

GEO-BASED PROJECT MANAGEMENT: WHY “WHERE” MATTERS IN A FIRST NATIONS CONTEXT

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WHILE MANAGING CONSTRUCTION PROJECTS IN FIRST NATIONS COMMUNITIES PRESENTS CHALLENGES COMMON TO MOST OTHER CONSTRUCTION PROJECTS AROUND THE WORLD, MANY OTHER PROJECTS IN SUCH AREAS AS CAPACITY DEVELOPMENT, ECONOMIC DEVELOPMENT, PUBLIC HEALTH AWARENESS, CIVIL SOCIETY AND GOVERNANCE STRENGTHENING PRESENT UNIQUE CHALLENGES. FOR EXAMPLE, THE ACTIVITIES IN SUCH PROJECTS ARE OFTEN CONDUCTED IN MULTIPLE LOCATIONS SPREAD ACROSS A WIDE GEOGRAPHICAL AREA.

Such projects can also include activities as diverse as training, construction and even software development, all contributing to a single project or program objective and all having to be managed simultaneously. Such projects also often have multiple stakeholders, each with their own unique contributions to make but also having their own agendas, reporting and information requirements.

Juggling all these demands in a complex project presents First Nations project teams with unique challenges requiring tools and skills complementary to the ones they employ as financial managers. Consequently, we can think of a complex project as having one or more of the following characteristics: multiple stakeholders, widely dispersed activity locations (from the project management office), various delivery agents and/or multiple funding sources.

In North America, the profession of project management is regulated primarily by the Project Management Institute (PMI) through their stewardship of the Project Management Body of Knowledge (PMBOK), now in its fifth edition.¹ The PMBOK emerged from the construction industry, but it is now practiced in virtually every enterprise where projects must be managed successfully.

Having emerged from the construction industry – where most if not all the activities in a project take place on the same building site under the direct supervision of site managers, foremen or works and quantity surveyors – the PMBOK has yet to deal with the extra challenges of managing complex projects where the activities take place in multiple locations, sometimes widely dispersed (such as capacity or resource development projects in First Nations communities spread across Canada).

LESSONS FROM AFGHANISTAN

A useful example in this case is the program of reconstruction in Afghanistan, where I served as CEO of the Afghanistan Information Management Services (AIMS). In Afghanistan, there are many thousands of projects being undertaken by many hundreds of agencies across all of the eight development sectors and in all 34 provinces of the country. Many of these projects are funded independently by foreign donors, while many more are funded and managed by the Government of [the Islamic Republic of] Afghanistan.

Each project has different beneficiaries, stakeholders, donors and implementing agencies, but each one should be contributing in some way to the objectives of the National Poverty Reduction Strategy Paper (PRSP), which forms the basis of the national development strategy. It is a vast program with many moving parts and a vast array of actors.

WHY “WHERE” MATTERS

What we learned in Afghanistan is that project management systems offer us a wealth of information about the project budget, the project schedule and the project resources from which many useful projections such as earned value and projected budget to completion can be derived. In situations such as a construction project, where the project management team can see the actual results of each activity and can physically confirm the completion of each project milestone, this information is sufficient.



In a widely dispersed First Nations project such as a regional economic development initiative where project activities are widely dispersed and may be of a less tangible nature, the project team needs the added information about the planned location of each activity to manage effectively.

Activity location, or the lack of it, played a key role in one example in the education sector of the Afghanistan reconstruction program. In the weeks and months following the defeat of the Taliban, Afghanistan was flooded with NGOs and international development agencies keen to make the lives of ordinary Afghans better. Education was high on the agenda, so many agencies began building schools.

Figure one shows the school construction situation in a small part of Nangarhar Province in June 2009. All the blue symbols represent operating schools with teachers, students and test results. All the green symbols represent planned schools on the project register of the Ministry of Education. The red symbols represent schools for which projects were documented but for which no teachers, students or test results were recorded. The photograph inset into the map is the supposed location of one of those schools in Nangarhar Province for which six separate project documents were recorded by six separate donor agencies with a total value of \$1.2M in construction costs, but no school was ever built there. The same situation to varying degrees existed at each of the other red symbol locations.

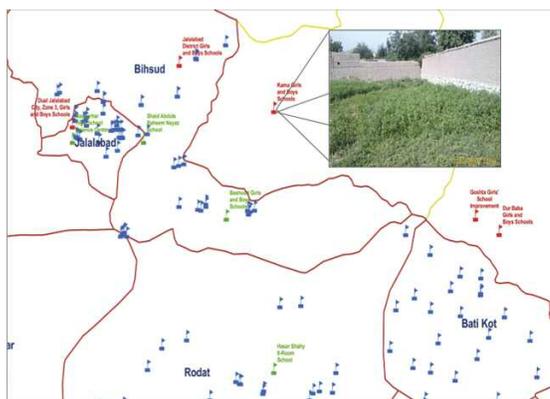


FIGURE 1: NANGARHAR PROVINCE SCHOOLS

The Afghanistan school project failure is a clear, if extreme, example of why “where” matters in the context of geographically dispersed projects and programs. By knowing precisely where a project activity is planned, and then using simple technology such as a smart phone application (discussed in more detail below) or satellite imagery to verify project progress, the project team can maintain situational awareness and avoid failures.

In Nangarhar Province, six different and well-meaning financial officers from six different nations all signed off these projects as complete because their financial reporting systems did not flag any issues to them. Given that neither financial nor project management systems deal explicitly with “where” activities occur, this is not surprising.

Figure 2 depicts the “golden triangle” of geo-based project management. The golden triangle creates a relationship between the planned location of activities on the project map, the exact nature, duration, expected output and resource requirements of those activities in the project plan and the actual location of the resources required to perform the activities – resources being human, material and financial.

If the resources required to perform the activities are in the right location at the planned time for the planned duration, then there is at least a reasonable assumption that the activity was performed and that there will be an outcome. Had any of the six project teams involved in the Nangarhar schools example had this capability, flags would have been raised early in the projects, and monitoring teams would have discovered the problems immediately.

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WITH GEO-BASED PROJECT MANAGEMENT, USING THE GOLDEN TRIANGLE, THE FIRST INDICATOR OF A POTENTIAL PROBLEM CAN BE ALMOST IMMEDIATE, GIVING THE PROJECT TEAM THE OPPORTUNITY TO INTERVENE IN REAL TIME.

FIGURE 2: THE GEO-BASED GOLDEN TRIANGLE



That project resources are on site as expected is of course no guarantee that outputs or deliverables will meet quality expectations. Quality assurance and quality control teams sent to remote locations to monitor project output quality are expensive and can make some projects unaffordable. There are however some smartphone technologies available that can fill the quality assurance role, even in the hands of inexperienced project officers.

FIGURE 3: PROJECT MONITORING USING SMART PHONES

By having the golden triangle in place, the use of simple smartphone project monitoring applications becomes possible. Knowing exactly where an activity took place, and exactly what its outcome or deliverable was expected to be, a project monitor can be sent to that location with specific data collection tasks to perform. The tasks can include capturing a series of images of the results of the activity, interviewing beneficiaries using a digitized survey form or confirming data fields from the main project database.



All of these data are location, time and date stamped, then dynamically uploaded to the project server to become part of the project record (shown in Figure 4). The project team then has immediate access to it, and if necessary can publish it for review by project stakeholders via a project website.

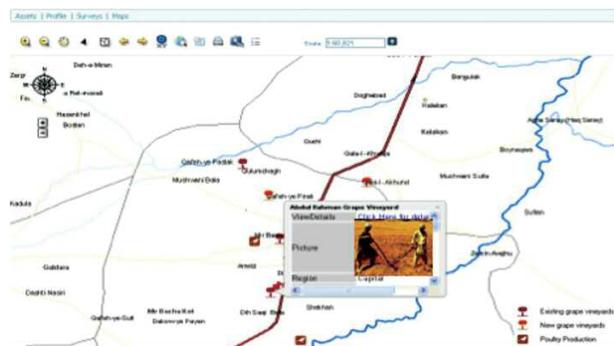


FIGURE 4: GEO-BASED ACTIVE PROJECT PROGRESS REPORTS

Active progress reporting (APR) narrows the gap or lag between the planned activity and knowing the actual result. Typically a project managed primarily via financial data will have at least a 30-day and more often a 60-day lag in data that might indicate a problem. In a low tolerance situation where either the budget or the schedule is constrained, it may be too late to intervene at this point.

With geo-based project management, using the golden triangle, the first indicator of a potential problem can be almost immediate, giving the project team the opportunity to intervene in real time. Meanwhile, active progress reporting will detect a quality defect in time for effective remediation before milestone or project sign off.

The cumulative effect of geo-based project management is a common operating picture in which all members of the project team have shared situational awareness that can also be shared with project beneficiaries and stakeholders as required. The impact of this unique project management and information-sharing environment is powerful.

- » Geo-based project management reduces the frequency and length of coordination meetings by enabling rapid, evidence based decision making on the key project indicators: schedule variance, budget variance, quality variance and change management.
- » Armed with the same facts and understanding, project team members are noticeably more effective and efficient in their work throughout all five stages of the project management lifecycle. Stakeholders, especially financiers, remain confident in the project even in the face of challenges or delays, and the team spend far less time in stakeholder management.
- » Finally, if project changes are required there is a body of evidence available to support evidence-based changes that make sense to all parties and contribute to the ultimate success of the project.

GEO-BASED PROJECT REPORTING

Project stakeholders (beneficiaries, financial institutions, project champions and governance bodies) increasingly require clear, quantifiable and verifiable evidence of both project outputs and outcomes on an ongoing basis as a condition of their continued support. The monitoring and evaluation, or M and E, activities required to satisfy the different project stakeholders can be onerous and time consuming, and in some cases intrusive to the point of impeding project delivery.

Stakeholders often want different information on different schedules in different formats, and not infrequently they want it yesterday. This is a challenge common to both First Nations and international development projects, and one for which geo-based project management offers some innovative solutions.

It is useful to reiterate the difference between project monitoring, which confirms that project outputs have been delivered on time, on-budget and to the quality standards specified, and project evaluation, which seeks to determine if the project objectives were met in that the desired effects or outcomes were achieved. While the project may meet every one of its deliverables on time, on-budget and above the quality standard, in the case of capacity building or governance projects the effects or outcomes may not be noticeable for years after the project is delivered.

Because project monitoring is an ongoing process in geo-based project management, with the golden triangle and active progress monitoring in place, the project team has near real time situational awareness. This overcomes the problem of lag indicators and makes immediate interventions possible regardless of how geographically dispersed project activities might be. Besides the obvious advantages of active progress reporting and the common operating picture it creates within the project team, geo-based project management supports project evaluation in some other important ways.

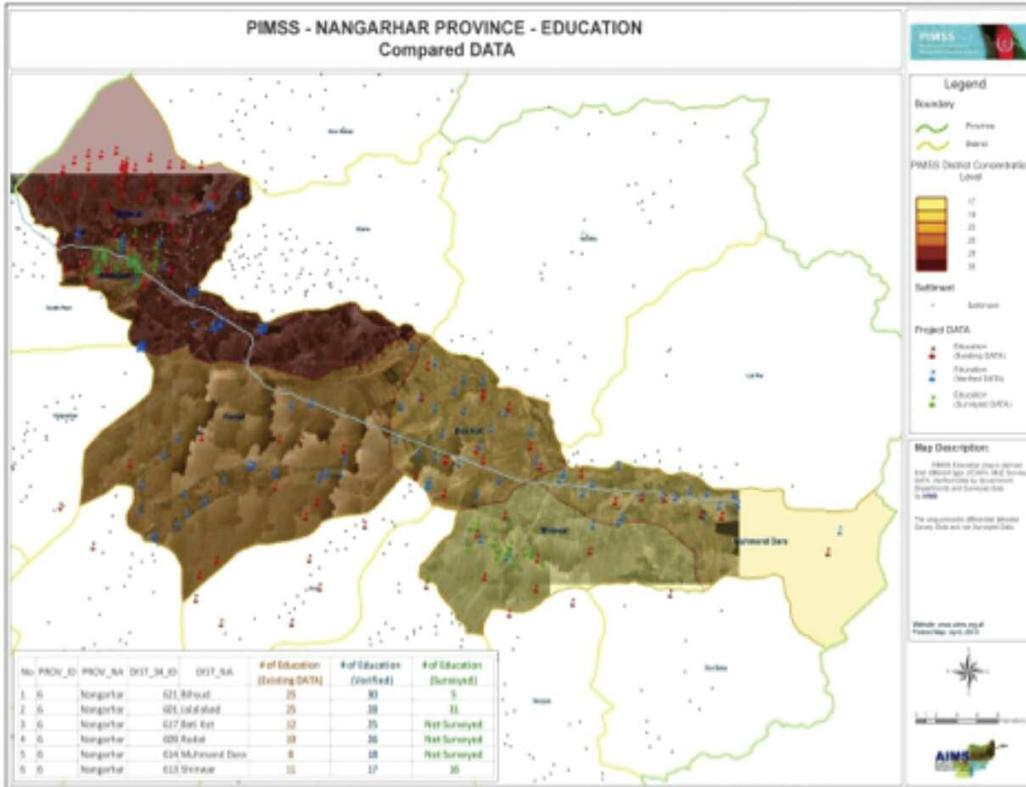
The geographic information system (GIS) that supports project-mapping functions is also capable of rendering very informative thematic maps. These maps depict trends as map overlays and allow important data to be extracted as a result. While graphs and tables indicating project status are useful to project management professionals, nothing conveys project progress or challenges like a thematic map.

With the aid of geo-based project management, the example in figure 5 depicts the relative success in school building in Nangarhar province after the hard lesson of the \$1.2 million. The red school symbols are projects in crisis that will not be ready for the new school year. Blue schools are operating, and green schools are on schedule and on budget. This map was automatically generated from the geo-based project management system in a matter of minutes and was used by Afghanistan's Minister of Education to brief cabinet in response to a question from Parliament the previous day.

STAKEHOLDERS OFTEN WANT DIFFERENT INFORMATION ON DIFFERENT SCHEDULES IN DIFFERENT FORMATS, AND NOT INFREQUENTLY THEY WANT IT YESTERDAY. THIS IS A CHALLENGE COMMON TO BOTH FIRST NATIONS AND INTERNATIONAL DEVELOPMENT PROJECTS, AND ONE FOR WHICH GEO-BASED PROJECT MANAGEMENT OFFERS SOME INNOVATIVE SOLUTIONS.

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FIGURE 5: GEO-BASED PROJECT THEMATIC MAPS



Data can also be combined in order to perform deeper analysis and evidence based evaluation – the “E” in the M and E process discussed earlier. For instance, most of the Statistics Canada demographic data are openly available, and by overlaying project data on these base layers, the software can drill down through it to identify trends or changes.

For example, a project to enhance Aboriginal inclusion in the extractive industry workforce in a particular region could be mapped to see the correlation between skills development projects and overall increases in average household income, occupational health and safety trends, public health improvements, increases in literacy and school matriculation. With such information in hand, the direct benefits of skills development projects and directed hiring programs can be mapped and understood, and where changes are required they can be made intelligently, based on the evidence.

CONCLUSION

The prosperity of First Nations communities emerges through the projects they undertake to develop their resources, their human capacity and their civil societies. The success of such projects will dictate the quality and sustainability of that prosperity going forward.

There are significant challenges to managing these development projects successfully in multi-stakeholder contexts and over vast geographic areas. Project teams need management tools, in addition to sound financial management, to help them succeed. The skills, tools and techniques that constitute the profession of project management provide some of the answers. Geo-based project management provides the rest.