



Business solutions through information technology

FINAL REPORT

FREP Handheld Business Case

BC Ministry of Forests and Range
FRPA Resource Evaluation Program

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2 Document Sign Off

This document has been approved as the Final Report for the File Transfer Mechanism Risk Assessment and accurately reflects the current understanding of the project.

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3 Glossary

The following terms appear throughout this document and its related attachments:

FREP	Forests and Range Evaluation Program
FRPA	Forest and Range Practices Act
FREWG	FRPA Resource Evaluation Working Group (FREWG)
J2EE	Java Platform 2 Enterprise Edition is a Java programming platform for server applications
JAVA SWING	Java Swing is a graphical user interface toolkit for java that allows the same deployment on all platforms without having to use the native handheld (XP) facilities. Sometimes reduces application development costs and compensates for server disconnections.
JRun	JRun is a J2EE application server currently owned by Adobe Systems. This handheld runtime environment would reuse most of the J2EE screen business logic of FREP Release 1 with the same layers and interface.
NPV	<p>The Net Present Value (NPV) is the discounted monetary value of the expected net benefits of the project. The NPV is the criterion most often used for deciding whether an IT project can be justified on economic principles. NPV is calculated by assigning monetary values to benefits and costs, discounting future benefits and costs using an appropriate rate, and subtracting the sum total of the discounted costs from the sum total of the discounted benefits.</p> <p>NPV is based on the principle that benefits accruing in the future are worth less than the same level of benefits that accrue now. As well, costs that occur in the future are less burdensome than the costs that occur now.</p> <p>Net Present Value (NPV) = Present Value of Benefits - Present Value of Costs</p> <p>The Discount factor is equal to $1/(1+I)^N$, where:</p>

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	<p>I=the discount rate</p> <p>N=number of periods (years) over which the discounting takes place</p> <p>If the NPV is positive, then the financial return on the project is economically acceptable. If the NPV is negative, then the project is not acceptable economically.</p>
TCO	<p>Total Cost of Ownership for applications and technologies (hardware and software) includes development, support, disaster recovery and retirement costs along with the costs of flexibility, scalability, ease of use/support over the life cycle of the technology or application. For the purposes of this business case, the life cycle is assumed to be five years.</p>
UMPC	<p>Ultra Mobile Personal Computer's fill the gap between tables and handheld with the ability to run Windows XP</p>
XForms	<p>XForms is an XML (extensible mark-up language) format specification for user interfaces for XML data such as web forms.</p>

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4 Executive Summary

The FREP Handheld Business Case has concluded that the overall net cost/benefit of a Handheld is unacceptable and is significantly different from the current Non-Handheld. Initially, we were optimistic that a handheld deployment phase would be valuable for FREP but due to the characteristics of FREP and the recommendations from the Vivid Solutions study, this business case has identified an NPV difference of \$500K.

Technology investments are complex but difficult decisions must be made within the strategic context of the BC Government. This business case process looked at many different options and consulted with other handheld deployments within the MoFR. The approach of this business case is comprehensive and looked beyond financial (quantifiable) estimates. It is important to note that the financial estimates are forecasts over a five year term and are not guaranteed to occur. Hence, a risk assessment of the estimates was completed to account for potential future variability.

Although the data for FREP is collected in the field, there are no other characteristics that support the replacement of paper checklists with a handheld. Characteristics that typically drive handheld investments and are missing from FREP are the following:

- Not an audit-driven need
- No legislation need for handhelds
- No fines, penalties or extra revenue
- No 'customer service' or competitive advantage driver (eg. in private sector)
- No safety, security or health issue
- No significant benefits from business process improvements, productivity savings, better information flow, decreased information publishing costs (minor), reduced staffing costs (overtime) or turnover.
- No significant qualitative benefits like: higher citizen or licensee satisfaction, improved staff efficiency, improved or timelier decision making, increased staff morale, regulatory or legislative compliance or significant cost avoidance

There are data quality effort savings with handhelds but these savings do not bridge the \$500K NPV difference.

Most of the significant benefits are delivered with FREP online application in Release 1. This application provides significant data quality improvements with business data rules in the system and there is only incremental value to push this out to handhelds.

In summary, unless there is a significant change in the key business drivers, mandatory requirements for a handheld or the ability to share handheld investment costs with other program areas, FREP should stay with the Non-Handheld. CGI recommends that MoFR

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complete an update to the business case in three years to verify assumptions, evaluate if remote communications in the field are technically and economically feasible and ascertain if there are any significant changes to costs or benefits.

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5 Purpose

Information technology represents a significant investment. To ensure that scarce resources are optimized, the full benefit of initiatives is realized, the risks are mitigated and the business functions of MoFR are supported, a business case approach to managing information technology priorities for FREP is being undertaken. Technology investments are complex and difficult decisions must be made within the strategic context of the BC Government. This decision process, like government itself is continuously evolving and improving. A major component of the decision making process is business case analysis.

The purpose of this business case is to:

- Describe the options of solving the handheld deployment decision in clear business terms to facilitate decision making
- Analyse what will happen if various handheld options are implemented or not
- Provide an objective (non-emotional) assessment
- Analyse how the handheld options meet the FREP objectives
- Identify what resources (costs) and benefits are required for implementation
- Provide a recommendation on the best option

Business cases are an important managerial tool and capital funding is a limited resource. Thus, management has to carefully decide whether a handhelds are economically acceptable. MoFR management must identify the projects that will contribute the most to Ministry priorities. This, in essence, is the purpose for the handheld business case.

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6 Approach

The approach of this business case is comprehensive and involves a process which looks beyond financial estimates. Although financial estimates are of critical importance, they do not capture certain issues. At the same time it is important to understand that the estimates, financial and other, which are used for investment evaluation, are always opinions about the future and are thus not as accurate as is suggested or thought.

The basic steps of the business case process include the following:

1. Identify viable alternatives that solve the decision-making problem.
2. Analyze the alignment of the alternatives to strategic objectives at the Government, Ministry and Program levels.
3. Review all stakeholders that have an interest in either alternative.
4. Complete a Quantitative and Qualitative cost/benefit analysis.
5. Complete a Risk Assessment to develop a Risk Factor.
6. Final Recommendation.

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7 BUSINESS CASE – FREP HANDHELD

Estimated Project Start Date: July 1, 2007 (Handheld)

Estimated Project End Date: July 1, 2012 (Handheld)

11.1 Overall Project Description and Objectives:

Current State: (Non-Handheld)

- The first release of the online FREP application occurred in early February, 2007. This application will allow the field teams to enter checklist data from their Branch offices. This current state improves the data quality, timeliness, completeness and reporting capabilities from the previous fiscal year. Data is still collected in the field on paper checklists. The opportunity exists to continue to improve functionality, data quality, timeliness and save operating costs.

Project Purpose:

- The purpose of the FRPA Resource Evaluation Program (FREP) information management system is to have one central database to collect and analyze resource monitoring values. The FREP system will determine if forest and range policies and practices in British Columbia are achieving government's objectives for FRPA resource values, with a priority on environmental parameters and consideration for social and economic parameters where appropriate. The data collected by the system will be used by forest professionals to report on forest conditions.

Project Scope/Timing:

- Release 1 of the new system will be implemented before the next field data collection phase in 2007. Additional checklists will be implemented in later releases. This project reviews the business case for a five year period.

Business Case Project Objectives:

- Reduce overall business process, project and IT support costs.
- Improve effectiveness of forecasting as well as governance and forecasting accuracy.
- Implement consistent business and reporting processes.

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Project Stakeholders/Users:

- Resource Value Team members that collect and enter the field data
- FRPA Resource Evaluation Working Group (FREWG) which consists of number of branch specialists, resource value team leads and a selection of district staff from MOFR and MOE
- Headquarters and specialist staff in Forests Practices Branch
- MoFR Information Management Group (IMG) for systems implementation, integration and support
- Workplace Technology Services (WTS) for handheld management and maintenance
- External users: Licensees have access to their individual data

11.2 Strategic Alignment:

Alignment to Department Strategic Plan and Government Objectives and Priorities:

The FREP IMS project and both business case options align equally well to two of the **BC Government Five Great Goals**:

- Lead the world in sustainable environmental management,...
- Create more jobs per capita than anywhere in Canada.

The FREP IMS project and both business case options align equally well to all three of the **MoFR Goals**:

- Goal 1: Sustainable Forest and Range Resources
- Goal 2: Sustainable Forest and Range Benefits
- Goal 3: Highly Effective, Innovative and Responsive Organization

Both business case options align equally well to all three **FREP Objectives**:

- Assess the effectiveness of the *Forest and Range Practices Act* (FRPA) in achieving stewardship of the eleven resource values identified under FRPA;
- Identify issues regarding the implementation of forest policies, practices and legislation as they affect the resource values identified under FRPA;

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- Implement continuous improvement of forest management.

If urgency increases with respect to reporting on FREP Objectives achievement, the handheld option may align better in the future.

In summary, implementation of Option #1 (Non-Handheld) or Option #2 (Handheld) will equally improve achievement of relevant Government, Ministry and Project level goals.

11.3 Stakeholders:

- **Key Stakeholder Group #1** – Resource Value Team members and FREWG collect, enter and analyze field data. This group is central to the objectives of FREP. Their requirements are well documented in the 'Core Hand-Held Requirements' document and are consistent with the Vivid Solutions report recommendation. This group is impacted the most by the implementation (or not) of a handheld option.
- **Key Stakeholder Group #2** – Headquarters and specialist staff in Forests Practices Branch. This group is impacted mostly by data quality, data entry and reporting requirements.
- **Key Stakeholder Group #3** - MoFR Information Management Group (IMG) for systems implementation, integration and support and Workplace Technology Services (WTS) for handheld management and maintenance. This group is impacted with any support tasks.
- **Key Stakeholder Group #4** – External users (eg. Licensees)

All stakeholders are considered in the Quantitative and Qualitative assessments.

11.4 Option Descriptions

This business case looked at various options and finalized to two viable options for the following reasons:

- Various Non-Handheld options were reviewed that changed variables such as data entry time, data entry location or whether documents were scanned/copied in the district or at headquarters. Since the purpose of this business case is to assist with the decision on whether to implement a handheld or not, various non-handheld options do not provide any extra insight. This business case is not meant to decide on the best non-handheld option to implement.

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- The following Handheld options were reviewed:
 - Real-time remote communications in the field via satellite that would avoid handheld application development and maintenance costs.
 - Not-viable. Protection Branch, which uses this technology for fire camps, utilizes portable satellite dishes that are cumbersome (3 foot size) and too expensive (\$18K purchase cost and \$4K per week) with a vendor that is not stable (GlobalStar) (Brian Howden/Mike Winder)
 - Java SWING and JRUN development environments on the handheld were examined with the hope that most of the J2EE code could be re-used on the handheld and could run in a 'disconnected' state.
 - Not significantly lower costs. These development environments had their own costs and were not significantly different than XML forms.
 - Different XML forms development environments (InfoPath versus Xforms) are assumed to have little significant development environment cost differences (Please refer to, 'FREP Mobile Application – Architecture Recommendations', Vivid Solutions, Nov. 16, 2006)

In summary, CGI examined many viable options but decided to complete estimates for only two options; Non-Handheld (Non-handheld) and Handheld. All CGI estimates were pessimistic for the Non-Handheld and optimistic for the handheld, to ensure a conservative useful comparison for a final handheld decision.

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Option #1 Non-Handheld (recommended) is the Non-Handheld of the current online FREP IMS Release 1 and paper checklists in the field.

Option #2 Handheld is a UMPC with XP, XML Forms application and utilizes ESF for data synchronization based on the recommendation in the FREP Mobile Application Architecture report by Vivid Solutions

Alternative	Advantages	Disadvantages	Impact on Key Stakeholders
Option #1 Non-Handheld	<ul style="list-style-type: none"> - High strategic alignment - Best NPV - Least project risk since already implemented 	<ul style="list-style-type: none"> - Higher data quality costs - Customized checklists have limited sharing in the field - No incremental benefits expected over the next five years 	<ul style="list-style-type: none"> - Non-Handheld so no change except note that data entry is being shifted to branch offices as the Non-Handheld (FREP Release 1) is implemented. - Expectations have to be possibly changed. Stakeholders that like change and new tools will be disappointed.
Option #2 Handheld	<ul style="list-style-type: none"> - High strategic alignment - Benefits expected with data quality and paper management savings - Medium project risk 	<ul style="list-style-type: none"> - High cost option 	<ul style="list-style-type: none"> - Improved business processes (no entry of data on checklist and system); - Increased data quality and less paper management costs.

Option #2 Potential Benefit Areas:

- Reduction in paper-handling
- Reduction in re-typing from filled-in forms
- Reduction in report delays while waiting for someone to update
- No errors in re-entry (Data Quality improvements)
- Simplified entries through popup lists
- Speeds information access. (However, time not as critical for FREP)

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11.5 Quantitative Cost-Benefit Analysis

Costing Template (Please refer to attached cost/benefit spreadsheet for more detail)

Quantitative Analysis – Option #1 (Non-Handheld)	Year 1 \$K	Year 2 \$K	Year 3 \$K	Year 4 \$K	Year 5 \$K	Year 6 \$K	Total \$K
Benefits:							
Cost Savings	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cost Avoidance	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Revenue	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL BENEFITS	0						
Costs:							
Non-Recurring	0	0	0		0	0	0
Recurring	\$119	\$130	\$127	\$137	\$148	\$151	\$813
TOTAL COSTS	\$119	\$130	\$127	\$137	\$148	\$151	\$813
Net Benefit or Cost of Viable Alternative 1	-119	-130	-127	-137	-148	-151	-\$813
Present Value of Benefits	0						
Present Value of Costs	-707						
NPV for Option #1	-707						
Discount Rate	4%						
Quantitative Analysis – Viable Option #2 (Handheld)	Year 1 \$K	Year 2 \$K	Year 3 \$K	Year 4 \$K	Year 5 \$K	Year 6 \$K	Total \$K
Benefits:							
Cost Savings	0	0	0	0	0	0	0
Cost Avoidance	0.00	0.00	0.00	\$13	\$13.2	\$13.6	\$25.96
Revenue	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL BENEFITS	0	0	0	13	13.2	13.6	\$39.52
Costs:							
Non-recurring	311.80	27.00	27.75	281.6	28.30	86.46	\$763
Recurring	92.00	92.67	95.42	98.25	101.1	104.1	\$583.69

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TOTAL COSTS	403.80	119.67	123.1	379.8	129.4	190.6	1,346.6
Net Benefit or Cost of Viable Alternative 2	-92.00	-92.67	-95.42	-85.47	-88.0	-90.6	-\$544.1
Present Value of Benefits	32.47						
Present Value of Costs	1190.2						
NPV for Alternative 2	-1158						
Discount Rate	4%						

Quantitative Cost-Benefit Analysis

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Analysis:

Overall, Alternative 1 (Non-Handheld Option) has the best NPV and almost a \$500K difference from the Handheld.

Assumptions Overall:

- 6 year term for project
- 3 year refresh of handheld since they are on a steeper obsolescence curve than desktops
- Cameras integrated during second refresh cycle
- 100 users (3 handhelds per district at 30 districts) every year for five year term
- NPV is the best tool for financial quantification. Payback and ROI are rarely used for business cases because of the lack of consideration for the time value of cash flows. Even though IRR is very popular, NPV is better because it implicitly assumes intermediate cash flows are reinvested at the more conservative cost of capital. IRR does not consider the cost of capital. In addition, certain mathematical properties may cause a project with a non-conventional cash flow pattern to have zero or more than one real IRR.
- Discount Rate for NPV = 4% Prime Lending rate is currently 6%. Assume government costs of capital are slightly less.
- 1200 Checklists per year
- Employee burdened annual cost = \$78,000 and hourly cost = \$39/hr in Year 1
- 250 work days per year at 8 hours per day or 2000 hours per year
- 3% salary increase per year
- 3% inflation rate per year
- Assume no efficiency difference from filling out paper checklist versus handheld form

Handheld Assumptions:

- Utilize lower cost UMPC with 'ruggedized' uplift to \$2,000 per device purchase cost

Assumptions for Major Costs are the following:

- Low Initial loss of productivity: Initially productivity may drop while staff learns to use the new FREP application on the handheld but since the online/office version will be similar to the handheld version, this loss will be isolated to just the handheld only and was considered to be insignificant.
- Able to negotiate a contract for the estimated costs (from vendor) for required hardware and software.

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These benefits and costs were identified through one-on-one interviews and published data.

A checklist was utilized to ensure all costs and benefits were considered. (See Appendix A for Cost/Benefit Template).

Summary of Quantitative Cost-Benefit:

Summary of Quantitative Cost/Benefit (\$1,000's)	Non-Handheld Option #1	Handheld Option #2
Present Value of Total Benefits:	0.00	32.47
Present Value of Total Costs:	706.54	1,190.19
Net Present Value of Project	-706.54	-1,157.72

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11.6 Qualitative Cost-Benefit Analysis

The qualitative analysis is summarized in the following table:

Viabile Option #1

Qualitative Summary	Description	Stakeholder(s) Impacted	Ranking
Benefits:			
Low Change to current process	Cost avoidance at all levels.	All	L
Costs:			
Organizational overhead at Branch Office	Paper checklist data will be re-entered in the Branch Office. There will be increased costs paper management costs at the branch level.	Field and branch staff.	L
Transition	Transition Management during first year to handle increase in escalated help desks and change management	All Staff impacted by Forecasting function across Government.	L

Viabile Option #2

Qualitative Summary	Description	Stakeholder(s) Impacted	Ranking
Benefits:			
Improved Morale	Improved morale for users in the field that would view a tangible handheld as an investment.	Field Staff	L
Leverage non-FREP Tasks	FREP handheld could be re-used for other mobile applications	Field Staff	M
Costs:			
Organizational overhead at Headquarters	IMG and WTS management effort	IMG and WTS staff.	L
Transition	Transition Management during first year to handle increase in escalated help desks and change management	All	L

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Initial Loss of Productivity	Initially productivity may drop while staff learns to work new handheld too and application.	All	L

Summary of Qualitative Cost-Benefit:

Note: Ranked only as a comparative – high, medium and low

Summary of Qualitative Cost/Benefit	Viable Option #1 (Non-Handheld)	Viable Option # 2 (Handheld)
Summary of Total Benefits:	L	L
Summary of Total Costs:	L	L
Overall Qualitative Value of Each Alternative	L	L

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11.7 Risk Assessment:

Project Risk Assessment	Viable Option #1 (Non-Handheld)			Viable Option #2 (Handheld)		
	Probability	Impact	Risk Factor	Probability	Impact	Risk Factor
Risk 1: Risk of schedule delays due to MoFR staffing resource constraints to completed migrations of applications.	1	4	5	5	4	20
Risk 3: Public have expectations of immediate data, meaningful/good baseline data results, which could cause loss of credibility.	4	4	16	3	4	12
Risk 5: Risk of project funding requirements being reduced impacting resource constraints in the field.	4	4	16	4	5	20
Risk 8: WTS support may not be sufficient to meet minimum service levels impacting user adoption	4	1	4	4	4	16
Risk 10: Challenges to the data could cause project credibility and cause project delays.	3	5	15	2	5	10
Risk 12: Risk of changing nature of 'handheld' technology will impact costs and schedule.	1	1	1	5	3	15
Risk 13: Penalties (WTS?) to manage handheld technology may impact costs.	1	1	1	5	3	15

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<ul style="list-style-type: none"> Overall Project Risk Summary 									
Project Risk Assessment	Viable Option #1			Viable Option #2			Viable Alternative 3		
	Probability	Impact	Risk Factor	Probability	Impact	Risk Factor	Probability	Impact	Risk Factor
<i>SUMMARY RISK FACTOR</i>			58			108	3	2	6

Note: Relevant Risk data re-used from Project Risk Assessment completed in Oct. 2006 (Please refer to Appendix B)

11.8 Conclusions and Recommendations:

This business case clearly supports the Non-Handheld Option #1.

Recommend implementation of Option #1 since the Strategic Alignment, the NPV is almost \$500K better than the Handheld. Further, the project risk of Option #2 Handheld is almost twice as high as Option #1 and any effective mitigation strategies which will be costly.

Alternative	Strategic, Business and Program Alignment	Project Risk Assessment Risk Factor	Cost/Benefit Analysis
Option #1 (Non-Handheld) [Recommended]	High	58	NPV= -706 K Qualitative: L
Option #2 (Handheld)	High	108	NPV= -1,158K Qualitative: L

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8 Reference Documents

- Access to FREP IMS Issue Paper 20 July 20 06
- FREP Mobile Application – Architecture Recommendations, Vivid Solutions, Nov. 16, 2006
- Summary Notes for FREP Data Quality, May, 2006
- Core Handheld Requirements

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APPENDIX A: COST BENEFIT TEMPLATE

Example of a comprehensive list of costs for a project:

Quantifiable Capital Costs	One-time Cost	Annual Cost
Hardware and peripherals for development and end users		
Software (packaged or custom)		
Telecommunication equipment		
Facilities upgrades		
Site preparation and renovations		
Furniture and fixtures		
Other		
Quantifiable - Non-Recurring		
Planning for the IT project		
Start up process for equipment procurement		
Development/Negotiation of all vendor contracts		
Initial data collection		
Conversion costs		
User specifications		
Initial training of employees		
Workforce adjustment for affected employees		
Transition costs (parallel systems)		
Quality assurance		
Post implementation reviews		
Quantifiable – Recurring (Incremental)		
Salaries and benefits for IT staff		
Software maintenance and upgrades		

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Computer supplies		
User training		
Telecommunications		
Reviews		
Office leases		
Help Desk support		
Other		
Qualitative Costs		
Initial loss of productivity		
Opportunity costs		
Organizational Overhead		
Transition Management		
Other		

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Example of a comprehensive list of benefits for a project:

Quantitative Benefits	One-time Value	Annual Value
Increased (or wider range of) services		
Decreased cost of services provided		
Savings from Business process improvements		
Productivity gains		
Savings from structural changes		
Savings from optimized information (or flow)		
Decreased information publishing cost		
Reduced staffing cost (incl. overtime)		
Reduced staff turnover costs		
Other		
Qualitative Benefits		
Higher citizen satisfaction		
Improved staff efficiency		
Improved quality of information/decision capabilities		
Increased staff morale		
Regulatory compliance		
Cost avoidance		
Other		

Qualitative cost definitions

In addition to the quantitative costs, often there are qualitative costs that organizations need to consider:

- *Initial loss of productivity:* Initially productivity may drop while staff learns to work new IT tools or applications.
- *Opportunity Costs:* New systems will increase the support required from the corporate IT area. This could range from network support to help desk support. The cost of this

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added support needs to be taken into consideration. Opportunity costs occur where additional resources (such as staff) are not added, but instead existing resources are diverted from other priorities.

- *Organizational Overhead:* Recognize that new applications will impact the overhead of the organization including management time, additional supplies, etc.
- *Transition Management:* Need to communicate the benefits of the new project to staff and other stakeholders. Engagement techniques to mitigate the employee impact could result in added costs.
-

Notes on Benefits

Quantitative benefits are usually easy to identify and calculate. They represent actual benefits (savings or increased revenue) that the business will realize. They are broadly accepted and provide the strongest case for justification.

Improvements in productivity cannot be considered tangible benefits unless these improvements can be stated in monetary terms through specific cost reductions or cost avoidance situations.

Qualitative benefits can also be explicitly defined, but are more difficult to calculate and quantify. Benefits of this type include saving management time or freeing up working space. Both result in a benefit although the expense still continues.

Valuing the qualitative benefits is a more difficult task.

Qualitative benefits can be linked to quantitative benefits, which in turn can be linked to cost savings or productivity gains. For example, fewer face-to-face meetings can save travel time. Better communications may also make meetings shorter and more effective. This would increase productivity and give staff more time for other tasks.

Level of service benefits can be quantified by calculating how much citizens would be willing to pay for the service improvements. For example, if an IT investment saves time for a group of citizens, the value of that time can be based on the average wage rate for the citizens.

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Cost avoidance *benefits address reduction or elimination of a future cost. There are numerous types of expense items that could be considered cost avoidance, such as overtime and temporary staffing, future staff growth, additional equipment, etc.*

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APPENDIX B: RISK ASSESSMENT

Step 1: Risk Identification				Step 2: Risk Analysis				
ID or WBS #	Project Objective	Category	Description	Likelihood	Consequence	Inherent Risk	Confidence Level	Tolerance Level
				(1-5)	(1-5)			
R1	1. Stakeholders	Project Management	Risk of schedule delays due to MoFR staffing resource constraints to completed migrations of applications.	5	4	20		
R2	2. Credible Indicators	Project Management	Risk of inconsistency of contractors for data analysis and could lose project continuity - eg. SAS experts	5	4	20		
R3	2. Credible Indicators	External	Public have expectations of immediate data, meaningful/good baseline data results, which could cause loss of credibility.	4	4	16		
R4	1. Stakeholders	Project Management	Overall risk of training commitment and subject matter experts being committed throughout the project impacting objectives	4	4	16		
R5	1. Stakeholders	Project Sponsorship	Risk of project funding requirements being reduced impacting resource constraints in the field.	4	4	16		
R6	1. Stakeholders	Project Management	District staff is not 100% dedicated to FREP and DM reallocating resources based on priorities.	4	4	16		
R7	1. Stakeholders	Project Sponsorship	Handheld cost/benefit analysis not clear impacting stakeholder expectations and system capabilities	4	4	16		
R8	1. Stakeholders	Project Sponsorship	WTS support may not be sufficient to meet minimum service levels impacting user adoption	4	4	16		
R9	1. Stakeholders	Project Management	Great deal of detailed, complex data capture required & support for long term resourcing/training/maintenance will impact project success	3	5	15		

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FREP Handheld Business Case

R10	2. Credible Indicators	Project Management	Challenges to the data could cause project credibility and cause project delays.	3	5	15		
R11	2. Credible Indicators	External	Potential for conflicting results (with other ministries) impacting data integrity, project credibility.	3	5	15		
R12	1. Stakeholders	Project Management	Risk of changing nature of 'handheld' technology will impact costs and schedule.	5	3	15		
R13	1. Stakeholders	Project Management	Penalties (WTS?) to manage handheld technology may impact costs.	5	3	15		

16/03/2007

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