

Technology Investment Selection and Protection

The Governance Challenge

Prepared by the NECCC IT Governance Work Group



NATIONAL ELECTRONIC COMMERCE COORDINATING COUNCIL

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Key Factors in Conceiving IT Investments

Introduction

The world of technology, especially information technology, is ever changing and with it the landscape facing the IT planner and decision maker. Traditional ways of choosing, managing and evaluating IT projects, while still relevant and valuable, are no longer sufficient to guarantee that the resulting investments will realize their full potential, both functionally and economically. In the public sector, greater reliance on automation to support governance objectives while working within the stringent funding and statutory limits on spending public money, results in an even more dramatic change impact. In response to this evolving IT universe, planning techniques are widening to encompass the additional factors that influence IT investment success. This planning imperative is similar to what IT professionals experienced when they refocused their strategic planning to include the previously disregarded portions of the IT life cycle. Included as well are the many areas of technology that have become more flexible and interchangeable, relieving the planner of risks that plagued earlier efforts. Taken together, this new change imperative may be characterized as a shift from an emphasis on detailed tactical planning that factored in only technology risks toward a more holistic and long-term strategic view of project success and risk that includes all of the factors that impact the enterprise.

The Evolving IT Investment Challenge

Historically, in a successful IT acquisition, the key variables were the hardware, operating system, application development environment, and communication capabilities of the core computing resources being considered. While even then there were many additional factors involved in the ultimate use of the foundation IT resources, these were usually secondary to the ability of the hardware and operating system suite to support the desired processing load. Even where commercial software products were to be installed, the core computing architecture was often the most important variable. Questions like “Do they have a UNIX version?” were regularly heard during the planning stage. Technology has improved radically in the past few decades, meaning that IT investments are less often and to a lesser extent dependent on the raw capabilities of their technological components. At the same time, however, success has become more dependent on a range of factors that might be categorized as functional, even social in nature.

For example, the traditional view of IT investments was based on an implicit assumption that once the hardware and infrastructure was in place, applications would be developed or procured and made available to users whose level of receptivity was neither a requirement nor a criterion

for success. Where end-users were outside the organization, as with applications designed for customer benefit, trained call-center staff normally completed the desired transactions based on telephone or hard copy contact with end users. If system end-users complained about their experience with the system, correction was usually an issue of additional training for in-house staff assigned to user interaction. With the growth of the Internet and World Wide Web, this focus shifted to how the application could empower self-use by customers. This required the applications to be capable of successful use by “untrained” users with limited or no support from trained staff. The transforming impact of the applications designed based on end-user behavior and perceptions has become a critical variable in measuring investment ROI. This trend, especially in the public sector, is traceable to the evolution of automation or “e-government” as a preferred approach to the challenges of governance and the demand for better service delivery by the end user.

Consequently, the organization’s task in conceiving, undertaking and monitoring projects that will result in IT-related investments has become at the same time both easier, as a result of improvements in hardware and software reliability and a refocus of development priorities determined by the customer, and harder as a result of the more complex chain of variables that must be managed to achieve success that have become less controllable from within solely the IT organization.

This paper, while not offering a “template” answer to this evolving change imperative, seeks to describe the environment that has been generated, and to offer some guidelines based on concrete examples for successful practices to employ. It is key, however, that the reader understand these recommendations in the context of today’s investment variables which are more subjective and the need for an organization to evaluate peers’ experiences in the context of the unique challenges of their own environments – particularly in terms of culture and organizational structures and dynamics which aren’t as flexible and easy to change as rapidly as technology has.

The IT Investment Life Cycle

With the changes described in the following pages, we’ve seen the definition of a successful IT investment broadened to include a wide range of internal and end-users, especially in the growing public sector use of automation to enable and encourage a higher level of citizen participation in government. No matter how technologically solid and well-designed many systems may be, their success is often defined by whether their intended users accept them and find them reliable and by whether that use furthers the underlying open-governance objectives.

We have also seen applications deployed for a particular set of requirements organically grow to meet new requirements that previously would have been handled as a separate system. The rapidly evolving Service Oriented Architecture (SOA) movement, for example, is based partly on a growing realization that useful functionality need not, and perhaps should not, be built into monolithic application suites and that today's communication resources make it no longer necessary for planners to look only within their own organizational walls for functional support. A growing initial step in the development of an IT investment plan is the discovery and description of those groups and individuals who are responsible for and affected by the contemplated functions. Considerations such as these should be asked:

- **What is the business need and who are the likely participants and users?** While investments and applications have always included some level of requirements analysis, this phase of the process has become more involved and critical as the circle of participants and users has widened and as the criteria for success has become less discrete. A complicating factor in this portion of investment planning is that systems designed to address needs often classed as "business" related, do not behave in the logical manner of business disciplines. Even after the core description of a requirement set has been set forth, planners must develop a thorough analysis of the participant and user groups with a particular focus on the demographics and likely behavior of the intended end-users. Planners must understand clearly what business needs they are trying to meet, and what they may expect of those whose participation will be critical to the success of the effort and whose limitations will drive cost and risk across the investment life-cycle. If the resulting application meets the requirements but the requirements haven't been described in a way that tracks and details actual and detailed user experience has the application resulted in something that is usable?
- **Who are the target system users and what are their demographics?** A major characteristic of most business computer systems has traditionally been the fact that their direct users were largely internal to the organization. Even applications intended for support of customers or private citizens were designed with a firm or agency representative acting as a buffer between the system and the consumer. User demographics, therefore, became a training issue. Agency workers were trained to deal with the predictable range of user behavior, questions and complaints, insulating the system from their direct influence and insulating them from the frustrations the representatives might experience working with the system. With the rise of the Internet and connected government, this insulation has largely broken down as all manner of citizen-government functions have been redesigned for unaided Web access by their intended consumers. These changes are fundamental to the IT planning and investment process, and the definition of success is at once less discrete

because end-use is wider, and more important as an agency's constituents become direct users and evaluators of system operation, including direct experience with its shortcomings and failures.

- **What range of facility with computer systems and the Internet is likely to be present among the user community and what is the most likely level of facility?** As connected government brings the application and the end user into more direct contact without the brokered participation of a trained agency representative, the expected behavior of users grows in importance. Nothing is more frustrating to the end-user or difficult for system developers than a user population that fails in its interaction with the software, often creating error conditions not anticipated by the developers. Like playing chess with a rank beginner, the application planner and developer must be even more circumspect and thorough in laying out the application paths and transactions because users are likely to “break” them with maddening regularity. Understanding who each actor is and what their script should look like must be understood during design and this can't be done successfully without the direct involvement of the end user during a planning phase that previously didn't include this level of “team” member.

- **What user behavior does the system require for successful operation?** This variable is the other side of the user-familiarity component. Knowing what defines success in a system-user interaction is an important factor in deciding what level of hardware, software and application development complexity will be required to make the effort successful. This situation may be likened to sending an untrained repairman into the field with only the repair manuals to aid his work. With no ability to shape his behavior ahead of time through training and practice, the planner must depend on the manuals to provide answers to every question lest he break the items he has been sent to repair. This dramatically raises the level of planning and cost that must be plowed into the documentation and risk prevention plan, especially in IT systems intended for direct use by consumers.

- **What is the impact on the process life cycle of invalid or incomplete user behavior?** Beyond user frustration, every connected government application carries with it a cost of failure. Failure to negotiate time critical transactions may cause users to miss deadlines for response, renewal or payment, triggering enforcement, penalties and discontinuance of services. The resulting serious consequences for constituents, and for agencies fielding complaints from constituents about computer systems that they can't use or that are unavailable when needed must be considered in the planning process. The 2000 voting brouhaha in Florida is an extreme but hardly isolated example of the result of citizens' belief

that they cannot successfully use even rudimentary technology to complete important transactions. The subsequent challenges in successfully implementing the resulting Help America Vote Act (HAVA) bear testimony as well to the complexity of the underlying challenge – perhaps disconnect – of what IT planners think will be successful as a result of described application functionality and what voters will accept in their instinctual responses as a credible IT-supported voter-system interaction.

- **What is the impact on the involved governance objectives of user failure to engage the system?** Assuming that connected government computer systems must be backed up by telephone or in-person assistance from agency personnel, the cost, in funding and time, for applications not fully planned or carefully deployed can be massive as users overwhelm the planned call centers or local offices. Moreover, citizen frustration with computer applications is often accompanied by complaints to agency management and legislative representatives, both with potential negative consequences for continued IT funding and staffing. Without appropriate user defined success metrics this can result in an added cost to doing business and delivering services in both extra service modalities having to be available as well as the cost of cleaning up the mess, if you will.

Developing a New IT Planning Paradigm

The image of IT planning presented in the preceding paragraphs implies a number of changes in the way projects are conceived, selected, and undertaken. Perhaps the most important of these is the widening circle of “business impact” generated by most modern IT-based systems.

Evolution has been seen to shift from efforts largely driven by technological decisions buffered from end users by traditional services such as call centers to automation efforts based on direct interaction with our customers. This widening circle of impact has meant that the investment return considerations of projects has expanded in parallel – every involved group must be considered from the dual perspectives of how the system will affect them and how their behavior will affect the system’s success and value.

In addition to the changing role of the user, technology itself has changed the demands on project planners. As technology has reacted to the growth of communications and content standards, applications have become more dependent on resources outside the direct control of the planners and technical staffs responsible for their architecture and operation. For example, planners using the Internet for data collection and service delivery must be cognizant of the status and evolutionary path of a wide range of Internet-related standards and their industry support in the design of physical and functional architectures. If this wider view of the IT life-cycle is to be

fully incorporated in the investment process, groups representing these portions of the life-cycle must be included in every phase of planning and development activities. In practice, these groups have been involved early on to articulate a general need and then at the end of the project, when the design and investments are largely complete, to review the results. This technology-based model, while still adequate for some projects limited to linear upgrades of computing infrastructure, does not provide for enough participation at the right time of the groups who will be responsible for working with the resulting systems to make them successful.

A new paradigm is needed, and this paradigm should be based on a project organization that provides for full participation by all affected groups. There is no shortage of techniques for the development of these teams – the manufacturing world created concurrent engineering for similar challenges. In order to choose, adopt and employ them, however, IT planners must accept the premise that most IT challenges are as functional as they are technological. This has not been an easy concept for many IT professionals or for the industry itself, but it is crucial and the remainder of this paper offers a series of approaches to aid planners in how to explain, justify and implement its precepts.

In subsequent sections of this paper, the path taken by a major organization in developing its IT strategy and projects is described. While readers may find that their own situation is not completely parallel to the described organization, a careful reading will suggest basic precepts that can be valuable to any organization faced with growing demands, the impacts of the changing IT and fiscal landscape, and the need to plan for long-term success.

Key Considerations in Selecting IT Investments

Section 1 of the document provided an overview of the environment that has driven organizations to change the type and priority of issues they consider when establishing a program to strategically invest in information technology. This included a sample subset of specific questions that chief information officers and other strategic decision makers should ask when identifying their strategic investments and developing the program to protect these investments for the long-term. The authors of this white paper have realized that there are different levels of planning and assessments which are used in making these decisions – ranging from a strategic and high-level view (macro) to a tactical response plan (micro).

First and foremost: The business drives the technology portfolio. In a number of situations, we have come across organizations both in the private and public sector that look at the development of a three to five year information technology portfolio and funding plan. However, in many cases these portfolios haven't been designed with a clear relationship that shows how IT decisions have been driven by the key business needs of the organization.

In these cases, the IT portfolio ends up being a technical portfolio that fails to satisfy overall business objectives and lacks the contribution and ownership of the business sponsors who will have a critical voice in not only allocating funds for future technology and business investments but in seeing them through to deployment. To achieve buy-in and support, IT must focus on working with business owners to identify opportunities to leverage technology to re-engineer existing business functions, automate processes and drive greater efficiencies, and identify new revenue generation and cost savings opportunities. In other words, creating a partnership between information technology and the business owners leads to a more effective use of technology and a greater realization of successful applications.

Ultimately, the organization must develop a business and IT program portfolio and a project lifecycle management program that includes a standardized process for developing and reviewing business cases and managing risks. These tools – strengthened by the partnership between IT and business owners – will assist the organization in identifying the optimal investment strategy and ensuring the realization of investment assumptions.

Business Drives the Enterprise Portfolio

To illustrate the imperative of the business driving the enterprise information technology portfolio, we have included a practical example of business-driven IT program portfolio management.

Recently, the New York City Housing Authority (NYCHA) leveraged its new portfolio management program to develop a five-year Information technology strategic plan. NYCHA leveraged advice from many private and public sector subject matter experts informed by industry best practices to develop its approach. This approach has subsequently been reviewed by independent governance analysts who believe that NYCHA's methodology can also be leveraged by other organizations as they look for an approach to determining where to make their information technology investments and how to protect them for the long-term.

Previously at NYCHA, funding for IT initiatives was allocated on an as-requested basis with no consistent planning or approval criteria. Moving from an ad-hoc process to a more structured portfolio management program was a significant challenge for the NYCHA management team and departments. However, NYCHA needed to position itself to take advantage of industry best practices and advances in technology while ensuring that technology could remain a strategic enabler for business and service improvements during a time of tremendous fiscal challenge. The authority also needed to adapt to meet evolving customer needs and expectations. The lack of a holistic view of program return on investment resulted in an environment that severely limited NYCHA's investment in new IT initiatives or even successful deployment of already funded ones – even though these initiatives were critical to NYCHA's ongoing success. NYCHA needed a radically different approach.

Under the new model, NYCHA's CIO was elevated to a deputy general manager position reporting directly to the general manager (i.e., CEO) and worked closely with the board and executive staff to establish a governance program to guide both the selection and management of IT projects at NYCHA. The CIO appointed a senior-level resource to concentrate on this governance initiative, which included the development of a first-ever project management lifecycle and discipline, and portfolio selection and management methodology, and the new model was used to facilitate the first ever information technology strategic planning initiative at the authority. The result was an IT strategic plan that provides a broad overview of information technology goals over the next five years as well as a two-year roadmap of prioritized initiatives – a number of which were already in progress. This roadmap is used as the basis for enterprise business and information technology initiatives across NYCHA and will be updated annually to reflect NYCHA's evolving enterprise information technology business portfolio of initiatives.

NYCHA's Five Step Methodology

NYCHA developed a five-step process for establishing an application and solution portfolio roadmap. This approach allowed the organization to define business objectives and goals before progressing to selecting portfolio initiatives. The five steps included:

- Establishing a baseline.
- Refining business goals and strategies.
- Finalizing selection criteria.
- Developing the IT strategy and roadmap.
- Approving and executing IT strategy and roadmap.

As indicated in Figure 1, the planning process took approximately ten months and required significant involvement and interaction from executives and managers across the authority.

Application / Solution Portfolio Roadmap: Five Step Methodology

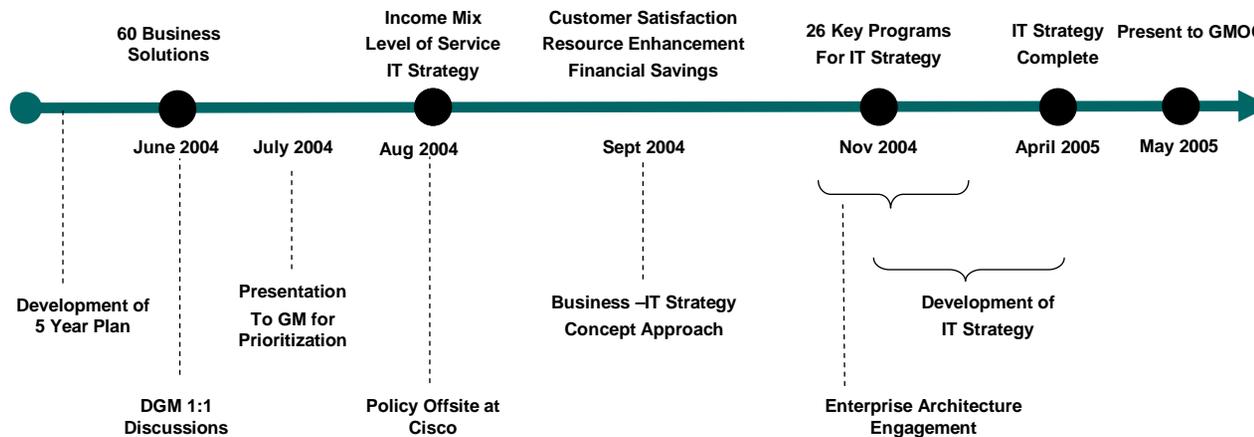


Figure 1 May 26, 2005

Acronym legend for Figure 1: GM=General Manager, DGM=Deputy General Manager, GMOC = General Manager's Operations Committee, which also serves as the Investment Council for the IT portfolio.

Establishing a Baseline

NYCHA did not have an existing business strategy that included specific IT solutions and programs. To establish a baseline IT portfolio, the planning team started by reviewing NYCHA's published "5 Year Plan for Fiscal Years 2005 – 2009 and Annual Plan for Fiscal Year 2005." (NYCHA submits this plan to Housing and Urban Development (HUD) on an annual and five-year basis.) The fiscal plan helped the team identify how the language that HUD provides could be converted into more defined business goals and outcomes and formed a basis for preliminary discussions within NYCHA.

The team developed a baseline portfolio organized by the deputy general manager (DGM) or director responsible for effectuating each identified business goal.

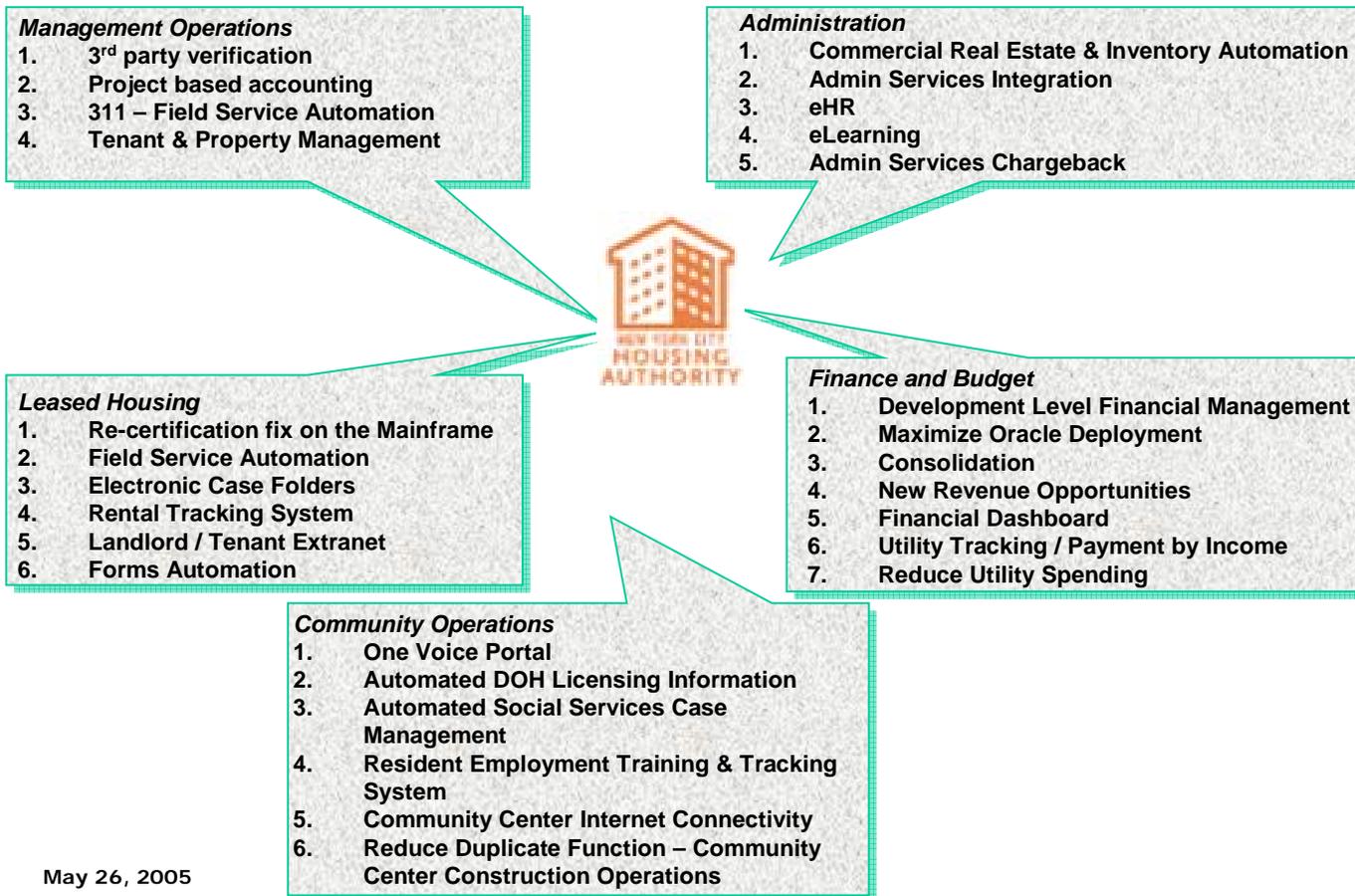
Refining Business Goals and Strategies

The planning team partnered with NYCHA's CFO and Director of Budget and Financial Planning and worked with NYCHA's Deputy General Manager for policy, planning and management to gather more information about the programs in the baseline portfolio. The team conducted facilitated sessions with executive staff to validate business goals, key success metrics and solutions. During this review, the program "owners" removed, added or modified "HUD-related" goals and programs. Once the list of goals was complete, the team gathered additional "what/who" information including:

- What programs and solutions are required to achieve this goal?
- What success metrics will demonstrate that the goal has or has not been met?
- What tools and resources are needed to develop the programs and solutions?
- Who are the stakeholders for this goal?

Figure 2 shows the results of this initial set of one-on-one planning sessions.

Step Two - Aggregated Results



May 26, 2005

Figure 2

Finalizing Selection Criteria

During the refinement stage, NYCHA identified 60 different business goals – an overwhelming number. The team identified similarities between these goals and proposed solutions and sorted them into the following six program areas:

- Compliance.
- Cost takeout/employee productivity.
- New partnerships.
- New revenue.
- NYCHA-wide initiatives.
- Resident care.

The team then analyzed each business goal and reviewed it against the key impact areas of people, process and technology. This analysis highlighted goals and objectives that required a technology investment. The general manager requested a further round of planning and analysis against a defined set of business policy questions.

To do this, the planning team held an offsite facilitated session for NYCHA executives to brainstorm on these policy questions – with an eye towards developing draft decisions to further guide the prioritization of business initiatives. This dialogue resulted in the development of three work groups:

- Appropriate Mix of Resident Services.
- Who We Serve.
- Information Technology Strategy.

The Information Technology Strategy work group decided to develop a version 1.0 strategic plan to provide a prioritized solution and application roadmap to help NYCHA meet its business goals relating to financial stability. Subsequent iterations of strategic planning would focus specifically on business policy issues and result in publication of NYCHA's five-year business strategy – NYCHA 2010. NYCHA business strategies will drive subsequent versions of the information technology strategy.

Constructing the IT Strategic Plan and Roadmap

The Information Technology Strategy work group combined previous analysis with the additional factors gathered at the offsite. Utilizing the same “what/who” methodology shown in figure 3, the work group went back to the deputy general managers and directors to conduct a focused review of the initial strategy sessions in light of the current portfolio of enterprise IT business projects and

outstanding capital funding requests. This effort further refined NYCHA's goals, objectives and priorities, and the remaining solutions were prioritized and combined to fit in the following three categories:

- Customer satisfaction.
- Resource enhancement.
- Financial savings.

As a result, the information technology strategic plan version 1.0 consists of 26 programs or projects that could contribute positively to NYCHA's financial stability. This plan was submitted to the general manager for review and project prioritization.

Priority	Business Goal	Proposed Solution	Key Metrics	Stakeholders
1	Automate information gathering and analysis to determine eligibility for rental and recertification	<u>Automated 3rd Party Verification</u> This project will facilitate the validation of eligibility requirements for applicants and current tenants (Section 8 as well), by automating information gathering and analysis to determine eligibility for rental and recertification.	<ul style="list-style-type: none"> • Not lose subsidy as a result of inability to verify income and other eligibility • Waiting list reduction • Housing Application Process reduction • Time to Respond to a Status Inquiry • Size of Housing Applications Department • Reduction of paper folder shipment to a housing development while awaiting development interview 	<p>Owner: Arlene Campana and Eli Methal</p> <p>Budget Analyst: TBD</p> <p>Policy Issues with HUD: How many original signatures what do we need to keep on file</p>
2	Cost Allocation at a development level	<u>Project Based Accounting</u> This project shall provide the ability for budgets and costs to be allocated and tracked at departmental levels and then rolled up to boroughs and then to NYCHA.	<ul style="list-style-type: none"> • Ability to develop an appropriate proportion charge, of central services provided • Not lose our subsidy as a result of inability to cost allocate - <i>Validate HUD requirement in order to define metrics</i>) 	<p>Owner: TBD</p> <p>Budget Analyst: Jose Mercado to select</p>

3	Provide scheduling and maintenance staff field automation	<p><u>311 Work Tickets – Field Service Automation</u></p> <p>This project will provide scheduling and maintenance staff field automation by adding a scheduling component to the existing work ticket system and provide access to maintenance workers to handheld devices.</p>	<ul style="list-style-type: none"> • Customer satisfaction improvements • Decrease in tenant-not-at-homes • Increase in worker productivity 	<p>Owner: Victor Edwards</p> <p>Budget Analyst: Hector Ramos</p>
4	Automate a continuum of tenant and real property management from application through end of relationship	<p><u>Tenant and Property Management Lifecycle CRM ERP</u></p> <p>This is a project to automate the continuum of tenant and real property management from application through the end of a tenant relationship. This will happen via business process reengineering, and the implementation of a customer relationship management solution.</p>	<ul style="list-style-type: none"> • Reduction of multiple sources to search for • Not lose our subsidy as a result of inability to cost allocate 	<p>Owner: Bobby TBD</p> <p>Budget Analyst: Hector Ramos</p>

Figure 3

Approving and Executing the IT Strategy and Roadmap

The General Manager reviewed the IT strategy and roadmap and developed a tiered approach to facilitate funding and scheduling decisions. This approach balanced resource impacts, risk to the organization of pursuing or not pursuing specific initiatives, ability to execute, departmental involvement, financial benefit, and impact on NYCHA’s customers. The GM identified four tiers of initiatives:

- Tier 1 – Top priority business initiatives
- Tier 2 – Emerging business initiatives to be supported by a business case over the next year
- Tier 3 – Managed by IT with limited or no departmental involvement
- Tier 4 – Future year initiatives

These program priorities, themes and initiatives served as the foundation of a discussion draft presented to the General Manager's Operations Committee (GMOC) – which serves as NYCHA's IT governance body – for review, feedback and approval by NYCHA's executive sponsors. The approved information technology strategic plan focused the IT organization, allowing it to focus on initiatives that directly impact overall business performance and customer satisfaction. The plan provides all staff with priorities for managing workload, staffing, training, and purchasing. This plan also delivers a directive and process for future IT financial planning and funding.

Portfolio Management

Every organization has a number of projects running concurrently, all of which consume resources: staff, funding, or equipment and material. This set of projects constitutes a portfolio and managing that portfolio is one of the critical aspects of maximizing an organization's information technology investments.

There are four major activities to managing a portfolio of projects.

1. Ensuring that the portfolio consists of projects that support the organization's strategic direction.
2. Ensuring that all new projects, before they are accepted into the portfolio, have an appropriate business case.
3. Establishing priorities among the projects in the portfolio and deploying resources to the projects according to the priorities.
4. Ongoing measurement of the results of the projects, as part of an enterprise-wide benchmarking program, to ensure that the portfolio is returning the maximum value to the organization.

History has shown that in many organizations, projects arise because someone, usually a senior manager, has a bright idea. Lower level managers and technical staff respond and a new project emerges with little consideration of whether it belongs in the portfolio strategically or will provide a positive business benefit to the organization.

The problem with such a project is not that it is inappropriate. Indeed, the manager who requested it probably has a solid grasp of what would benefit the organization. The issue is that the project has not been evaluated to determine if it supports a prioritized strategic goal or has a business case to justify it against the organization's established return on investment criteria. Applying this framework and consistently following the agreed process and desired results is a key aspect of portfolio management. The point needs to be emphasized that portfolio

management **enforces the entry and continued inclusion of projects into the enterprise portfolio**. That is, it has the authority to reject a request for a project that does not qualify. Without this rigorous discipline applied, there is no method of excluding capricious projects from the portfolio, and no way to manage expectations.

Projects That Support the Strategic Direction

Making the assumption that the organization has a clear strategic direction, goals, and objectives, all projects in the portfolio need to support that strategy. For example, a state government agency may have as a strategic goal that its services will be made equally available to all residents of the state regardless of where they live. A project to provide those services over the Internet would satisfy that goal, while a project to centralize delivery of those services into a single office in the capital city would violate it.

Supporting the organization's strategic direction requires the project requester to identify the specific strategic goal (or goals) of the organization to which the project contributes. This implies that the organization has a set of such goals that are sufficiently well articulated against which this test can be applied. For example, a goal to "enhance the residents' experience in dealing with the agency" is one that would be difficult to evaluate, whereas a goal to "provide services to all state residents using the Internet" would be easier.

A problem arises, however, when the organization does not have strategic goals, or has too many without a clear prioritization scheme, or the goals are too vague to be applied and measured. While the organization or individual responsible for the management of the portfolio may be able to establish a *de facto* strategy based on the understanding of the organization and executives, it will be more difficult to reject an ad-hoc project that originates from senior management since the playing field is not understood by all of those who could request a project. In such organizations, there needs to be a small group of subject matter experts (SMEs) or one individual who should be the "keeper of the mandate," otherwise projects and programs cannot be evaluated against strategic goals.

Business Case Development

A business case is simply a document that advocates conducting a project. It has four components:

- It describes the problem or opportunity that the project will address.
- It describes the project itself, its work plan and deliverables.

- It presents an approximate cost for the project.
- It lists the benefits that the project will provide to the organization.

Problem or Opportunity

The business case should state the problem or opportunity that the project will address.

Examples of problems in the public sector might include:

- There is a gap between the services that the organization is charged with providing and the services that it actually delivers. For example, a legislature mandates that an agency make information about its services equally available to all residents of the state, but the current information services do not reach smaller communities. The agency could define a strategy and a program or set of projects to close this gap.
- The process to deliver a service is complex, time-consuming, or error-prone. For example, applying for a permit is unduly difficult. The agency could define a strategy and a program or set of projects to re-engineer, automate and simplify the process for access by citizens.
- There is a gap between your organization's strategic plan and its current practice. For example, you may have as part of your strategy the goal of making documentation simple and easy to understand, but if your current documentation is contorted and steeped in legal terminology, you could define a project to clean up the documentation and align this aspect of your practices to your strategic direction.

An organization might also identify an opportunity. For example:

- There is a potential to modify your processes to reduce your costs. Cost reduction can come about by:
 - Reducing the number of staff required to execute a process.
 - Reducing the number of handoffs of documents.
 - Simplifying a process to reduce the amount of re-work or error recovery, including the risks and costs of litigation or financial sanctions caused by errors.
 - Reducing the time that each step in a process takes.
- Your organization could define a project to revise your processes either by simply modifying them or by developing technology to support them or both.
- You have the ability to offer a service for a fee that would enable some level of cost recovery. For example, your organization could offer by-products of its operations for sale, such as sign making. You would define a project to develop the processes needed to support external sales.

Definition of the Project. In the early stages of a project, it can be difficult to specify the details of the project's work plan. However, the business case should have enough information about the project for those reviewing it to understand the project's overall direction and approach. Preparing the business case may require that you recruit the assistance of someone familiar with what the specific technology can provide, such as a business analyst, a systems analyst, or a project manager. The definition of the project should include, at a minimum:

- A high-level statement of what the project will deliver. This might include a new application, refined business processes or new partnerships.
- A high-level work plan showing the major phases and activities of the project. This is best expressed as a Gantt chart, in which the major activities are represented by horizontal bars, showing the schedule of each.

Project Uncertainty. In many cases, you will know that you have a problem or an opportunity, but you may not be able to articulate the solution, perhaps because you have a limited understanding of the capabilities of the technology or there are numerous options that you need help in clarifying. In such a case, there should be tight collaboration with information technology partners to consider the execution of a proof of concept initiative to identify the following:

- The boundaries and nature of the problem or opportunity.
- The applicability of technology to the situation.
- A high-level work plan and scope statement for the project.
- A high-level cost estimate and resource sourcing plan.

The outputs from this proof of concept will provide much of the information needed to return to the business case and complete it.

Cost Estimates

Business cases which will be used for evaluation in a portfolio should include an estimate of approximate cost and payback. Early in the definition of a project, it is difficult to specify the costs with precision, because there has been no detailed planning, so it should be understood that the cost benefit analysis is for purposes of establishing the magnitude of the effort and return and is only preliminary. One method which has been effective in expressing this data is to present the costs with an accompanying range or a rough order of magnitude (ROM), which at this stage in a project is typically -20 percent to +100 percent. Therefore, if the preliminary estimate is \$200,000, the cost estimate would be presented as a range from \$160,000 to \$400,000.

Another way to define the costs is to identify some funds that can be made available for the problem or opportunity and to state this as the estimate. This sounds like cheating, but if you have the estimates prepared by technical experts, they will tell you, in effect, “Given that this is how much you can spend, this is approximately what we can provide.” This is in contrast to the first approach above, in which you are told, “Given that this is what you want, this is approximately what it will cost.” In both cases, you will have a project definition and an initial cost estimate as well as an understanding of which sourcing method and contract type you may need to apply. For example, the more specific the requirements the easier it will be to engage in a fixed-price deliverable based contract.

Project Justification

Project justification answers the question, “Why should we do this project?” It provides a rationale, usually financial or a considerable need to improve customer satisfaction, for committing the resources that are required to execute the project.

Project justification falls into three categories: mandated, financial, and organizational goals. A mandated justification means that the project’s purpose is to fulfill a mandate, usually legislative. A financial justification indicates that the project’s product will provide a financial benefit to the organization, typically through cost savings, increased productivity or new revenues. Organizational goals justification typically implies that the project is being executed to meet a business goal of the organization – for example, an initiative to improve citizen satisfaction.

Before we consider what constitutes justification, two principles are dominant:

1. **Every project must include a justification.** It is the justification that is used to establish priorities among projects: those with the greatest benefits should be given the highest priorities.
2. **A justification should be planned for.** If it is stated that a project will save costs by reducing a hiring need by 50 people, thereby lowering payroll and benefit costs, those savings become a financial target. But this cannot be left to chance. How will this target be met? Will staff be realigned to other departments? How will they be trained? If a benefit is left to be an effect that will somehow happen, it is unlikely that it will be realized. Conversely, when a benefit is planned for, there is a good chance of achieving it.

In the following discussion, we look at these three justification factors including intangible benefits.

Financial Justification. Financial justification means that the project will make a net contribution to the organization's fiscal status, either by increasing its revenues or reducing its costs. An organization could define a project to revise key business processes either by simply modifying them or by using technology to support them.

Simply improving a process will not reduce costs unless staff required to execute the process are also reduced. Staff reductions do not necessarily require layoffs; they can often be achieved by attrition and by the re-assignment of staff to other areas with headcount, avoiding the need to hire new staff.

One key principle of financial justification is the **payback period**. This is the length of time it takes for the benefits of a project to recover its costs. For example, if a project will reduce costs by \$100,000 per month, and costs one million dollars (including the operating costs of whatever the project produces), costs will be recovered in just ten months. On the other hand, if the project costs ten million dollars, it will take nearly seven years to recover the costs. As a rule of thumb, if the benefits of the project recover its costs in under two years, the project should be considered to be justified. The payback period is just one of the measures used to set project priorities.

Mandated Benefits. A mandated justification means that the benefit of the project will satisfy a requirement that is not currently being satisfied. The last condition is critical: a project to deliver a mandated service is a mandated project only if that service is not already being delivered. If the service is being delivered, any project would be to improve delivery and must therefore be justified financially.

A mandated project is not subject to the test of justification: If a service is mandated, it must be delivered. However, there is usually a wide range of alternative means to deliver the service. Because one purpose of portfolio management is to ensure that an organization's limited resources are used most effectively, the following process could be considered:

1. Identify the alternatives to deliver the service and prepare cost and resource estimates for each one. Costs should be considered in terms of the total lifecycle. Often the costs of training, overhead and production maintenance and upgrade are overlooked. In many cases, especially with a proprietary solution, the cost of execution is small and soon dwarfed by the costs of maintenance.
2. Define the lowest-cost alternative as the baseline.

3. Review the other alternatives to determine if they would result in operational cost savings over the baseline alternative.
4. Define any alternative in which the operational cost savings exceed the difference in the cost estimates between it and the baseline. Make this the new baseline.
5. Repeat steps 3 and 4 until one final alternative remains—the one for which the benefit to cost ratio is highest.

This process, in effect, assumes that the initial baseline method of service delivery already exists and financial justification for the more costly alternatives is being considered. This approach ensures that whichever alternative for the mandated service adopted will be the one that maximizes the use of the organization's resources.

Intangible Benefits. Justifications for projects usually include a long, predictable list of “intangible benefits.” The problem is that there is no such thing; all benefits are realized in terms of costs, revenue, or significant political gain. To call a benefit “intangible” simply means that nobody has been able – or has done enough analysis – to develop a quantifiable measure.

For example, consider user-friendliness. (This word, like most words used to label intangible benefits, is vague, but a good working definition is that a user-friendly system is one in which an untrained user's response to any given screen state is more likely to be correct than not.) With a user-friendly system, training costs will be lower, productivity will be higher because of a reduced need to consult manuals, and the error rate will be lower, resulting in reduced re-work costs. There will need to be some work to quantify the cost savings in each of these areas, but user-friendliness is a benefit because it leads to real results.

Some argue that even though certain benefits cannot be quantified, they should still be identified. Indeed they should, but only if they are used to set targets. For example:

- **The system will be flexible.** Maintenance costs will be reduced by 15 percent which will save the organization \$24,000 per year.
- **The system will be developed with state-of-the-art tools.** Development productivity will be increased by 10 percent which will save \$100,000 per year in development costs.
- **The system will be integrated.** The improved access to client information will result in a 25 percent decrease in errors which will reduce our re-work costs by \$50,000 per year.
- **Customer satisfaction will significantly increase.** Services will be so improved that customer complaints to external advocates will be reduced therefore saving internal resources considerable time in avoiding responses to queries by elected officials, for example, on behalf of their constituents, or reduction in duplicate responses by different

internal staff to a myriad of external complaints on the same customer's issue. Ultimately there is a cost savings even in this example.

The point of setting targets is to ensure that a real – that is, measurable – benefit emerges from the resulting product.

Establishing Priorities Among Projects. The sole reason for establishing priorities among projects is to determine which should receive the organization's scarce resources. Establishing priorities is a resource management tool. The highest-value projects have the highest priorities. But how should projects be valued? The following is one suggested method:

- Mandated projects have the highest priority. If there is more than one mandated project, establishing their priority depends on at least two factors:
 - Which project carries the greatest consequences of failure? The consequences could affect the organization, such as withholding of funding or disciplinary action, or they could affect the public, such as the lack of availability of a critical service. In either case, the organization must decide which of its projects has the most impact if it fails.
 - Which project has the best chance of being realized or can be completed fastest? The rationale for this measure is that faster projects show results sooner and free up resources for the longer-term projects.
- Justified projects are given priorities based on a combination of the highest financial returns and the shortest payback periods. A project that will return \$100,000 a month with a payback period of three months is of greater value than one that will return the same \$100,000 a month with a payback period of a year. But what happens if the second project will return \$200,000 a month?

One way to approach this is to develop a spreadsheet with a rolling 24-month span across the top and the projects listed vertically with their financial contributions entered under the appropriate month. So the first project in our example would start showing a return of \$100,000 a month four months from now, while the second would not start showing returns, of \$200,000 a month, until the thirteenth month. A total contribution by project across the 24-month span will illustrate the highest-value projects in the portfolio. In our example, the first project will return \$2.1M over the two years (21 months times \$100,000 a month), while the second will return \$2.4M (12 months times \$200,000 a month), and is marginally the higher-value project. However, you also need to factor in how long you can wait to pay back the initial investment.

This process provides the ability to list all projects in the portfolio by priority and ensure that resources are assigned to the projects at the top of the list. It will also allow the organization to keep current. Over the life of a project, costs increase and benefits may decline. By adjusting the spreadsheet, the priorities may shift so that the list reflects the current reality.

Portfolio Risk Management

“Risk management” is the set of processes to identify risks, classify them according to their degree of risk – based on probability and impact, mitigate them or reduce their levels of risk, and prepare contingency plans to deal with the risk should it materialize. Every project should have its own risk management plan, but the concept of risk applies to a portfolio of projects as well. Here, we will consider how to apply risk management to your portfolio.

Basics of Project Risk Management

A risk is not a problem to be solved, it is a potential problem to be avoided or mitigated.

Formal risk management, as practiced in industries such as insurance, is a statistical application involving numerical assessments of risk and their analysis using the tools of inferential statistics. However, project risk management is less quantitative and, as we will see, simpler to apply.

Every risk is always resolved. Some never materialize, some become problems to be solved, and some become crises that destroy projects, organizations, and careers. The purpose of risk management is to avoid the third outcome.

As defined above, risk management involves four steps:

1. Identify the risks that could affect the project. This consists of little more than listing project risks; in mature project management organizations, this list is normally prepared using a checklist.
2. Classify each risk according to its degree of risk. Risk is a function of two characteristics: the probability that the risk will materialize and the impact if it does. Probability and impact are two dimensions of a grid that give a category of risk as shown in the following chart.

		Probability		
		High	Medium	Low
Impact	High	Extreme	High	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Minimal

3. For the highest risks, those that are classified as extreme or high, mitigate them. Mitigation is the process of reducing a risk's degree of risk, which is done by reducing the probability that a risk will occur, the impact if it does, or both.
4. For the highest risks, prepare contingency plans to put into action if the risk materializes.

A Risk Management Example. Let's follow a risk through these four steps.

1. In listing the project risks, we have identified a risk that a key employee will leave a project before it is complete.
2. To classify the risk, if the project is lengthy and the organization's staffing is volatile, the probability of this risk occurring is high. Given that this employee is key to the project, the impact on the project of his or her departure is also high. On the chart above, a high probability and a high impact combine to produce a risk that is extreme.
3. To mitigate this risk, we could assign an "understudy" to learn the key employee's skills. We could do this by a combination of training courses, on-the-job mentoring, and assigning basic activities to the understudy. These activities would reduce the impact if the risk materializes. We could also offer project completion bonuses, or, to avoid the employee being pulled off to work on another project, we could ensure that resource managers know the project's critical requirements. These activities reduce the probability that the risk will materialize. If we can reduce both the probability and the impact to medium, we have reduced the risk from extreme to medium. A critical point to note is that mitigation requires activities. If we don't actually send the understudy to courses, provide for mentoring, or notify a resource manager, we may have wonderful plans, but the risk remains extreme. This means that a project plan must include additional activities, the sole purpose of which is to reduce the riskiness of the project's risks.
4. Finally, our contingency plan would include steps to assign the understudy to the key employee's activities, recruit a new team member to take over the understudy's activities, and re-draw the plan reflecting the lower level of expertise that the understudy brings to the project. This last action prepares you for what could end up as secondary risks that pop-up when the risk materializes. These can be both knowns or unknowns. This is one of the main

reasons why risk management must be a regular and prioritized activity throughout the lifecycle of your project.

Portfolio Risk Management. The crucial difference between project risk management and portfolio risk management is that the former is concerned solely with the interests of the project, while the latter is concerned with the interests of the organization and the balancing of all projects. A risk that is extreme for a project might be only medium for the organization if the project itself is not critical.

It is tempting to conclude that portfolio risk management is applied at the portfolio level. This is incorrect. Both project risk management and portfolio risk management assess the risks to individual projects, but while project risk management seeks to protect the project, portfolio risk management seeks to protect the organization. Portfolio risk management follows the same process as project risk management, with these exceptions:

1. In classifying a risk, a project manager will consider the impact on the project, but a portfolio manager considers the impact on the organization, and these ratings of impact for the same risk could be different. For example, consider a project that provides an e-commerce application that is currently handled manually and that has a risk that would imperil it. The project manager would rate the impact of the risk as high, but the portfolio manager may have a different view. If the loss of the project would be annoying rather than devastating—because the application is still available—the impact of the risk to the organization might be medium or even low.
2. Similarly, a portfolio manager may classify the probability of a risk differently than a project manager would. For example, a project manager might rate as a high probability the risk that a vendor will not deliver a product on time. But the portfolio manager, aware that the same vendor is supplying a number of different projects and that its failure to deliver would imperil its relationships with all the other projects may consider the probability of a default to be extreme.
3. Mitigation measures are less specific. For example, a project manager might mitigate the loss of a team member through the kinds of actions described above. For a portfolio, the actions to mitigate the risk will be aimed toward the more general issues of staff retention and balancing resources and demands. Furthermore, while project risk mitigation results in additional project activities, portfolio risk mitigation may result in additional projects. For example, if a risk in an application development project is that the technology infrastructure may be inadequate to handle the new application, the portfolio manager may mitigate this risk by initiating a technology upgrade project.

4. In portfolio risk management, contingency plans are at a higher level within the organization. For example, there may be a risk that vendors will not deliver on time. Within a project, the project manager's contingency plans are limited to finding alternatives to the vendor's product or service or in defining workarounds. For the portfolio, contingency plans can involve a higher level of vendor management including the threat of legal action, or a change of vendor.

Portfolio Risks

Funding

This risk is that funding for a project will be withheld, withdrawn, or not renewed.

Mitigating this risk at the portfolio level consists of activities that deal with funding sources and with demonstrating to those sources and to the executive of the organization the value that the projects deliver. It also consists of ensuring that the value and benefits of all projects have been identified and documented.

Resource Availability

This type of risk is that specific resources are unavailable for a project either because they are not available to be assigned, or because they leave the project, which may be because they leave the organization or because they are transferred to another area within it. In most organizations, inadequate staffing levels is not a risk – it is a chronic enterprise problem. Mitigating this set of risks at the portfolio level consists of actions to retain employees and to deploy them where they are most valuable. This latter step is one of the goals of portfolio management. This will frequently mean that some projects lose key staff to others that are of higher priority. To the project managers on these projects, this is a serious problem, but to the portfolio manager, it is the most effective allocation of staff. In order to effectively manage this some organizations take advantage of enterprise software that stores not only skill set profiles but takes the input of project managers of all time sheets to reflect availability of resources. It is also important to hold regular portfolio review meetings so that resource reallocation issues can be determined by the executives who set the project priorities.

Vendor Performance

This risk is that a vendor will deliver late or will provide a product or service that does not meet requirements.

Mitigating this type of risk at the portfolio level consists of actions to make vendor contracts more specific and to include bonus and penalty provisions. It also includes actions to keep current with the marketplace and develop relationships with other vendors so that, in an emergency, there are alternatives.

Technology

This set of risks is that the available technology does not have the capacity required for the project, or that the technology architecture is inappropriate. For example, it does not provide the security that the new application will provide.

Mitigating this set of risks at the portfolio level consists of reviewing the technology as it applies to all existing and planned applications and ensuring that the overall technology supports the entire portfolio and not just a single project. Implementing an enterprise architecture program to translate business strategies into specific technology acquisition and maintenance plans which can be successfully implemented is a primary mechanism to ensure effective portfolio management of the technology risk.

The Public Sector Challenge

Public sector organizations may face some unique challenges in trying to utilize the recommendations presented in this paper. In many jurisdictions, the processes of planning, approving and funding IT projects are mandated in statute or policy. Additionally, final approval and funding of projects may well rest with individuals (state or local CIO) or institutions outside the organization (governors and their budget staffs, legislatures or technology councils). Within the organization, there is also very often a long gap, sometimes a year or more, between initial project concept and justification development and receipt of final approval and funding. Finally, those government organizations that are totally dependent on a yearly budget cycle and appropriation by a governing body to fund projects, know all too well the uncertainty of receiving the requested funds, regardless of how important or well justified the project is within the organization.

This is not to suggest, however, that public sector organizations cannot benefit from the principles and recommendations presented here. Three key principles emerge:

- The need for a clear governance structure within the organization that ensures projects are evaluated, prioritized and approved based on business goals and objectives.
- A project planning, development and management approach that involves all key stakeholders early on, and to the greatest extent possible.
- Management of the IT projects in the organization as a portfolio so that scarce resources can be directed toward those projects that deliver the most value and flexibility can be assured when priorities may shift during the course of any project.

Some or all of the specific recommendations made in this paper can be applied in many organizations, either to improve existing governance and project management processes, or to build solid processes where none exist today. As pointed out earlier, the technology itself is seldom the problem. More often projects don't deliver the desired result, or fail altogether because of inadequate governance structures, poor project management or failure to direct scarce resources in the most productive way. Organizations that develop and deploy clear governance, project management and resource management processes, and effective portfolio management, will realize much greater value for their IT investments.

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Case Studies

New York City Housing Authority Virtual IT PMO Discipline

Case study developed from materials sent with permission by Helene Heller, Senior Director, Office of the Chief Financial Officer, New York City Housing Authority, City of New York, and Faisal Hanafi, Cisco Systems, Inc. Reproduction is strictly prohibited

Borough of Hillingdon, UK Business Case for Modernization

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UK Criminal Justice Information Technology

Case study developed from materials sent with permission by Stephen Jenner MBA, FCMA, MSt, Portfolio Director, Criminal Justice Information Technology (CJIT is part of the Office for Criminal Justice Reform, which is a cross-departmental team that supports all criminal justice agencies in working together to provide an improved service to the public)

PeopleSoft

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NYCHA Information Technology Governance Model

The New York City Housing Authority developed an enterprise-wide IT governance model that aligns its business and IT strategy, which when factored into driving the authority's financial planning process will drive millions of dollars in cost savings, improve employee productivity, increase resident satisfaction, and deliver strategic IT projects on time and on budget. NYCHA's Virtual IT Project Management Office discipline integrates comprehensive process flows, templates, online tools, and collaborative techniques to standardize IT project selection and management throughout the organization, driving innovation through governance and high performance.

Launched in June 2004, the IT governance model (which includes all of the above) has already led to increased productivity, reduced costs, improved resident satisfaction, and has enhanced NYCHA's ability to make informed decisions about strategic-business-aligned IT programs.

Challenge

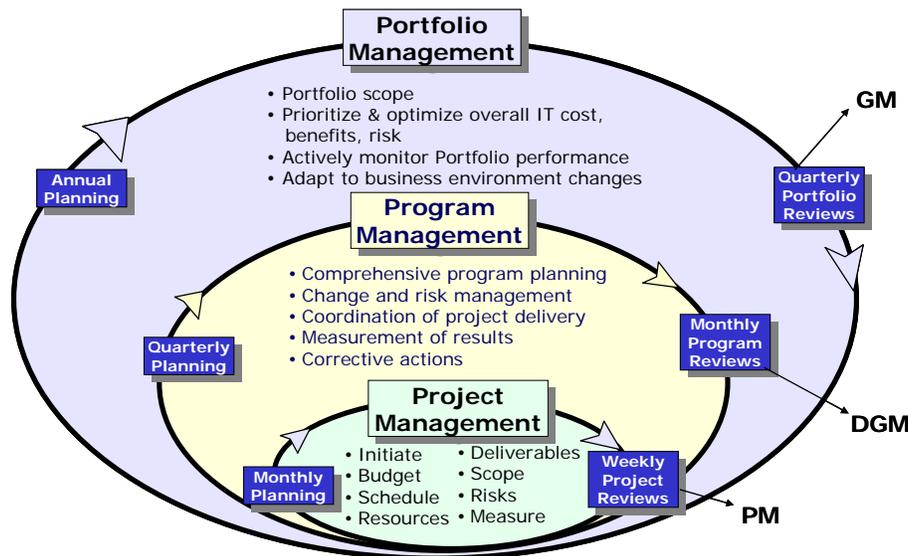
NYCHA is the largest low-income public housing authority in the United States, with 14,000 employees overseeing nearly 2,700 buildings and 181,000 apartments. NYCHA's mission is to preserve its aging housing stock located throughout Queens, Manhattan, the Bronx, Brooklyn, and Staten Island through timely maintenance and modernization of developments. However, like many in the public sector, NYCHA – whose operating budget is comprised of rent collection and federal funding programs – must meet constituent demands with shrinking resources.

NYCHA's lack of an enterprise-wide IT governance process prevented strategic alignment of its business and technology investments and strategies. Compounding that problem, a lack of standardized business processes and limited enterprise analysis and review of IT funding and program requests made it difficult to identify, initiate, and execute strategic, multi-million dollar IT programs.

In addition, NYCHA's lack of technology and data standardization had led to multiple technology platforms and solutions that supported similar business functions in different departments – an expensive and inefficient environment to support.

Solution

NYCHA developed an enhanced Virtual IT Program Management Office (PMO) governance structure based on industry best practices, but customized to address issues specific to the organization. The Virtual IT PMO manages IT portfolio selection, program management methodology, project lifecycle approach, and project management discipline through an IT governance model. It includes comprehensive process flows and templates that standardize IT project selection and management throughout the organization. Figure 4 provides a snapshot of NYCHA's approach to portfolio management.



NYCHA Portfolio Management Approach – Ongoing Process

Figure 4

As stated by Gartner at its June 2005 GCON, “NYCHA represents a comprehensive process where roles, responsibility and process are clearly articulated – who is involved in the selection, control and evaluation of projects from the program and strategic level. This is an excellent example of a cyclical and dynamic cost benefit, risk and outcome approach throughout the lifecycle where the organization is regularly visiting the portfolio to reevaluate and catch problems as fast as you can and for best realignment flexibility. Further, the transparency of the process is possible. Executives can see real results in front of them and can ask real questions as to where their investment is going.” NYCHA was referred to as having a “program management office” and a true “Investment Council,” where program executives who own lines of business within the organization are responsible for the IT investment.”

An enterprise-wide governance portal leverages a shared server environment to create an online repository of tools and materials to support project managers. The next evolution of this portal will leverage the Microsoft Enterprise Project Management (EPM) suite and other products to provide a Web-based project management application, including collaborative tools and techniques such as a project dashboard, repository, planning and tracking, risk management, and reporting/issue management.

With a support structure that monitors and facilitates best practice transfers, IT issues such as reuse, methodology, and business performance measurements are addressed. The governance model will help NYCHA select the right technology projects dictated by the business and integrate technology with business priorities and improvement opportunities set by the program rather than by the CIO.

Not only has the governance model allowed NYCHA to analyze, track, and measure IT projects, it has provided a method of evaluating opportunities to establish partnership ecosystems—a key strategy for NYCHA's IT Department. Out-tasking functions to other organizations will help to streamline operations and reduce cost.

Results

Although governance is often associated with bureaucracy, NYCHA has established the model as a *virtual* process with very clear rules and a high level of automation and collaboration. This has strengthened the business-to-IT relationship within NYCHA. It is now clear within the authority the impact that information technology will make to NYCHA's long term success.

Among other benefits, NYCHA has seen the following results:

- Generated \$1.2M in cost reductions through staff avoidance via the Virtual IT PMO.
- Increased business unit satisfaction and collaboration with IT.
- Streamlined NYCHA business and IT five-year strategic planning process.
- Improved level, quality, timeliness, and cost effectiveness of strategic IT programs.
- Significantly increased the amount of capital spending allocated to IT projects.

Hillingdon Business Case for Modernization

Hillingdon is London's second largest unitary borough. Located 14 miles from central London, Hillingdon shares its boundaries with neighboring west London boroughs and the counties of Hertfordshire, Buckinghamshire and Surrey. The borough is home to 250,000 people from diverse backgrounds and includes the world's busiest international airport at Heathrow and the main campus for Brunel University.

Executive Summary

Hillingdon has successfully implemented a strong business case justification model to drive the expansion of its e-government modernization efforts. This model is flexible enough to allow for customization at the agency or local authority level, but robust enough to ensure that initiatives result in sustainable positive benefits and meet Hillingdon's strategic modernization objectives. Even in a tough investment environment, this process allows Hillingdon to identify and make changes that will not only pay back and allow it to expand ambitions, but will change the way that people work.

For example, the development of a business case to support the modernization of Hillingdon council's housing service has a tangible outcome. Although not completely unexpected, the scale of the potential for deploying new working methods – affecting nearly 70 percent of the workforce – and the consequential impact on office accommodation – almost a 50 percent reduction – was more significant than anticipated. The relevance and impact of these initial findings were enhanced by the subsequent quantitative ROI analysis. This work identified savings in allowing people to work from their homes. This stripped out 35 percent of office costs on a recurring basis after four years leading to local councilors having choices available regarding the reallocation of resources that were previously locked up in relatively fixed assets.

The Hillingdon business case model promotes the idea that the modernization business case is not “about” putting forms on the Web, implementing CRM or having colleagues work from home. What the modernization business case is “about” is achieving profound business transformation through carefully managed organizational change.

Building the Business Case

Hillingdon's borough-wide “Business Case for Modernization” framework does not try to establish a definitive set of e-government modernization drivers applicable to all local authorities. Each local authority must determine drivers and desired outcomes based on its own circumstances.

Early identification of these objectives focuses the local authority's attention on the benefits that must be delivered by modernization.

Hillingdon also developed a robust business case methodology that couples the modernization drivers defined by the local authorities with a standard five step evaluation process.

- **Step 1. Benefit Identification** – Identify the benefits the modernization initiative needs to deliver to the organization.
- **Step 2. The Modernization Diagnostic** – Identify the opportunities and risks of modernizing working practices, e-delivery and citizen contact.
- **Step 3. Reality Check** – Review the diagnostic outcome against the benefits required.
- **Step 4. Completing the Business Case** – Develop a costed ROI on all or selected priority elements of the diagnostic.
- **Step 5. Prioritizing the Business Case** – Evaluate the business case using established prioritization criteria to assist resource allocation decision-making.

Benefit Identification

Each local authority's strategic and operational context will create the framework in which the modernization business case is built. In building any business case the importance of establishing the anticipated benefits of a particular initiative at the outset is self-evident. In the case of e-government modernization the anticipated benefits will be relevant to each council's circumstances.

Hillingdon has identified broad target groups as potential beneficiaries of modernization, including:

- Citizens and community.
- Employees.
- Service providers.
- External stakeholders.

Hillingdon also developed a "long list" of benefits for each target group. These benefits were then categorized based on the form and context of the anticipated outcomes. Under this model, benefits are categorized as "red," "green" or "orange," which is explained as follows.

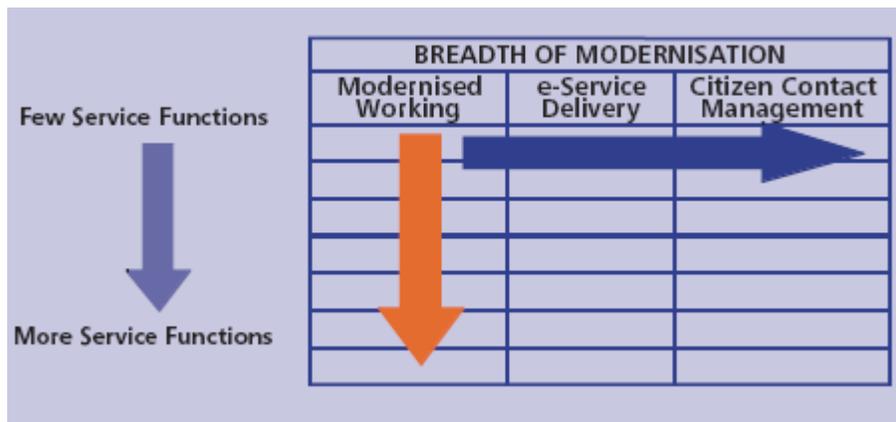
TARGET GROUPS	BENEFIT CATEGORIES		
	RED	ORANGE	GREEN
Citizen and community		Disintermediation	Socially inclusive
Employees		Reduce commute time & turnover	Staff motivation
Service providers	Reduce premises & recruitment costs	Greater productivity	Service accessibility, staff motivation and meeting citizen e-expectations
External stakeholders		Sub-regional economies of scale	Meeting citizen e-expectations

- **Red benefits** produce hard tangible cost savings, examples include:
 - Reduced premises costs.
 - Reduced information and communication technology costs.
 - Implementation of flexible working methods.
 - Reduced facilities management costs.
 - Cheaper and faster procurement.
 - Reduced postage costs.

- **Orange benefits** result from productivity improvements in terms of employee time saved. These types of benefit require proactive management to be realized. They can either be banked as financial savings or alternatively used as “free” resources to be reallocated elsewhere. Examples include:
 - Reduced commuting or non-productive time.
 - Greater employee productivity and reduced resource duplication.
 - Better use of specialists and increased focus on value-added tasks, via job redesign.
 - Reduced staff turnover and improved work-life-balance.
 - Improved access to electronic information and greater efficiency in data-handling.
 - Standardization of processes and citizen interactions.
 - Enablement of citizen self-service and deployment of multi-channel service delivery.

- Enhanced performance-monitoring.
 - Simplification of supply chains.
 - Availability of regional/sub-regional economies of scale.
- **Green benefits** are those that cannot be converted with any degree of reliability into cash or productivity gains, including:
- Community leadership and reputation as an innovative and responsible government.
 - More responsive citizen-centric policies, processes and services.
 - Citizen empowerment and social inclusion by providing self-service, feedback mechanisms and more targeted service.
 - Ability to attract and retain private sector partners.
 - Improved work-life-balance and staff motivation, responsibility and value-add.
 - Ability to establish and enforce performance-orientated management.

The Modernization Diagnostic



The objective of Hillingdon’s “modernization diagnostic” is to identify the opportunities, benefits and risks associated with deploying digital communication technologies to:

1. Modernize working practices.
2. Enable electronic service delivery.
3. Improve citizen contact management.

The diagnostic was characterized as follows:

- A set of pre-determined questions applied systematically.
- Service-based approach that focused on the experience and judgment of service managers.
- Conscious of the capabilities presented by the Internet and other digital communications technologies to change the organization.
- Sensitive to the human resource benefits, implications and risks of deploying and sustaining modernization.

However, the diagnostic is relatively time-consuming to apply, requires data preparation beforehand and a fair amount of quantitative and qualitative analysis afterwards. Because of this, the business case methodology allows a continuum of scoping and diagnostic options, giving each council or local authority the ability to determine what is best for its own circumstances.

For example, Hillingdon decided to carry all three elements of its diagnostic for the modernization of the Housing Service. Since cost improvements were a priority, they applied the modernized work processes element. In addition, the authority was legislatively required to *e-enable* particular services and to improve constituent services. Hillingdon's experience was that reviewing the benefits identified (during Step 1) helped scope the application of the diagnostic.

Reality Check

Having completed the modernization diagnostic and identified the key opportunities and risks, the reality check is the next step in building the business case. The reality check is a qualitative review of the benefit matrix. The objectives for this phase are to:

- Clarify the key opportunities and risks generated by the diagnostic
- Assess the opportunities and risks against the benefits identified
- Determine whether the opportunities and risks are likely to generate an acceptable level of benefit, paying particular attention to the evaluation and management of risks identified by the diagnostic.

In Hillingdon, this assessment focuses on determining whether an acceptable level of sustainable benefit has been identified. Efforts that fail to meet this threshold are reviewed against the modernization diagnostic to pinpoint specific weaknesses or other obstacles that inhibit sustainable benefits. Efforts that demonstrate acceptable benefit levels continue to the next

phase which produces a quantitative assessment of the costs and savings derived from the key opportunities and benefits.

Completing the Business Case

To support the business case for implementing key initiatives, Hillingdon developed a financial ROI model covering each of the three areas of modernization diagnostic: modernized working practices, implementation of CRM practices to improve citizen contact and e-enabling service delivery. This ROI model allows Hillingdon to identify and scrutinize the quantitative costs and savings associated with each of the identified sustainable benefits highlighted during the reality check.

The ROI analysis uses a cash flow model as is common practice in the private sector; however the model was customized specifically for Hillingdon's purposes. Simple cash-flow-based models like this have been widely developed by organizations looking at combinations of Internet business solutions and technologies. ROI analysis is particularly helpful when used to consider not only new technologies being adopted but also impacts on working practices and associated business processes.

For each of the three areas of modernization, a number of scenarios were created and modeled. Each scenario considered a different combination of initiatives with associated benefits and costs. In each case:

- Red benefits (hard cost reductions) were estimated in terms of their monetary value.
- Orange benefits (time saving productivity benefits) were modeled in two ways; in terms of their monetary value (by equating the time saved to the average salary rate) and in terms of the additional hours of time available to provide extra value-added services.
- Green (non-financial) benefits were not modeled as part of the ROI although they do, of course, form part of the overall justification for implementation.

It is important to interpret what comes out of an ROI analysis. It should not be thought of as a "forecast" predicting a known future outcome. Such a view implies that the hard work is done once the business case is estimated. Rather, it is a way of helping an organization to design the future that they wish to create. The ROI is a way of capturing assumptions about initiatives, their likely costs and benefits in a transparent manner which allows inspection and investigation of the implications of variations to the assumptions. Ultimately the real value of the model is making assumptions explicit and capturing the logical implications of those assumptions in terms of value

to the organization. The ROI at the planning stage does not address the key issue of allocating accountability to those responsible for achieving the estimated benefits.

Prioritize the Business Case

Success of the overall Hillingdon modernization initiative depends on the judicious allocation of government resources. Once the sustainable qualitative and quantitative benefits are identified, Hillingdon leverages standard prioritization criteria to assist resource allocation decision-making. Evaluating initiative selection at the enterprise level allows Hillingdon to identify opportunities for council-wide integration and sharing of data, assets, resources and services.

Criminal Justice Information Technology, United Kingdom

Criminal Justice Information Technology, Portfolio Management

The United Kingdom Criminal Justice System IT program was established in 2002 to coordinate existing infrastructure and case management projects with the IT projects that were being planned to integrate these systems. Criminal Justice IT (CJIT) is part of the Office for Criminal Justice Reform (OCJR) which is a cross-departmental team covering the Home Office, the Department for Constitutional Affairs and the Attorney General's Office. The OCJR supports all criminal justice agencies in working together to provide an improved service to the public by delivering the Criminal Justice System (CJS) strategic vision, that by 2008:

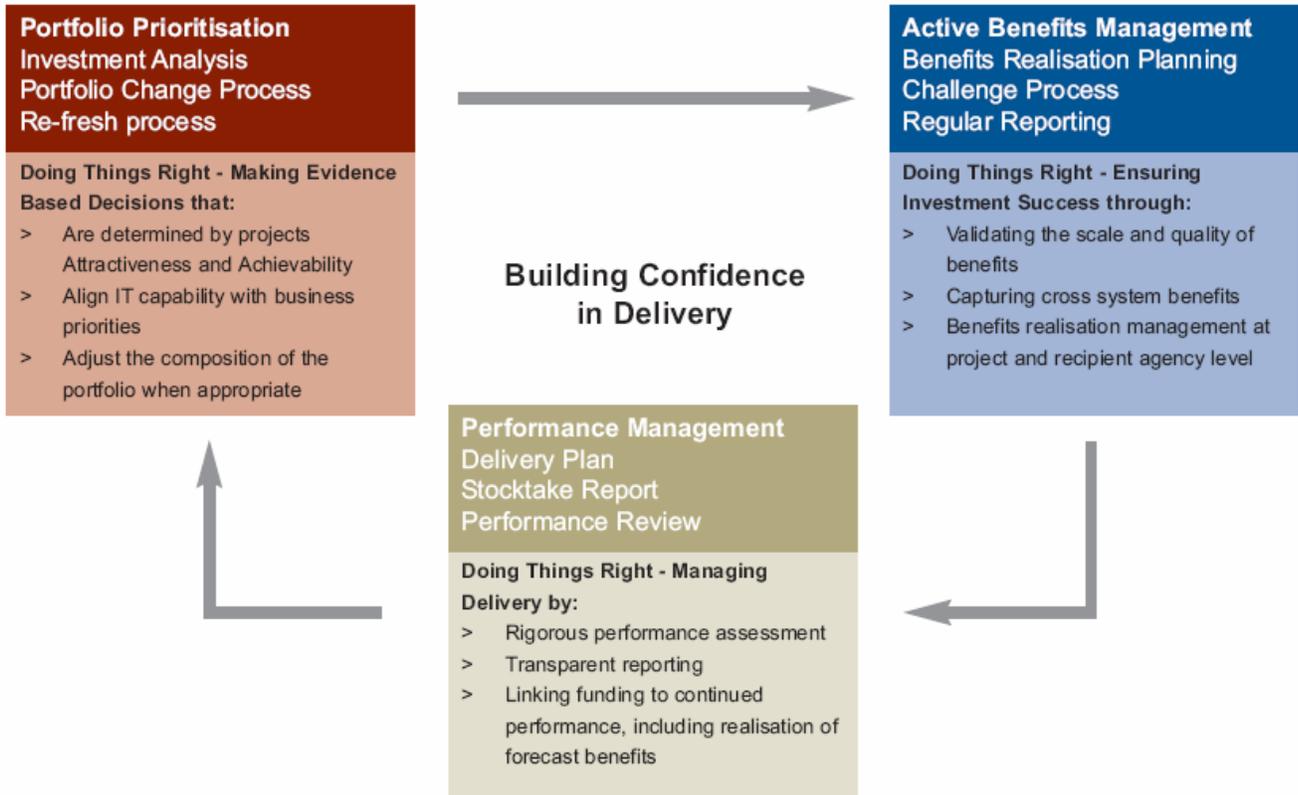
- The public will have confidence that the CJS is effective and that it serves communities fairly
- Victims and witnesses will receive a consistent high standard of service from all CJ agencies
- More offences will be brought to justice through a modern and efficient justice process
- Rigorous enforcement will revolutionize compliance with the sentences and orders of the court.
- Criminal justice will be a joined up, modern and well-run service and an excellent place to work for people from all backgrounds

CJIT has a dual role: to deliver IT solutions that help join up the CJS and to manage the wider CJS IT program which encompasses the provision of modern infrastructure and case management systems in the police, crown prosecution service, courts, prisons, probation and youth justice board.

Challenge

The track record of major IT programs is not good – it is commonly reported that anywhere between 60 and 70 percent of IT programs in both the public and private sectors fail to deliver what they promise. High profile failures in recent years indicate that the situation has not improved significantly. The issues associated with this failure are particularly problematic in large scale cross-departmental programs such as CJS IT.

Indeed, while progress has been made in the first two years of the program, there has also been significant slippage in delivery, lower than anticipated take up, cost overruns and benefits have consequently fallen behind trajectory. It was therefore recognized that a revised and more effective approach to managing the program portfolio was required. The following diagram shows CJIT's new approach:



It is hoped that the lessons learned on the CJS IT program will contribute to embedding more sophisticated and effective approaches to portfolio management across government.

Portfolio Prioritization

As part of the 2005-08 strategic planning process, CJS IT revisited the shape and scope of the program to ensure that it remains aligned with business priorities and that will deliver its objectives. This involved:

- Developing a set of principles to guide our investment decisions.
- Employing an evidence-based approach to assess the attractiveness, achievability and affordability of existing projects and those that are proposed for inclusion in the program.
- Designing a process by which the program can be 'refreshed' going forward.

Investment Principles

A set of nine high-level investment principles were developed by the OCJR operational board, which identify the criteria against which existing and future cases for investment will be assessed.

1. All program and projects that are funded by the CJS IT are governed by the approved budget and funding allocation and the CJS IT governance arrangements. Funding requires a business case that demonstrates a positive cost/benefit, and continued funding may be linked to the realization of benefits.
2. CJS IT should not fund new projects that do not contribute to the CJS vision or add value to multiple criminal justice organizations (CJOs).
3. What has been started should be finished (i.e., funding should continue for those projects that are on time and to budget, otherwise previous investment would be wasted).
4. New projects should not be funded unless they can demonstrate a positive return on investment and the benefits are agreed, in principle, by all parties.
5. Where possible, options selected should represent: the shortest implementation timeframe; the lowest cost and; deliver a reasonable amount of benefit to the CJS.
6. Overspends should be borne by the relevant organization rather than the CJS IT ring-fence.
7. Continued funding will be contingent upon project performance, in terms of meeting delivery milestones and realizing benefits, and will be reviewed periodically.
8. Projects will not be funded if critical issues are unresolved.
9. Projects should not be started if the assessments of their achievability and attractiveness do not meet minimum standards.

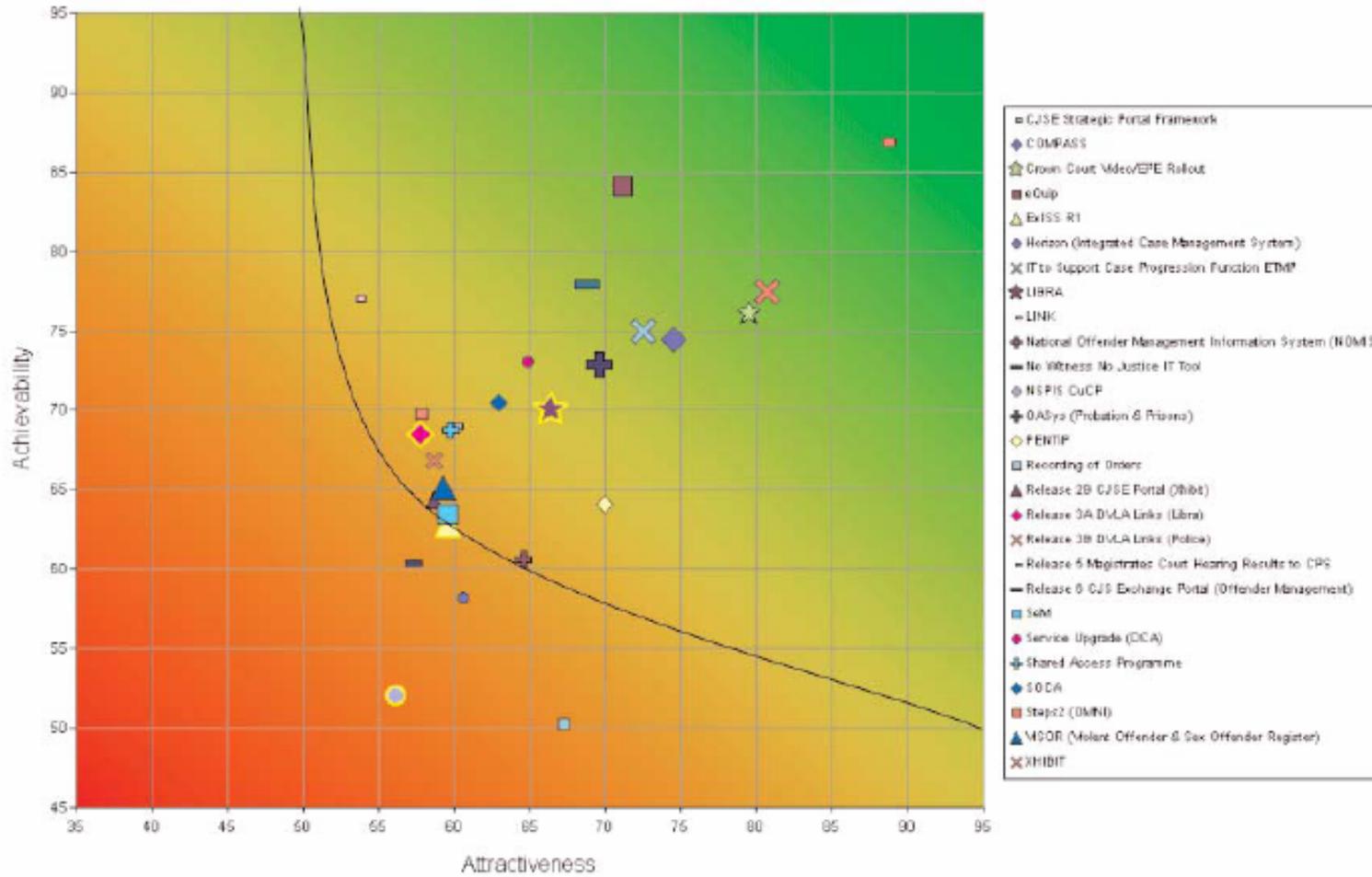
Determining Attractiveness, Achievability and Affordability

Existing and proposed projects are evaluated to determine their absolute and relative attractiveness and achievability. Factors considered include:

- **Attractiveness** – The contribution the project will make to strategic priorities and business objectives; the scale and quality of the benefits case.
- **Achievability** – Ensuring there is sufficient capability and capacity to deliver the project; the adequacy of risk assessment and contingency; stakeholder commitment; and the extent to which benefits are clearly identified and agreed with the recipients.

This process incorporates an assessment of projects using a “Proving Model.” The model was developed by Cranfield University in 2002 following a two year research study into the causes of program failure. The approach includes a detailed assessment of project documentation and stakeholder interviews. The outputs include summary reports for each project identifying any critical issues (those that would preclude further investment until they are addressed) as well as projects’ attractiveness and achievability scores. These scores are also combined in an assessment of the program portfolio as a whole.

Portfolio Analysis Summary



The data from the Proving Model assessments is considered along with reviews of:

- Projects' strategic contribution by the OCJR vision "strand boards" that are responsible for delivery of each "strand" of the CJS strategic vision.
- Compliance with the spending review settlement conditions including whether the project meets the required rates of return of 3.5 percent on infrastructure and 10 percent on software.
- The quality of the benefits case in terms of its compliance with HMT guidance and the CJS IT benefits eligibility framework which defines how benefits are categorized and accounted for to ensure consistency across the program and minimize double counting. This assessment is undertaken by the CJS IT benefits management team.

These assessments are then combined with a review of affordability and the investment principles outlined above. The outcome of this process is a revised delivery plan which is presented to the OCJR operating board and ministers for approval. Subject to these approvals being obtained, funding is then released for the year ahead.

Refreshing the Program

Processes are being established to evaluate new proposals for funding on a quarterly basis. In addition, the entire program portfolio is subject to re-evaluation on an annual basis to assess progress and ensure it remains aligned with business priorities. This re-evaluation includes:

- Independent assessment of the program portfolio using the Proving Model.
- Strand board confirmation that projects remain aligned with strategic priorities.
- Re-assessment of the project and program level benefits case by the portfolio unit's CJS IT benefits management team.

Active Benefits Management

Too often benefits management is seen as an unnecessary overhead that gets in the way of delivery. Yet this attitude is itself at the heart of why so many projects fail to deliver the promised benefits. The CJIT portfolio unit is seeking to address these issues with an approach to benefits management that:

- Applies a consistent benefits framework across the program.

- Focuses on benefits throughout the project lifecycle, from outline business case through to post-deployment.
- Adopts a joined-up approach to the identification and valuation of cross system benefits.
- Embeds responsibility for benefits realization, not only with the relevant projects, but more importantly with those in the business able to influence their realization.
- Includes regular review points to ensure that, if benefits can no longer be achieved in a cost-effective manner, then appropriate action is taken and, if necessary, resources are re-directed to more deserving projects.

Benefits Management Framework

Benefits are categorized according to the following classification framework:

- **Efficiency Benefits** – Savings in staff time and equipment costs etc. arising from IT enabled business change. They are further sub-divided into *cashable benefits* which enable current output to be delivered at lower cost and *opportunity value benefits* such as the value of activities that can be undertaken due to productivity improvements that would otherwise not have been undertaken or which would have been completed to a lower standard of quality.
- **Effectiveness Benefits** – The monetary or economic value assigned to performance benefits that arise from addressing the root causes of major problems in the CJS. This measures the contribution to the delivery of the CJS strategic vision, public service agreement (PSA) targets, other government priorities and departmental key performance indicators.

These benefits are further categorized into:

- Benefits delivered to the organization sponsoring the project.
- Benefits delivered to other criminal justice organizations and the wider CJS (including defense solicitors, legal aid, etc.).
- Benefits delivered to organizations and groups outside the CJS (including other government departments and local authorities), citizens, and to the UK economy/society as a whole.

An agreed-upon benefits eligibility framework provides guidance on issues such as: accounting for dependencies (i.e., benefits from other projects that are dependent on the project under review); accounting for shared (contributor) benefits; and the treatment of cost avoidance benefits.

The benefits forecast by the program's constituent projects are combined in a program level trajectory to demonstrate the total return on investment and to ensure any double counting is excluded.

Benefits Focus Throughout the Project Lifecycle

As outlined above, the commitment to, and scale of, benefits is a key determinant in deciding whether projects are approved for funding from the ring fenced budget. Projects are required to meet hurdle rates – 3.5% for infrastructure and 10% for software projects and all investments are expected to pay back within 10 years. It is important to note that these rates of return relate to the economic value of the forecast benefits rather than representing a cashable return. Such benefits also need to agree, at least in principle, with the organizations expected to realize those benefits.

Project representatives are required to present their benefits realization plans to the benefits working group. This provides a reality check in terms of ensuring other agencies agree with the benefits they are forecast to receive and it also encourages more joined up planning for the business change on which benefits realization is dependent.

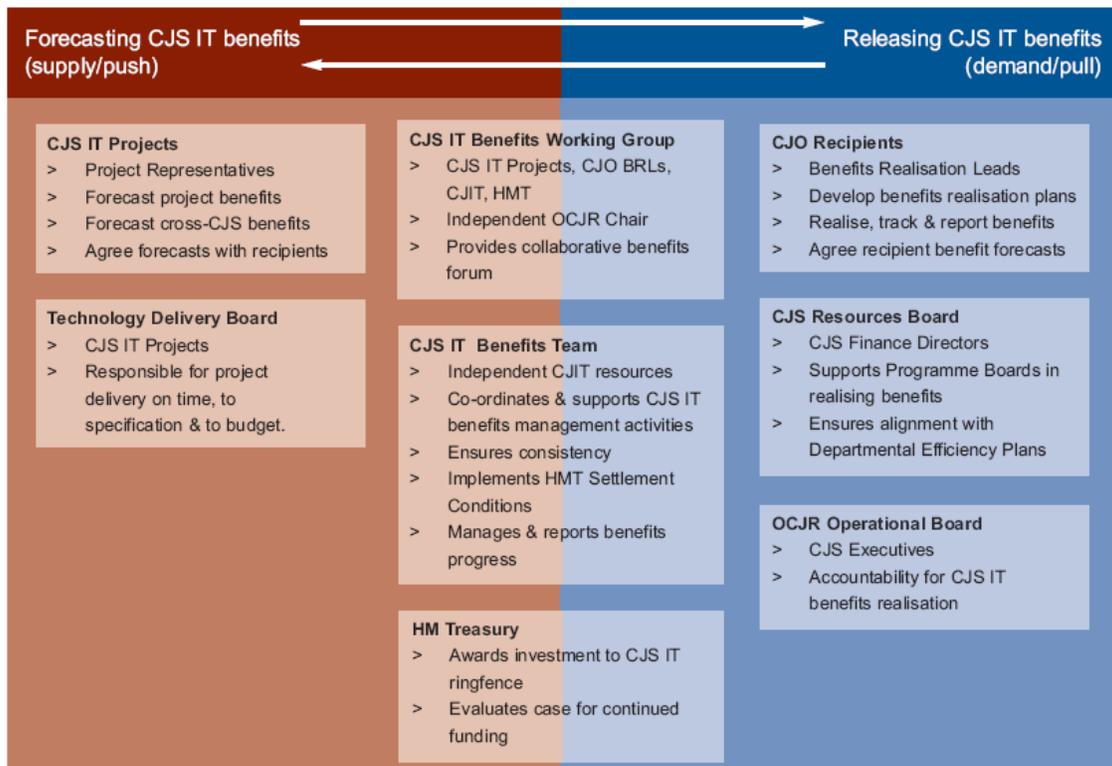
The settlement letter also makes it clear that continued funding is dependent on the realization of benefits and this is reviewed on a quarterly basis. Tolerances for escalating under-delivery to the governance bodies have been agreed (up to 10 percent to the resources board and technology delivery board, and > 10 percent to the OCJR operating board).

Cross CJS Benefits

Realization of benefits in a cross-departmental program is particularly problematic in that benefits to one organization may well be dependent on business change elsewhere in the system. This issue is being addressed by:

- The development of a "Root Cause Model" and benefits linkage charts as a basis for articulating, agreeing, quantifying and valuing cross-CJS benefits. The model identifies the forecast impact of IT projects on the root causes of key problems in the CJS and in turn the contribution to meeting the CJS strategic vision and the PSA targets. The Root Cause Model has been developed from a series of practitioner workshops and is agreed with the business representatives on the benefits working group. The output is an agreed statement of the performance impact of the program as a whole – what are referred to as the "combined effectiveness impact" benefits. The model is also being used to help align the CJS IT program with the plans of the wider business reform program.

- The program governance regime includes the benefits working group which has representation from each contributor project as well as recipient organizations (the benefits realization leads). The benefits working group is responsible for optimizing the benefits from the program and for ensuring that obstacles to the realization of cross CJS benefits are addressed effectively.



Embedding Responsibility for Benefits Realization

The OCJR operating board members are accountable for the realization of benefits from the investment in CJS IT within their respective organizations. To assist them, benefits realization leads have been identified and are responsible for planning, tracking and reporting the realization of benefits in their agency – not just from their own agency sponsored projects, but from the wider CJS IT program. They are therefore charged with preparing recipient organization benefits realization plans that show what benefits are forecast to be realized in the current year and how they will be measured. These plans are reconciled with the benefits claimed by contributor projects in the CJS IT benefits trajectory. Where there is a variance, responsibility for approving benefits ultimately lies with the recipient agency rather than the contributor project.

A quarterly “Benefits Evidence and Revised Forecast” report is prepared and is issued to the program governance bodies. These reports include:

- An assessment of progress in terms of benefits realization by recipient organizations and the latest benefits forecast by contributor projects.
- Summary benefits reports for contributor projects and recipient organizations that enable governance bodies to assess progress in an immediate and meaningful manner.
- An updated benefits risk register addressing risks to the scale and quality of the benefits forecast and to benefits realization.

Once approved, the report is used to update the program Stocktake document.

Performance Management

Slippage in terms of delivery, overspends against agreed budgets, and reductions in benefits realization have occurred on several key projects since the inception of the CJS IT program. Whilst the revision of the program governance structure and the introduction of such measures as a monthly Stocktake report and change control process in 2004 have gone some way to increasing transparency of reporting and control, these processes have not proved sufficient to address the ongoing problems of slippage, affordability and benefits realization.

A more robust performance management regime is, therefore, being implemented including regular reporting and checkpoint assessments; integration of performance information from various sources; and application of the principle of earned autonomy with attention being focused on projects that are falling behind in terms of milestone delivery and benefits realization.

In applying these principles, a range of tools and techniques are being developed that include:

- A delivery plan that sets out SMART targets for the program. It represents the baseline against which progress is monitored and it is updated every six months in a consistent format.
- Integrating performance information from various sources including: the assessments arising from the most recent Proving Model review; audit findings; recommendations made by Office of Government Commerce Gateway review teams; and issues identified by the dedicated portfolio unit performance management team from their participation on project boards and regular contact with project management staff. These issues are captured in an integrated action plan for each project.

- A formal six-month performance checkpoint review to assess progress in terms of targets, milestones, costs, benefits and risks compared with the most recent delivery plan. Outputs of this checkpoint review include an updated delivery plan and revised project action plans.
- A monthly Stocktake exception-based report which provides a concise view of program and project progress in terms of targets, milestones, costs, benefits and risks.

PeopleSoft

PeopleSoft, which was acquired by Oracle Corporation in 2004, faced many of the same challenges other companies do in the management of resources, services, and projects. In 2001, the software company spent \$114 million on enterprise services, much of which went to hire temporary and contract workers to support its rapid growth following the successful launch of PeopleSoft 8. Of the \$114 million total, over \$80 million was off contract, preventing PeopleSoft from leveraging relationships with preferred suppliers to achieve volume discounts and more favorable payment terms.

Equally as challenging were the goals PeopleSoft set for itself. The software vendor aimed to reduce total spending by 40 percent through a combination of workflow efficiencies, standard financial controls, and workforce optimization. Specific targets included a 20 percent savings on individual contracts, a 25 percent increase in resource utilization, and a 30 percent reduction in IT project costs.

Executive Summary

PeopleSoft's CEO challenged his executive management team to slash \$100 million in expenditures. Rather than lay off employees or cut research and development, he mandated the executive team to focus on cutting enterprise service expenditures. This included internal IT services and external consulting operations and contract workers.

Fortunately, PeopleSoft was in the process of launching PeopleSoft Enterprise Service Automation (ESA), a new software solution designed to help PeopleSoft's customers get a grip on their own enterprise services spending. Chief Information Officer David Thompson was tasked with implementing ESA internally across the PeopleSoft operations to boost efficiencies of external consulting operations, reduce internal IT costs, increase internal IT satisfaction, and drive profitability by investing in the right IT projects with fewer resources.

Managing Projects the PeopleSoft Way

As part of his mandate to reduce expenses, Thompson launched an internal effort to justify the IT projects he was sponsoring at PeopleSoft. He worked closely with each business unit head to revisit old IT projects and track the returns they were generating to improve project accountability and ROI. Out of that effort came a new ESA module – PeopleSoft Project Portfolio Management (PPM). The PPM module leverages best-practice business processes and Web-based tools to optimize project portfolios, reduce project delivery costs, and increase returns on employee time

and skills. It enables organizations to select, monitor, and manage IT project investments against key business performance objectives.

Thompson hoped to reduce IT project spending by up to 30 percent using PeopleSoft Project Portfolio Management by using the solution to quickly prioritize the workload, rank initiatives by total business value, and manage resources. In 2003, the CIO selected 65 IT projects to fund from a total of 280 proposed projects, choosing those projects that best supported PeopleSoft's key business objectives.

IT Funding Based on Real Benefits

By automating IT project management and bringing it online through a roles-based portal, PeopleSoft managers were able to analyze IT projects in real time for health, value, risk, and alignment with key performance objectives. Daily budget reports show how effective the projects are, based on metrics like employee productivity and the time spent learning new processes. PeopleSoft was able to reprioritize and fund projects online based on results—not perceived benefits—enabling the company to quickly align strategy between IT and other key business units. “We don’t have to wait for a project milestone to come around and get blindsided by it,” notes Thompson. “We can take corrective action immediately.”

Bottom Line Results

When PeopleSoft announced year-end results for 2002, one of its most impressive achievements was the \$185 million reduction in the company’s operating expenses year over year. Management points to PeopleSoft ESA as a key factor in its ability to exceed the original \$100 million target and help PeopleSoft maintain profitability in an extremely challenging environment for enterprise software vendors.

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