the need and can be supported on an ongoing basis.

### **Template Guidance**

Each of these templates has instructions contained within them that provides guidance in completing the forms. The Project Office also provides assistance and individual training modules will be provided on key templates.

The list below shows the templates that are available.

### **Templates**

Project Charter.doc  
Requirements.doc  
Project Completion Report.doc  
Meeting Minutes.doc  
Meeting Agenda.doc  
Risk Assessment Worksheet Template-2.doc  
Project Issue Log.xls  
Project Change Log.xls  
Project Issue Document.doc  
Change Request.doc  
Opportunity Assessment.doc  
Slim Project Charter.doc

The Project Office is working with IT and Unit Management to define the approval processes and Governance bodies.

### **Dalhousie University**

There is no reference to a PMO within the University Computing and Information Services.

### **University of Ottawa**

Computing and Communication Services reports to a Vice-President, Resources. Within Computing and Communication Services there is a list of projects but no explicit reference to a PMO.

## **AAU (Empirical) American Universities**

### **Indiana University – Bloomington**

Within the University Information Technology Services there are references to projects and project managers but not to a PMO.

### **Rutgers University**

The Office of Information Technology is divided into the following areas:

#### **Campus Computing Services**

- Oversees campus computing services for Camden, Newark, and New Brunswick/Piscataway
- Computing support for faculty, students, and staff

#### **Enterprise Systems and Services**

- Administrative Computing
- Information Protection and Security
- Telecommunications

#### **Instructional and Research Technology**

- Integrates Instructional Technology
- Coordinates Support for Research
- Works Closely with Center for the Advancement of Teaching

#### **Planning and Operations**

- Planning
- Communications
- Program and Project Management Across IT areas
- Vendor Management

The IT Project Governance Committee (ITPGC) is charged to establish priorities for allocating central administrative computing resources. This university-wide committee is composed of academic, administrative and IT leaders from all campuses. There are two subcommittees: Financial/Business Systems and Student Service Systems.

There is no further information on planning and operations.

### **University of Arizona**

The University Information Technology Services (UTIS) is composed of the following units;

- Chief Information Officer and Executive Director of UITS,
- Network Technology Solutions,
- Administration, Finance & Workstation Support,
- Computing Services,
- Learning Technologies Center,
- Office of Student Computing Resources,
- Administrative Computing & Data Services.

There is no obvious reference to a PMO.

### **University of Colorado – Boulder**

There is a Vice Provost and Associate Vice Chancellor, Academic and Campus Technology that reports to the Provost and Executive Vice Chancellor.

The Office of the CIO provides leadership for the campus's IT infrastructure and is responsible for oversight of Information Technology Services (ITS). The CIO Office leads processes, such as the 2002 IT Strategic Planning process, to determine the campus-wide direction for IT, and it plays a leadership or sponsoring role in other campus-wide IT initiatives. The Office also coordinates educational technology on campus. The CIO Office is responsible for the development of IT policy and the management of IT governance structures. It is also the clearinghouse for data about the campus's IT environment

Project updates are available on the web on a monthly basis. There is a reference to an ITS Project Office that manages projects, project interdependencies, project portfolios and processes.

### **University of Iowa**

Information Technology Services (ITS) provides integrated information technology support for the University of Iowa campus. ITS provides computing facilities; administrative information systems; voice, data, and video communications networks and services; technological resources for teaching and research needs; Instructional Technology Centers (ITCs); and a variety of related services and support.

ITS is a single organization comprised of five departments and directors. Each department has its own decision autonomy, budgets, and business plans, which guide their actions and decisions. The Assistant Vice President and Chief Information Officer provides coordination, capital planning and control, policy approval, and other institutional coordination, intended to support the successful operation of each ITS department.

### **Project Management Task Force**

Improving project communications was the focus of one of the initial sub-groups that was formed within the ITS Communications Team. A portion of that sub-group (along with additional staff members from ITS) was spun off to create the Project Management Task Force (PMTF). The goal of this team was to improve not only project communication, but project management as a whole.

Throughout 2006, this team worked to understand where ITS is currently with regards to project management, how departments handle project management and what staff would like to see in the future from project management. The PMTF also put together a report highlighting what project management techniques are being used throughout the University, at other schools as well as within the IT industry.

A Project Management Advisory Group was put together with additional staff members from around ITS. The purpose of this group is to be a sounding board for the ideas and documents coming out of PMTF and to help set direction and focus.

At the end of 2006 and into 2007, the team continued to develop a framework to be used for managing projects throughout ITS. The goal is to provide something that is lightweight and flexible, yet achieves the necessary results and gathers the necessary information. The goal is to improve the success of project management throughout ITS.

A project management website has been created and it is password protected.

### **University of Missouri – Columbia**

The Division of Information Technology reports to the Vice-President for Information Technology and CIO. There is no PMO in the organizational chart of this division.

### **University of Pittsburgh**

Computing Services and Systems Development (CSSD) provides support for students, faculty, and staff in the areas of academic computing, administrative systems, development services, and support solutions. CSSD also operates the Technology Help Desk, the single point of contact for all information technology solutions at the University of Pittsburgh. There is no reference to a PMO.

### **University of Virginia**

The Associate Vice President and Deputy Chief Information Officer has six units that report to him, namely;

- Applications and Data Services,
- Budget and Administration,

- Communications and Systems,
- Computing Support Services,
- Advanced Technology,
- Security Coordination and Policy.

ITC's Division Directors may request the creation of a new project or task by forwarding an e-mail request to ITC's Director, Budget & Administration with the following information:

- award from which the activity will be funded;
- division to which the project or task will be assigned; and
- name of the new service, product, project, etc.

The director and/or manager responsible for the new activity will be advised of the new structure and charging instructions.

There are a number of Advisory Committees.

**University Committee on Information Technology:** Through the University's Vice President and Chief Information Officer, the University Committee on Information Technology (UCIT) provides guidance, advice, and assistance to the President, the President's Cabinet, and the senior information technology officers on matters affecting information technology and communication, including data, voice, and video.

**Administrative Technology Council:** The Administrative Technology Council, in a proactive manner, encourages and champions the development of administrative committees and cross-administrative interest groups concerned with information technology issues at the University. The Council is an advocate for widening the use of information technology in administrative support activities, especially when it is an effective tool in process simplification, and shall contribute to the development of architecture to reach that goal.

**Student Information Technology Advisory Committee:** This committee represents students and the student view on all matters of information technology and policy, and creates a vision for the ideal information technology environment to support student learning and student life at the University of Virginia. It surveys other peer institutions to determine the status of facilities, resources and services to support students and assesses the current situation at the University against other institutions and against an ideal vision, and identifies the highest priority needs.

**Deans Technology Council:** The Deans Technology Council functions as a key forum for pan-University information technology planning and project review in support of the academic mission. The range of topics discussed by the group includes new technologies, digital security, operational issues, student and faculty services, and network enhancements. The council, which is chaired by the Vice President and Chief

Information Officer, includes representatives from all academic schools, the University Library, the Provost's Office, and the Health System.

There was a policy issued in 2006 by the Vice-President and CIO regarding University Information Technology Project Management.

The policy states that the University is committed to continuously improving the delivery of information technology (IT) solutions within budget, on schedule, within scope and in such a way as to best contribute to accomplishing the University's strategic mission. This policy further established the goal of a common and consistent application of project management best practices in the management of IT projects. A uniform project management framework promotes consistency and better control of IT projects, thereby reducing risks and increasing project successes. The policy further states that information technology projects shall be managed in accordance with best practices promoted by the nationally recognized Project Management Institute (PMI), appropriately tailored to the specific circumstances of the University. For example, project managers should possess professional credentials and/or an appropriate level of project management training or experience. Projects that engage leading IT consulting or software development firms to assist with project management may apply additional best practices provided by these firms.

The scope of this policy does not extend to research projects, research initiatives or instructional programs.

The policy provides the following URL for further reference

<http://www.itc.virginia.edu/policy/pm>

### **University of California (LA)**

There is an Associate Vice-Chancellor, Information Technology.

UCLA's Office of Information Technology (OIT) is an umbrella organization that spreads across the spectrum of IT activities, projects, and organizations. The OIT is responsible for university-wide technology planning and strategic and tactical deployment of the academic and administrative operations, services and resources in support of the university mission and its central and distributed technology requirements.

The OIT manages institutional IT planning, policy setting, security practice and compliance, prioritization and decision-making processes, and with the Office of Finance and Budget is responsible for campus IT investment planning and decisions. The OIT provides program office and project oversight capacity and consultation services.

### **Institutional IT Planning and Decision-Making Bodies**

The IT decision-making and budget structure and processes at UCLA have broad executive commitment. The organization involves a number of standing committees providing key input on project and policy direction, project scope, impact and value, business models, resources and priorities.

Through a process established and overseen by the Information Technology Planning Board (ITPB) and managed by the Office of Information Technology, a collection of projects, each with executive sponsorship, forms the recommendations on UCLA's IT portfolio of campus-wide projects. The strategic, tactical and technical recommendations of these committees provide key campus input to the executive sponsorship on project definition and budget. Once finalized the IT portfolio becomes a set of project and budget recommendations that are submitted to the Chancellor, Executive Vice Chancellor and Vice Chancellor for Budget and Planning.

Three committees are responsible for integrated, campus-wide recommendations on strategy and policy, budget and business, and technology, respectively:

The **Information Technology Planning Board (ITPB)**, a joint faculty senate-administrative committee is charged with strategic planning and policy recommendations. The ITPB reviews the portfolio of institutional information technology projects to determine the strategic balance of overall resource expenditures vs. campus priorities and coordination of initiatives across Areas of Emphasis.

The **Information Technology Coordinating Committee (ITCC)** is responsible for finalizing campus wide IT project, operating model and budget recommendations to the Chancellor and Executive Vice Chancellor. It is appointed by the Executive Vice Chancellor and members are representatives of Deans and Vice Chancellors, the Chair of the ITPB, and the Associate Vice Chancellor, Information Technology.

The **Common Systems Group (CSG)** is responsible for preliminary assessment, technical planning, policy, integration, impact and infrastructure assessment in conjunction with the Office of Information Technology (OIT). It is appointed by the Associate Vice Chancellor, Information Technology and members are Academic and Administrative IT Directors.

Two other committees are responsible for focused recommendations about three specific campus IT Areas of Emphasis:

- 1) campus wide productivity applications and common infrastructure,
- 2) instruction, and
- 3) research:

The **Committee on Information Technology Infrastructure (CITI)** which brings together the Vice Chancellors is responsible for strategic and tactical planning, operational policy, and business and cost allocation models. The CITI is appointed by the Executive Vice Chancellor on behalf of the Deans and Vice Chancellors and members

are academic and administrative directors responsible for business and fiscal aspects of IT applications and infrastructure.

The **Faculty Committee on Educational Technology (FCET)** is responsible for strategic and tactical planning, policy, and IT infrastructure for Educational Technology. It is appointed jointly by the Vice Provost of Undergraduate Education and the Associate Vice Chancellor, Information Technology, and members are faculty and staff in the College and Professional Schools.

These committees work together to create an overall framework for decision-making, prioritizing, funding, and implementing UCLA's information technology projects and initiatives. For any given project or initiative, a committee of functional sponsors is formed to drive the project programmatically.

The Office of Information Technology (OIT), in coordination with the IT Planning Board (ITPB) and the Common Systems Group (CSG) has established a methodology and processes for initiation, assessment, planning, review and implementation for campus-wide IT projects and IT policy review procedures.

- Pre-Implementation Institutional Project Assessment Process
- Project Development Flow for High Impact Campus-wide Projects
- Project Development Flow for High Impact Campus-wide Projects – Process Details

Highlights of these processes are provided below. More detail is available on the UCLA website.

### **Pre-Implementation Institutional Project Assessment Process**

#### **Project Assessment Planning**

CSG Preliminary Analysis

If the project was initiated by Sponsors  
(e.g. ECC, CSG, ITPB, ITTF, Office of Research)

- Summary of Project
- Project Assessment Worksheet
- Budget Analysis (including Total Campus Cost & Values)

#### **Technical Review**

Review for Best Practices (Similar Technologies, Other Institutional Installations)

Review for Technical Soundness

Review for Inter-System Dependencies (External Interfaces)

Review for Local & Institutional Impacts

Projects meeting one or all of these criteria:

- Project Cost: > 1-2 million

- Project Duration: > 2-3 yrs
- Project Phases: > 1-2 and/or heavy development vs. off-the-shelf product migration
- Project Benefits/Success Factors: ITPB has significant concerns
- Project Scope: many users and/or impact on large and/or critical organization/business process

May also require:

- Formal Project Control Document (PCD)
- Formal reviews, with higher likelihood of external participation
- Written reviews
- Written signoffs
- Project Options (including costs, pros/cons of each)
- Policy Change Recommendations?

### **Preliminary Assessment**

- Project Initiation & Preliminary Needs Assessment
- Project Objectives,
- Macro Description & Budget
- Scope of Functional and Technical Specifications
- Technical, Cross-Systems, Cost & Impact Review, Endorsement of PCD
- Functional Specification Review, Endorsement of PCD

### **Project Development Flow for High Impact Campus-Wide Projects**

- Progress Review Needs
- Assessment, Detailed Project Description
- Project Completion Details
- System Acceptance Details, Operating Budget Approval
- Assist Formation of Functional Sponsors
- IT Program & Policy Review, Endorsement
- ITPB Endorsement of PCD
- IT Budget Constraints, Approval Capital
- Budget Review, Approval
- Owner Budget Review, Approval
- Preliminary Assessment
- Endorse PCD & Proceed
- Final Design Approval
- Detailed Specifications
- Development & Testing Requirements
- Technical Endorsement
- ITPB Endorsement
- Final Implementation Approval
- Implementation Endorsement = Recommendation Approval

## Appendix C. NCS Project Management Plan Template



**McGill University**

**<Project Title>**

Project Plan (Statement of Work)

<Date>



Prepared by

Prepared for

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(March 2007)

## DOCUMENT REVISION INFORMATION

**Project Name** \_\_\_\_\_  
Prepared by \_\_\_\_\_  
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## DOCUMENT APPROVAL

This signature page is to indicate approval from Gary Bernstein (Director of NCS) sponsor, for the attached Statement of Work for the Staff **Email Archiving: Implementation Phase** project. Each of the undersigned acknowledges that they have reviewed the contents of this document and, with respect to their own areas of expertise and responsibilities, agree with the stated design details.

**NCS Sponsor**

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Date \_\_\_\_\_  
\_\_\_\_\_

**Project Manager**

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Date \_\_\_\_\_  
\_\_\_\_\_

***After the appropriate signatures have been affixed, the text herein binds the participants to the stated tasks, responsibilities and outcomes. Changes to the scope must be presented to the sponsors for approval. Should this project exceed 6 months in duration, it shall be automatically reviewed by the sponsors for termination, continuance or re-launch.***

## Table of Contents

DOCUMENT REVISION INFORMATION .....	68
DOCUMENT APPROVAL.....	68
About this document.....	70
Section 1 - Description and Scope <b>Error! Bookmark not defined.</b>	
1.1 Summary of Work Requested	
1.2 Background	
1.3 Major Milestones and Major Deliverables	
1.4 Expected Benefits	
1.5 Items not in Scope	
Section 2 - Approach	
2.1 Methodologies or Special Standards to Be Observed	
2.2 Impact on Existing Projects or Systems	
2.3 Assumptions Critical to the Project	
2.4 Plans for Periodic Status Reporting	
2.5 Procedures for Change of Scope and/or Work Effort	
Section 3 - Resource Requirements	
3.1 Detailed Plan for Assignment of Staff	
3.2 Stakeholders	
Section 4 - Risks and Concerns	
4.1 Risks and Mitigation Strategies	
Section 5 - Acceptance Criteria	
5.1 Testing and Verification	
5.2 Expected Results	
5.3 Termination of Project	
Section 6 - Estimated Time and Costs	
6.1 Estimate for Proposed Work	
6.2 Licensing Agreements	

## About this document

This document is used to officially launch the project and covers the following aspects:

1. Description of the issue and definition of the scope of the project
2. Definition of the approach to be taken by the project team
3. Identification of required material and human resources and stakeholders
4. Identification of risks and concerns
5. Definition of the acceptance criteria to measure the success and determine the satisfactory completion of the project
6. Any other pertinent background data or requirement list