LinksPoint White Paper

Mobile Project ROI

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MOBILE PROJECT ROI

Decisions to implement IT projects are made based on exacting financial criteria. This paper will present tools for how to develop a "return on investment" (ROI) analysis to be used in supporting the decision to finance a mobile project. While it may be intuitively clear that mobile projects will produce numerous operational benefits, justifying projects in terms of real decreases in operating costs is difficult. This paper reviews some of the basic ways of identifying and calculating cost savings as well as accounting issues that the “bean counters” will appreciate. Mobile GIS projects are often given brief consideration in economically constrained times, but it is in exactly these times that leveraging the GIS asset has the greatest financial benefit.

The first thing to define in the process of preparing a return on investment (ROI) is: what is an ROI? An ROI is the measure of the average income generated or the average decrease in cost generated by a project. When a project is to be considered that will directly result in an increase in revenues, as defined by the definition above, an ROI can be stated in terms of the increase in net income. An example of this might be where wireless technology is used in a point of sale to verify credit card purchases, thus decreasing credit card transcription errors and fraud. However, when a capital expense is incurred on technology that will increase operating efficiency and result in a decrease in operating expense, an ROI can be stated in terms of the decreasing costs.

More than that, an ROI analysis is the only way to measure opportunity cost. A good ROI will convince management that doing nothing will lose them money and that doing a particular project is more beneficial than another project

The days of implementing a new project because the technology is new and “cool” are over. An operations manager intuitively knows that many processes in the field are cumbersome and inefficient and would benefit from automation. However, senior management isn’t willing to believe the value of a mobile project unless it is presented with cold hard numbers.

The goal of this paper is to help give you some of the tools to justify the mobile project and do it in terms that the “bean counters” will understand. Intuitively one knows that mobile applications can deliver significant productivity gains and cost savings, however it is the ability to show clear financial benefits to management that will decide whether the project gets the “green light”.

The math involved in producing an ROI case study is actually the easy part. The challenge is to understand the processes and procedures currently in place well enough to identify areas that can be improved by mobile data technology. Once you know the problem(s) you are solving, calculating the ROI and the payback time of a project is simple. The final challenge is presenting the findings in a form that will convince senior management to approve the mobile project.

The Six Steps to Success in preparing the case are:

- Know the current process
- Identify the problem(s) you are solving
- Benefit Analysis
- Calculate ROI
- Calculate Payback Time
- Sell the project to management

Step 1: Know the Current Process

Before creating a convincing ROI, let alone an effective solution, one needs to understand the current process backwards and forwards. This is probably the most challenging step in developing a cost justification, but it can be made much easier by going about it in an organized fashion.

Talk to the "Experts"

The best way to do this is by talking to the people who use the current process. While there is almost always a defined and documented procedure manual for every work process, it is almost always the case that the people in the organization have developed a number of improvements to the process that didn't make it into the documentation. One wants the "as is" process, not the "as designed". To get to this one needs to talk to all participants in the process. This includes:

- End users
- Managers
- Dispatchers
- Data Entry
- Accounting
- IT/IS
- Other business line managers involved in the process
- Senior management (COO, CFO, Commissioners) if necessary to define the process and metrics

The people who do the work will tell you the real process and give you the problems that need to be solved.

What does what?...when?...and where?

Once one has spoken with everyone involved in the process, a pretty good understanding of what actually happens, and how mobile technology can help improve the process is determined. Because of this one will be able to identify the various steps in the process, when they happen and since this is a mobile process, where. One key process feature not to miss is the verbal component. Another element to address is what information is being exchanged by voice and what impact a mobile data application might have on this method of communication.

"Get the documents"

Get all the paperwork involved in the current process. Figure out how these fit the steps you've identified from the interviews. This is crucial: find out how long it takes for the paperwork to be filled out, whether it needs to be re-keyed into the system and what is the time lag before the data is available to the enterprise. Information latency can result in a cost that can be recaptured in the ROI.

Additionally, paper processes require transcription from job status reports into the digital form for use in work management systems and the cost of paper. The personnel previously used to enter the job status data into the work management system can be repurposed, thus further increasing the efficiency of the work force. Paper can be a sizable cost to consider as well if much of the information utilized in completing a work order is provided on paper, including the work order, plans and schematics, manuals and historic data.

Providing all of this to the field worker in a digital format and having all status reports filed digitally can show a tremendous ROI both in terms of reducing material costs as well as increasing efficiencies.

"Map it out"

When interviews have been completed and paperwork reviewed, then it is time to document the "as is" process on paper. Include the time it takes to complete each task and the time it takes for data to reach the enterprise. From this, one will be able to identify and quantify the productivity savings that will result from the proposed mobile solution.

Step 2: Identify the Problem You are Solving

Now that the current process has been analyzed, one can identify the processes the mobile solution will improve. For a mobile solution these improvements fall into three broad categories:

Operational process improvement

- Decreased data entry time/increased efficiency
- Improved consistency of process and data
- Better data accuracy

Improving access to information

- Extending dynamic data to the field (GIS/ Inspection & Maintenance History, etc…)
- Providing access to necessary information to complete a job (not just access to data a worker can carry) i.e. codes, procedures, etc…
- Real-time communication

Eliminating paper

- Eliminate overhead costs of paper work orders, maps, etc…
- Delays due to paper process
- Data accuracy
- Speed up collections/billing (Improved cash flow is a financial hot button)

It is important to remember that it is about the process, **NOT** the technology. The most advanced technology in the world will not provide any benefits if it is not applied to efficiently improve a process.

Step 3: Benefit Analysis

While the ROI analysis will produce hard numbers, an even stronger case for the approval of the project can be made by presenting the additional benefits it will provide the entire company. The benefits come in 3 levels:

- Primary benefits provide a direct and measurable cost savings.
- Secondary benefits deliver less tangible, but nonetheless clear improvements.
- Tertiary benefits offer benefits beyond the department or function deploying the mobile solution.

Examples of what falls under each of these categories are as follows:

Primary benefits

- Reduction in hard costs within the department
- Less paper
- Less overtime
- Reduce contractors/temps/staff
- Handle more calls/functions per day

- Increase billable time
- Decrease vehicle mileage/fuel costs

Secondary Benefits

- Increase consistency of work
- Reduce soft costs
- Increase level of customer service/satisfaction
- Fewer repeat calls
- Improve employee satisfaction/retention

Tertiary Benefits

- Impact on organization to reduce costs/increases productivity as a result of the mobile project
- Enterprise data integration reduces manual entry costs and pitfalls
- System consolidation (mobile platform) reduces burden on IT

Step 4: Calculate ROI

Now that the current process has been analyzed and improvements the benefits of the mobile project identified, it is time to calculate the return on investment. The steps are relatively simple, but this is a good point in the process to see if it is possible to get some help from the finance department in working with the numbers and in presenting the data in a format management is familiar with.

From the interviews with participants and information available within the organization, determine what the cost of the current solution is. This will include hard costs for materials such as paper, log books, and map that are used in field work. This also includes time, which can be both a hard and soft cost. Data entry time that is used to support the "as is" solution is a hard cost. Data lags or incomplete data in the field are inefficiencies that can be addressed to provide a hard benefit.

Take the estimated costs and savings associated with the mobile project and plug this data into an income statement to calculate an ROI analysis. The income statement will show the financial impact of the project in terms that senior management will understand. Begin with the cost of the system including hardware and software. The cost structure will be different if the company lease hardware instead of buying it, but that is easy enough to work into the project income statement.

Do not forget to include the ancillary expenses that are necessary to implement the mobile solution. While it is tempting to just use the cost of the hardware and software, those people reviewing the proposal will also want to consider the ancillary expenses. These include:

- Spare units
- Cables and cradles
- Batteries
- Accessories and cases
- Service contracts
- Installation fees
- Custom programming and interface development

Financial analysis is about comparing costs to savings. Once these have been tallied up, you can address savings. Some areas of saving from a typical mobile project include:

- Labor savings from eliminating data entry, and the additional savings of more accurate data.
- Savings from cutting overtime costs.
- Improved efficiency that results in a field worker being able to handle additional tasks in a day produces hard savings
- You may also save money on fuel or mileage based on the type of mobile solution you deploy. For example, if workers are paid for their mileage at a rate of 36 ½ cents per mile. If you can save 5 miles per day, that's an additional savings of $438 per year, per worker.

Please note that the intangible benefits have not been addressed. These are difficult to work into the income statement, but with some effort can be quantified and will play into making the overall case for the mobile project.

Sample ROI Calculation:

The following variables will be used in sample ROI calculation:

- Goal: Inspect/capture GPS coordinates for outside assets: 50 Workers
- Hardware: Ruggedized handheld computers with GPS
- Software: Field data collection, in-vehicle navigation system
- Replaces manual, paper-based process for collecting inspection data
- Automates process and provides the added benefit of capturing GPS data for GIS

Project Costs

- Hardware: Ruggedized handheld computers with GPS
  - Handheld Cost: $2500 X 50 units = $135,000
  - Depreciation over project lifetime of 5 years = $27,500/yr
- Software: Field data collection and in-vehicle navigation system
  - Software Cost: $45,000
  - Depreciation over project lifetime of five years = $9,000/yr
  - Integration and Installation Cost: $5,000
- Service Contract Cost: $7,500 per year for hardware and software
- Training/Supplies/Miscellaneous Cost: $3,000 initial; $500 per year

Project Benefits

- Reduces manual data entry
- Shortens cycle time of updates by up to 5 days
- Eliminates 90% of data entry errors
- Can re-deploy 1 clerical staff member ($22,500)
- Increase field worker productivity
- 10% reduction in overtime hours x 50 field workers ($156,000)
- 0.5 gallons of gas saved per vehicle per week ($8,125)
- Automates process of updating GIS
- Increases accuracy and detail of information

Below are all the costs and savings assumptions in a spreadsheet over the 5 year life of the project creating the project income statement. What this shows is that over the life of the project, even considering small gains in productivity and savings the project delivers, the savings total more that $200,000. These are a savings of only 2 hours per week per worker, ½ gallon of gas a day, and one date entry clerk. With this information in this form the Return on Investment can be calculated.

Mobile Project Income Statement

YEAR	1	2	3	4	5	Total
Hardware Depreciation	(27,500)	(27,500)	(27,500)	(27,500)	(27,500)	**(137,500)**
Software Depreciation	(9,000)	(9,000)	(9,000)	(9,000)	(9,000)	**(45,000)**
Integration/Installation	(5,000)	-	-	-	-	**(5,000)**
Service Contract	(7,500)	(7,500)	(7,500)	(7,500)	(7,500)	**(37,500)**
Training	(3000)	(500)	(500)	(500)	(500)	**(2,500)**
TOTAL COST	**(52,000)**	**(44,500)**	**(44,500)**	**(44,500)**	**(44,500)**	**(227,500)**
Labor Savings	178,500	178,500	178,500	178,500	178,500	**892,500**
Fuel Savings	8,125	8,125	8,125	8,125	8,125	**40,625**
PRE-TAX INCOME	**136,625**	**142,125**	**142,125**	**142,125**	**142,135**	**705,125**
Income Tax at 34%	(46,452)	(48,323)	(48,323)	(48,323)	(48,323)	**(239,744)**
NET INCOME	**90,173**	**93,802**	**93,802**	**93,802**	**93,802**	**465,381**

ROI is the average income as a percentage of the cost of the project.

The capital cost of the program is the system elements that can be recorded as a capital expense by the organization and depreciated over the life of the project. Do not include the service contract or miscellaneous costs here. They are reflected in the net income figure.

A Simple Formula:

$$\frac{\text{Savings + Revenue}}{\text{Costs}} = \text{Return On Investment (ROI)}$$

Once the bottom figure is divided into the top figure, you get the ROI.

So how does our sample project come out?

$$\frac{\$465{,}381}{\$227{,}500} = 204\%$$

This is telling you that over our 5-year period, we will earn over 200% on our investment!

Most companies will look for an ROI of 25% before they even consider a sizable capital investment. This 200% ROI may actually be conservative for this type of project – there are a number of costs and benefits that were left out for the sake of simplicity – but you may actually be hit with a sense of disbelief when you present this. With an ROI this big, you're going to have to justify it heavily to overcome the decision maker's skepticism.

Step 5: Calculate Payback Time

Payback time is the period it takes to recover the cash cost of the project. Payback is always expressed as a period of time, such as 1.5 years. To calculate payback time, one first needs to develop a project cash flow statement. This basically takes information entered into the project income statement and displays it without the depreciation expense. In this case, the full cost of the system is included in the first year.

Project Cash Flow Statement

Year	**0**	**1**	**2**	**3**	**4**	**5**	**Total**
TOTAL COSTS	**(195,500)**	**(8,000)**	**(8,000)**	**(8,000)**	**(8,000)**	**(8,000)**	**(227,500)**
Labor Savings		178,500	178,500	178,500	178,500	178,500	**892,500**
Fuel Savings		8,125	8,125	8,125	8,125	8,125	**40,625**
Income Tax		(46,452)	(48,323)	(48,323)	(48,323)	(48,323)	**(239,744)**
NET CASH FLOW	**(195,500)**	**132,173**	**130,302**	**130,302**	**130,302**	**138,302**	**457,881**
NET CASH SAVINGS	**(195,500)**	**(63,327)**	**66,975**	**197,277**	**327,579**	**457,881**	

One simply uses the information from the income statement and plugs it into the cash flow. The column headed "Year Zero" represents the initial cash outflow for the system. Then plot the costs and savings over the five year life of the project. It is assumed that the service contract and miscellaneous costs are paid in advance for the year. Savings and tax are counted at the end of the year.

Payback Time

The math for payback time looks more like a grade school assignment. One looks at how many full years are divisible into the initial cost. In this example it is one year, so in this example it is one and something years. We then subtract the savings for all full years from the initial cost outlay and divide the result by the savings for the next full year.

In our example above, the payback time works out to about 1.5 years.

Step 6: Selling the Project to Management

At this point a huge amount of data has been amassed to support the project. Now it is time to present it in a format that will convince the decision makers in the organization that the project is worthwhile. This will vary in form and can be a written proposal or a PowerPoint presentation. The key points to consider when presenting your solution are:

- Know the audience
- Emulate success
- Quote the experts
- Outline the solution
- Present the numbers
- Show it around
- Convincing the decision makers

Start by thinking about the people who will read and respond. If they are less technical, make sure any technical issues are presented in clear, simple terms that are easy understood. If possible, acquire a sample proposal that has been approved and emulate what made it successful in terms of presentation. If the organization uses a specific template for proposals, make sure to follow it. Draw on the interviews conducted in the discovery process to quote participants on the current and improved solution. Make sure to confirm any quotes before making the presentation.

Outline the solution with an emphasis on how it solves existing problems and results in savings. Here is where to include primary, secondary and tertiary benefits to show that the mobile project delivers both hard and soft savings. Having described the solution and benefits, it is time to “close the sale” with the numbers. Show ROI and payback time and cash flow if necessary. Again, try to get the support of someone in finance to help with the numbers. This can be very beneficial.

Show the proposal around for feedback and comment, it will allow objections to surface that can be covered before presenting it to the decision makers. If the proposal needs to verbally presented, make sure to have a clear outline and to be comfortable with all the data included. One needs to be “the expert.” By analyzing the current process and developing a solution that brings both hard and soft solutions to the organization, one has created a very compelling argument for the mobile project. Have confidence in all of the work performed to make the case. Confidence also sells a project.

About LinksPoint

LinksPoint provides Location Powered Solutions built around three enabling technologies – Global Positioning System (GPS), Geographic Information Systems (GIS) and Mobile Computing. LinksPoint helps enterprises work more efficiently with solutions for vehicle tracking, navigation and field data collection. LinksPoint's products are used by transportation companies, utilities and government agencies. LinksPoint technology was used by the FDNY at Ground Zero, an application that won the 2002 Exemplary System in Government Award from the Urban and Regional Information System Association (URISA).

Products & Services: LinksPoint tools make mobile workers more productive including, *GlobalPoint RouteTrak™, GlobalPoint AVL™, Field Data Collector™* and *Destinator™*. The company also manufactures the *GlobalPoint GPS™* line of specialized GPS receivers for mobile computing devices and ruggedized handheld computers.

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