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Introduction

Purpose

I began researching “big data project management” when I started seeing publications and online discussions concerning big data project “failures” being attributed to the classic reasons for project failure such as scope creep, poor stakeholder engagement, and inadequately understood requirements.

“What is it about “big data” projects that invites failure?” I wondered, thinking that rapidly evolving data management technologies and increasing interest in better analytics might be putting strain on “traditional” project management approaches.

Having long been connected as a consultant or employee with projects and organizations involved in data management, distribution, or access, I decided to research the topic of “what’s different” about big data projects, especially those that involve new data management architectures or more sophisticated analysis requirements.

Much of what I’ve found from interviewing colleagues and experts I’ve published on [my own website](#). Some of the most relevant articles are included in this document.

Acknowledgements

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I’ve benefited greatly from the diversity of experience and opinions of this group. Naturally, any errors or misunderstandings are my own.

Next Steps

I’ve been a project manager and management consultant for several decades and have moved from an initial focus on statistical and quantitative research to database publishing, systems integration, and IT strategy work. While I’ve found that “big data” projects are making use of newer technologies that are undergoing a variety of different learning and adoption curves, the processes of how one manages a big data “project” or develops a big data “program” may not be that different from managing other tech-related projects.

What is different, I’m finding, is the planning that needs to take place at the front end, balanced with the need to deliver results rapidly while maintaining a reasonable focus on enterprise level data governance.

I’m now turning my attention to understanding how this planning process can be implemented so that the projects that emerge from the planning process are effective, efficient, and successful. Please contact me if you need help doing this.



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The Tip of the Spear: Connecting Big Data Project Management with Enterprise Data Strategy¹

Introduction

In [Meeting the Mission of Transportation Safety²](#), Richard McKinney, U.S. Department of Transportation's CIO, describes four components for what can be called an "enterprise data strategy":

- Data governance
- Data sharing
- Data standards
- Data analysis

He also mentions additional factors relevant to DOT's data strategy:

1. The volume of data is increasing and we need to be ready for it.
2. Managing data is not the same as analyzing it.
3. We need to be thinking now about what type of analysis we need to be doing and what resources will be needed to do the analysis.

Based on the 20+ personal, telephone, and email interviews I've conducted so far as part of my [big data project management³](#) research I would add a fourth item to McKinney's list:

4. We need to devote at least as much time to planning and managing the people and business processes that make data analysis possible as we devote to

the analysis process itself and the technologies that support it.

This Paper's Target Audience

This paper is for managers and executives who are looking for ways to add "big data" benefits to their organization's operations.

Perhaps the organization is experiencing a significant increase in the type and volume of data it is generating and wants to make sure it points its evolving analytical capabilities at addressing its most important goals, objectives, or problems. Or, perhaps the organization just wants to do a better job of making use of the data it already has.

Tip of the Spear

If data analysis is Big Data's "tip of the spear" when it comes to delivering data-driven value to customers or clients, we also must address how that spear is shaped, sharpened, aimed, and thrown – and, of course, whether or not it hits its intended target.

Management needs to involve *both* business and technical resources in its planning process. While a variety of technical skills and capabilities may be required to develop and govern an effective data analytics program, the focus of this and the other reports in this series is not on technology or analysis tools *per se* but on how to make sure that data analysis and data governance processes are driven by business requirements and the delivery of practical benefits to the organization.

Challenges

Making the data analysis process – the tip of the Big Data spear -- effective and efficient is

¹ Published Nov. 18, 2015:
<http://www.ddmcd.com/spear.html>

² http://www.businessofgovernment.org/sites/default/files/Insights_McKinney.pdf

³<http://www.ddmcd.com/bdpm>

where good project planning and management come in. Challenges to doing this in connection with data intensive projects are many and include:

- **Siloes.** Data are often generated and managed in system- or mission-specific siloes. As a result, creating and implementing an effective enterprise-level data strategy that rises above and encompasses multiple programs, systems, and/or missions requires not just data analysis skills but a mix of technical, organizational, and political skills – not just good “project management.”
- **Sharing.** Making data accessible and useful often means that data need to be shared with systems and processes outside the control of those who “own” the data to be analyzed. Key steps in sharing data are that (a) data need to be identified and inventoried, and (b) technical and business ownership of the inventories data must be determined. In many organizations this inventorying is easier said than done and may require both manual and automated approaches to creating the necessary inventories.
- **Standards.** Efficient and sustainable analysis of data and metadata may require development or implementation of data standards. Existence and use of such standards differs by industry, data type, and system. The costs for developing and adopting standards to facilitate data sharing and analysis will also vary and may have cost and schedule implications at the project, program, enterprise, and industry or community levels.
- **Delivering value.** Modern data analysis tools and techniques provide mechanisms to identify patterns and trends from the increasing volumes of data

generated by a steadily widening variety of data capture mechanisms. Challenges in predicting what will be found when data are analyzed places a premium on making sure we are asking the right questions. This in turn impacts our ability to justify project expenditures in advance.

Portfolio Management

Responding to the above challenges requires not only project management skills but also a project planning process that takes into consideration the organization’s goals and objectives.

As one of my interviewees suggested, the challenge faced in complex “big data” projects has just as much if not more to do with overall strategy and “portfolio management” as with how individual projects are planned and managed. Effectively designing and governing a portfolio of projects and processes requires not only an understanding of how the portfolio supports (relates to, is aligned with, interacts with) the organization’s objectives. It should also incorporate a rational process for defining project requirements and then governing how the organization’s resources are managed and applied over time.

Given how pervasive and fundamental data are to an organization’s operation, skill in data science and analytics is a necessary element but will not be in many cases be a sufficient contributor to success. Technical and analytical skills must be accompanied by effective planning, oversight, and management in order to ensure that the data analysis “spear” is being thrown in the right direction. While it is not unusual to assign responsibility for big data projects to the IT department, both business and functional leaders from outside will also need to be involved.

Delivering Value Quickly

Ideally a defined portfolio of projects will support an organization's strategic plan and the goals or missions the organization is charged with pursuing. In the real world, though, we can't spend all our time planning, we may also need to "get tactical" by delivering value to the customer or client as quickly as possible.

In organizations that are not historically "data centric" or where management and staff have a low level of data literacy, an early demonstration of value from a targeted data analysis initiative will be important.

Balancing Tactics and Strategy

Unfortunately, challenges such as those identified above in many cases cannot always be addressed effectively in tactically focused short term projects. For example, convincing "data silo" owners to cooperate may take time given how the organization has been traditionally structured and managed.

Attention to enterprise-level data strategy while delivering useful results in the short term has implications beyond what is being attempted in an individual project's scope. Treating data as an enterprise resource may even require changes to how the enterprise itself is managed.

As we all know, it's not unusual for change to be resisted!

It's not unusual for a tactically-focused project that's delivering a practical data-based deliverable to uncover the need for a more global (or strategic) approach to managing data, metadata, data security, privacy, or data quality. In such instances it makes sense for the project manager, when communicating with project stakeholders to clearly identify strategic concerns along with reporting on current work. Experienced project managers will already be doing this.

An effective enterprise level data strategy will be one that balances the management of a portfolio of individual data intensive "agile" projects with parallel development of an upgraded enterprise data strategy and governance process. Doing one without the other could have negative consequences, for example:

- Focusing only on a narrowly defined data intensive analytics project by itself may generate immediate value through frequent useful deliverables but may not address underlying technical process issues that impact long-term efficiency and sustainability.
- Focusing only on an enterprise data strategy without delivering tactical benefits reduces the possibility that that less data-savvy managers understand the "big picture" down the road.

As experienced project managers know, concentrating on "quick and dirty" or "low hanging fruit" when under the gun to deliver value to a client in the short term *can* generate short term benefits.

They also know this approach can actually increase costs over time if strategic data management issues related to data standards or quality are repeatedly kicked "down the road."

Also, delivering a "strategy" without also engaging users in development of real-world analytical deliverables might also mean that strategically important recommendations ends up gathering dust on the shelf somewhere.

Communication Strategy

As experienced project managers understand, one of the most important ingredients in successful project management is communication among project staff, communication with the client, and communication with stakeholders.

Even when focusing on delivering incremental value quickly, we need communications about project activities, especially among key stakeholders, to focus *both* on tactical as well as strategic objectives. This may require accommodating a variety of communication styles as well as different levels of data and analytical literacy, especially when both business-focused and technology- or analytics-focused staff are involved.

The project manager must think carefully about what it will take not just to deliver a useful result now but also what it will take to make sure that participants and stakeholders understand the meaning and significance of what is being delivered. This may be straightforward in organizations that are already engaged in heavily data-centric activities. In other types of organizations more explanation and learning will be required.

Where to Start

A planning process that takes into account how the unique needs of the organization interact with an improved data management strategy is what is needed. Working without a plan that links improved data management with both tactical and strategic benefits is a recipe for, at best, wasted time or money. At worst, working without such a plan can lead to financial or organizational disaster.

In the case of big data, a revolution *is* occurring both in the management of steadily increasing volumes of data and in how data are organized, stored, and analyzed. Even managers of very traditional data collection and publishing operations are seeking ways to improve how they manage and use data based on what they hear about the potential for "data science" and "data engineering."

What I've been finding, though, is not that project management practices need to change. Instead, what organizations want and need to accomplish through improved data access and management needs to be better defined -- and ideally, quantified -- so that investments in time, technology, and other data-related resources are planned and made wisely.

This means that the "front end" of the project and program planning process needs to address fundamentals such as business requirements, business strategy, use cases, return on investment, and the related issues of security, privacy, standardization, competition, and innovation.

Whatever specifics are being addressed in the short term, the strategic implications of improved data management need to be addressed as well. We may find, for example, that what is needed initially is not a move to an entirely new data management architecture but the creation of business processes that make better use of the data resources that currently exist.

What's Next

Among other things I'll be turning my attention next posts in this series to address this planning process more specifically, possibly beginning with the relationship between communication and requirements definition.

Problems and Opportunities with Big Data: a Project Management Perspective⁴

Being able to make wise investments in "big data" capabilities may require more collaborative approaches to project management and decision-making than are currently being practiced. Two recent articles illustrate this:

- [Big data's big problem: How to make it work in the real world](#)
- [From DevOps to DataOps](#)

The first article states an often heard complaint that, despite much marketing hype, real-world examples of big data value are few:

"It does not help when so-called experts suggest that an information revolution is changing--and will continue to change--the nature of the workplace itself. Big data projects can have a transformative effect on business operations and processes. Yet evidence of a knowledge lead revolt in the offices of global blue chips is thin on the ground. Instead large organizations seem to be drowning under a sea of information."

The second article focuses on the opportunity side of the equation. It addresses how technology management needs to evolve in the face of growing technical data handling capabilities:

"From the top of the stack, more users want access to more data and more combinations. And from the bottom of the stack, more data is available than ever before--some aggregated,

much of it not. The only way for data professionals to deal with pressure of heterogeneity from both the top and bottom of the stack is to embrace a new approach to managing data that blends operations and collaboration to organize and deliver data from many sources to many users reliably with the provenance required to support reproducible data flows."

My own interest -- making organizational data [more open and accessible](#) to both internal and external user groups -- dovetails with both perspectives.

Both views show how people are grappling with the challenge of using modern tools to make sense of the increasing volumes of data in digital form. If there is no clear understanding of what benefits will flow from big data investments, investment justification will be a challenge. Anyone who has ever sold a new tool or technique understands this. This is why practical demonstrations and understandable testimonials are so important.

It is clear that tools and technology are improving in ways that can make sophisticated data usage more accessible and immediate to those with the necessary knowledge. For example, the turnaround time for processing large amounts of data is dropping as new platforms and tools are introduced. Processing speed and the ability to combine analyses of different data types can be documented objectively and technically.

One question is, can we demonstrate the real world benefits of such techniques in meaningful ways without requiring management to possess data science degrees? Just talking about the benefits of speed and volume in technical terms is not enough. Showing how these benefits

⁴ Published July 23, 2015:
<http://www.ddmcd.com/dataops.html>

translate into useful insights and support for useful planning and decision-making is required.

Healthy skepticism

The first quotation above reflects a healthy skepticism brought on by much of the hype surrounding big data. Such skepticism is a good thing if it forces proponents to articulate the “whys” and “wherefores” instead of just the “how-tos” of big data. This need for proof is why supportive “case studies” are in such demand at meetings and conferences. Consultants and vendors understand this and is why so many stories about big data “successes” are industry sponsored.

The second article’s emphasis on infrastructure is typical of tech-oriented solutions that focus more on the technology side of the equation. Yet there is more here than just a veneer of newness. Combining “big data” with “DevOps” makes great sense. I especially like the emphasis on the need for communication and collaboration which are critical to figuring out how best to grapple with taking advantage of powerful new tools.

Déjà vu

I have a sense of déjà vu when reading articles like these. “Tech hype” has always been with us. Mature tech managers and their bosses long ago mastered the art of healthy skepticism when hearing vendors expound on new technologies. A “show me” attitude is a healthy one to promote especially when price tags are high, a lot of changes are required, and business value may be difficult to pin down.

There's always a lot of faith and trust required at this stage of technology adoption. That tech vendors are investing heavily in tools, advertising, marketing, and hype need not divert us from asking the tough questions. Inevitably discussions about how best to take advantage of

new tools will lead to serious discussions about strategy, governance, quality, and costs.

Pushback

Pushback from the organization can come in many forms ranging from good old-fashioned resistance to change (how many times have we heard, “You've got to change the culture!”) to major implosions of high-profile projects or vendors. What may be different this time around with big data may be the speed with which new tools are introduced and the seeming ease with which tools can be used to analyze and visualize vast amounts of data quickly.

Range of changes

New data tools and technologies may also stimulate the need for changes to current management processes which, more often than not, generates pushback from those being changed. Adopting big data tools and process changes may be associated with a range of organizational changes including:

- The move to cloud services as a replacement for current infrastructure.
- The need to learn new tools and techniques.
- Resistance from business process owners who don't want to change.
- Overemphasis on tools and technologies while shortchanging business and strategy.
- The need to align data services with core business needs, not just with “easy to do” and “low hanging fruit” initiatives.

While it's important for IT staff to understand new data tools, employees and managers in all functional areas are impacted and must be able to articulate what they want from the data and from the new tools.

This is where the need for collaboration and communication emerge along with the need for basic project management techniques and support. Stakeholders need to be identified and brought on board. Resources need to be allocated and managed. Progress needs to be tracked and reported in some fashion. New products and services need to be aligned with goals and objectives that are important to the organization. Inevitable changes need to be addressed as learning takes place. Most important, project goals and objectives need to be clear and understandable to all.

No best practices

I think that, regarding the first article cited above, skepticism is healthy but needs to be specific to the organization's needs, not general. Searching for "best practices" and examples of whether or not other organizations are able to take advantage of big data applications may have little relevance to one's own organization. Understanding one's own needs and requirements must be the starting place, otherwise we run the risk of doing the "same old things" only with new tools.

One criticism of the second article is related to this. That is, while I do believe that we may need to re-think how we manage infrastructure and IT services to take advantage of new tools, services, and platforms, we also need to pay attention to how priorities are set and initiatives managed. Again, that's basic project management and points out the need for communication and collaboration in how priorities are set and how solutions are implemented.

Whether we call this "DevOps" or "DataOps" is not the issue. The issue is whether or not we can effectively manage projects and programs that take advantage of big data while involving *all* necessary stakeholders throughout every point in the data value chain, not just IT staff and data analysts.

Data literacy and strategic alignment

If it is inevitable in today's fast paced world that many fingers are going to be stuck in the "data management pie," we need to make sure that the heads operating those fingers have a basic understanding of how data are generated, managed, and used; let's call this "data literacy." Without basic data literacy participants risk talking past each other with the end result being inefficiency, blind alleys, and disappointment.

The connection between better data services needs to be aligned clearly with the organization's goals and objectives. Again, this is a basic requirement for effective project management. Management, IT, and data analytics experts need to communicate and collaborate right from the start so that everyone is on the same page.

Acknowledgement

The author is grateful to Julia Glidden of 21c Consultancy Ltd for her helpful comments on an earlier draft of this article.

You Need a Project Manager on Your Big Data Team⁵

The firewalled article by Ian Thomas, [The seven people you need on your Big Data team](#), is an entertaining and insightful overview of needed technical skills if you are tasked with developing a team that "... takes data from various sources ... and turns it into valuable insights that can be shared broadly across the organization." The article's suggested team members, each nimbly described, include:

1. The Handyman
2. The Open Source Guru
3. The Data Modeler
4. The Deep Diver
5. The Storyteller
6. The Snooper
7. The Privacy Wonk

Thankfully, the article also includes a "bonus" eighth member: "The Cat Herder (you!)"

I'm hoping this eighth person also has project management skills. By that I am not referring to someone with just a "PMP" behind his or her name but to someone who understands project-related management, communication, and collaboration, as well as the things that tend to make data intensive projects special.

Here are my own first three "action items" from the project manager's perspective when faced with initiating a "big data" program. At minimum, doing these will impact whom you recruit.

Project Manager Action Item #1

The first thing I would do as a project manager would be to understand and gain agreement on "Why are we doing this?" Is the problem we're trying to solve really to set up a generalized corporate resource as suggested in the article's 2nd paragraph? Or are we trying to solve some more specific problems that the organization has already recognized and/or prioritized? The answer to this question will have a profound impact on how I recruit, what people start working on, resource requirements, and who needs to be "in the loop" with the team.

Project Manager Action Item #2

Next I would develop a schedule of defined deliverables along with a list of all the people needed to define deliverable requirements, to gain support for the work that needs to be done to generate them, and to evaluate their performance and acceptance. I'd make this schedule available -- and I would make sure that everyone understands that it will probably need to change as the program evolves.

Project Manager Action Item #3

Third, I would make sure the data we're managing is inventoried, its ownership and location defined, and its quality (including its metadata) assessed. Data extraction, quality, and standardization efforts may then have to be prioritized. How this prioritization is accomplished will be driven to a great extent by action item number one (and by the budget).

What's Next?

For the most part the above suggestions come straight from Project Management 101. They are leavened with a bit of the reality that data

⁵ Published August 26, 2015:
<http://www.ddmcd.com/team.html>

specific projects do require some special handling.

What do you think? Are there other specific steps the project manager should take at the outset of such a project that will impact team-building? Let us know in the comments!

Acknowledgement

Thanks to my friend Doug Brockway for suggesting the kernel of this article.

Big Data Project Management Research Report #1: Setting the Stage⁶

Introduction

I've been doing some preliminary research on what makes "big data" projects unique and what such differences might mean for successfully planning and managing projects where the goal is to make large volumes data accessible and useful.

I've started by asking [three basic questions](#) in a series of informal interviews:

1. Do you think that too much attention is being paid to big data tools and not enough attention to big data project management?
2. Do you think that big data projects pose unique or special challenges to traditional approaches to project management?
3. What advice would you give to a project manager tasked with starting up a big data program in an organization that operates with a mix of legacy and newer cloud-based systems?

Some of what I've learned so far does seem to be unique to data intensive projects. At the same time, many of the challenges posed by "big data" projects will be recognizable to project managers based on previous experience with other large or complex projects.

Scope

My focus is not on data science tools or on data analytics but on the work that needs to be done – perhaps "behind the scenes" -- to make tools and analytics usable and manageable. This work might involve changes to an organization's IT infrastructure or even a shift to using cloud based resources. Addition of staff with data-specific skills may also be required.

At minimum, projects – groups of related tasks that support accomplishment of a defined set of goals and objectives – will have to be planned, ramped up, and implemented.

Also, my initial focus has not been on changing the "culture" of a sponsoring organization by making it more "analytics-friendly" or "data-driven." While those may be real and important goals, my initial focus has been more tactical: figuring out what project managers need to do to deliver value by making an organization's data better organized, analyzed, managed, and used.

What follows are some initial impressions from my interviews with other project managers as well as some hypotheses.

Preliminary Findings

Below are some initial observations about planning and managing successful data intensive projects. Also included are some hypotheses to address in future research:

1. **Where will the value generated by the project be located?** Is the focus of the project on (a) internal IT systems and processes, (b) on the business units served by the IT department, or (c) on the provision of direct service to the organization's customers or users? Each of these focal points will impact how

⁶ Published Sept. 4, 2015:
<http://www.ddmcd.com/stage.html>

data and data related systems and processes interact with the project and how associated work will be managed and communicated.

- a. **Hypothesis:** Projects that focus on delivering value *outside* systems and processes controlled primarily by IT may require more complex planning and governance methods than those more externally focused. Business justification of more externally focused projects may have to extend beyond cost-saving (as is the case with some infrastructure focused projects) to metrics related more to organizational performance such as profitability or financial ROI.
2. **Is the project “self contained” or part of an ongoing operation or program?** A “traditional” type of systems-focused project generates a deliverable that combines data and software in support of a changed process of some sort. Sometimes the deliverable is an upgrade to an existing system or process. At other times the deliverable is a replacement involving significant changes to an ongoing operation or process. Some “big data” projects might make use of data in new or innovative ways but in the end might end up supporting fairly traditional users and decision-making processes. Other projects might require, in order to move out of the prototype or “sandbox” stage, a major change to how the organization manages or makes use of data.
 - a. **Hypothesis:** The more that existing systems and processes will be changed by a big data project the harder the project

will be to (a) justify and (b) implement.

3. **Where are we in the project’s lifecycle?** Are we in the planning stages of starting a big data project or program from the ground up? Have we gotten the go-ahead and are in the process of ramping up the project (e.g., gathering resources, communicating with stakeholders, identifying potential risks, developing a communication plan, etc.) Or, are we coming in “from the outside” as internal or external consultants and are being challenged with delivering value via a project or program that is already underway?
 - a. **Hypothesis:** Project planning and justification will vary significantly depending on whether the project is being started from the ground up or is being “added on” to ongoing projects or programs where the value of an added “big data” component is being considered.
4. **What is the level of the organization’s “project management maturity”?** Does the organization already support a formalized approach to project management? Examples of such formalism may include having (a) a formal process for project justification, (b) an established process for project review and reporting, and/or (c) a project management organization (PMO) that helps project managers to administer their projects. Or, does the organization treat project management as something technical experts are assumed to be able to do as part of their existing jobs?
 - a. **Hypothesis:** Organizations that already have (and actually use) established project management processes will be able to

accelerate the *adoption* of new “big data” systems and processes. Whether they are able to accelerate development of new systems and processes that focus on big data analytics is another question (see #5 below).

5. **What is the level of the organization’s “data management maturity”?** Does the organization already support a formalized approach to metadata and data standards development and administration? Are governance processes in place that address related data management issues regardless of departmental boundaries? Is a formal “data stewardship” program in place whereby individuals in different departments coordinate how changes to data definitions and standards are managed and adopted? Has the organization established a “chief data officer” position with real clout? Does top management view data as a strategic resource – and knows what that means?
 - a. **Hypothesis:** The lower the organization’s data management maturity is, the more the project will have to do in terms of basic data management in order to get the job done. This can be viewed as a problem as well as an opportunity.

Discussion

As suggested earlier I’m not focusing – yet -- on changes to the organization’s “culture” or to its existing view of data as a resource fundamental to how it does its work. There will be a wide variation in these depending on how important data already are to the organization’s mission. A single project, even if data-intensive, is not going to change that in the short term.

Organizations that *already* gather and manipulate data as a core service (e.g., social networks, e-commerce firms, government agencies that concentrate on managing environmental or financial data, etc.) may be better positioned to manipulate their core data to support analysis, modeling, and predictive applications than more traditional organizations that focus on manufacturing or supporting physical products.

Organizations that have a wide range of internal and external data resources to draw on may have to spend a lot on making data available and accessible for big data analytics. Therein lies one of the challenges of focusing on data as a deliverable: not knowing exactly what will come out of the analysis, especially if the project is pitched as requiring a fundamental change in how data are managed or manipulated. (Such uncertainty may justify incorporating a risk analysis in the project’s initial planning.)

So far my research has not focused on tools but clearly how tools are managed and used will make a big difference, especially tools that either (a) make it easier and less expensive to ingest or prepare data for analysis or (b) tools that allow for us to “make sense” from unstructured data. (I admit that past experience managing projects involving a lot of conversion and standardization of structured and unstructured data makes me wary of solutions that promise significant reduction in manual processing but I am open to being convinced otherwise.)

Big Data Project Management Research Report #2: What's In & What's Out?⁷

Here's something to think about when you're planning a big data project: are you planning a *project* or a *program*?

I'm finding it useful in my [research](#) to make such a distinction⁸:

- A **project** typically has a beginning, middle, and end.
- A **program** is something ongoing and relatively permanent.

Projects

Relatively self-contained big data projects may be tied to an ongoing process or program that is already developing or delivering a product or service. Defining the project's requirements and developing its business case will be linked to existing performance measures or metrics. Answering the following type of question should therefore be simplified:

"How will the big data project contribute to the existing program's success in terms of customer growth, customer satisfaction, profitability, or cost-reduction?"

Introducing big data tools or technologies to support an existing product or service can sometimes be viewed as a variation of "typical" system development project where software are being developed or adapted to support programs already understood and underway. Even

when the specific contribution that a new analytical process or service will make is unknown, understanding of the value of the product or service being supported will tend to reduce uncertainty by making it easier to understand whether the big data service is itself useful.

Programs

A project to support development of an enterprise level "data science" program to provide data analytics support to a range of departmental programs and initiatives will be different both in type and scale. How such a service program will be embedded in the organization and how it will be governed will be of strategic concern with potential long term consequences and significant system and process integration challenges. That such an enterprise level initiative will lead to consideration of enterprise-level data architecture and standardization should be expected.

An uncertainty in such an enterprise level project to develop an ongoing support program might be difficulty in developing a convincing ROI analysis. This is due partly to difficulty in predicting what the benefits will be of potentially innovative or untried analyses. Adding to this will be uncertainties involved in making changes to corporate data governance and changes to how data and applications are managed (for example, via shifts to the cloud from internally managed resources).

Discussion

In the real world the distinctions between these two "big data" project types may not be so cut and dried. Even a narrowly targeted big data project that focuses on direct support for a well

⁷ Published Sept. 15, 2016:
<http://www.ddmcd.com/inandout.html>

⁸ For more on this distinction see [Some Implications of the Overlap between Project and Process Roles](#).

understood product, service, or process will encounter system and data integration challenges that raise interesting governance questions. Some of these questions will inevitably be political in nature.

This should not be a surprise to anyone planning or managing such a big data project and suggests the need for both project management experience as well as data science and technical knowledge, as discussed in [You Need a Project Manager on Your Big Data Team](#).

Looking at the program level and potential integration challenges, a reasonable question to ask is, “How long till we see some benefits from this program?” I’ll be the first to emphasize the need to understand the relationship between any project and the organizational goals and objectives it serves. In many cases, though, we will be dealing with uncertainties in a variety of areas ranging from how to implement and manage new technologies to how to take advantage of new analytical powers.

Having been through several adoption cycles for new technologies myself I think the need exists not only for technical data science skills on the implementation team but also for leadership, sponsorship, and – most important in my opinion – the ability to demonstrate benefits and value early on.

One of my interviewees suggested the need for a “portfolio management” approach where one can compare and contrast a variety of initiatives in cost benefit terms. A practical example of this is how the GSA’s 18F program selects projects to address, discussed in [The Commerce Data Advisory Council’s 2nd Meeting: Storytelling, Staff Recruiting, and Complex Processes](#).

Given how data as a resource permeates all aspects of an organization it is tempting to propose a program development strategy that is all encompassing – and very expensive. This is

why, I think, that any program development strategy needs to focus early on delivering value while at the same time capturing what is being learned and feeding it back into the program development process.

“Boiling the ocean” by attempting to make too many changes early on is tempting. Incremental steps in delivering analytics-based value may actually accelerate change in the long run.

Understanding the Challenges of Big Data Project Management: The Business Case⁹

Recently I spoke about my research into big data project management "best practices." My talk was titled "Big Data Project Management: What Works?" A copy of the slide deck is [here](#).

In an ongoing series of informal interviews, I'm addressing two related questions:

1. What's **unique** about planning and managing big data projects?
2. What's **not unique** about planning and managing big data projects?

So far I've talked with several professionals about these questions including:

- A corporate CIO with heavy data orientation
- Project managers and consultants with "traditional" enterprise data management experience
- A data scientist/software developer
- A corporate project manager focusing on web analytics
- A consultant building an enterprise level logical data model for a government agency
- A project manager developing web and data portals for nonprofit organizations

What I'm finding so far is a mix of "standard" project management challenges as well as a few interesting wrinkles associated with data intensive projects.

Some of these challenges are listed in the two "findings" pages in the slide deck. What I discuss more specifically here is one factor that does seem to be emerging that is a combination of the old and new: **the challenge of developing a management-convincing business case for big data initiatives.**

Speaking from my own consulting and project management experience, the development of convincing business cases for tech-related initiatives varies in difficulty ranging from slam-dunk (really easy) to pie-in-the-sky (requiring guesstimates).

One approach is to package convincing cost and benefit metrics in a form that can be clearly understood by management. This in itself can be a challenge if the business case developer is technically or analytically competent but unaccustomed to thinking through things from a business as opposed to a technical or data orientation.

More serious is the challenges of convincing management of the value of something that by definition may involve risk and uncertainty, as might be the case where new tools and techniques are being introduced to take advantage of increasing data volumes and variety. This is a special type of justification problem and is impacted by how certain we are that the outcome of a "big data" initiative will be positive and useful. It may be impossible to predict the outcome before we do the work, yet we still have to convince management to commit to a resource investment with an uncertain outcome.

The first challenge -- knowing how to develop a convincing business case -- is something that can be taught or purchased. The second challenge -- knowing in advance what the out-

⁹ Published Oct. 1, 2015: <http://www.ddmcd.com/challenges.html>

come will be of a new data analysis or predictive modeling effort – – is more difficult to address and may be especially acute where management is not analytically oriented.

One way to address this second challenge is to start with something simple and not attempt a program- or enterprise-level change requiring modifications to the organization's culture.

As I suggested in my talk, don't start by proposing to "boil the ocean." Instead, new tools and techniques should focus on high-value, high-priority issues, ideally those where ways of measuring corporate value have already been established. The sooner one hooks into understanding and solving real-world high-value problems, the better.

This is not the same as going after low-risk "low hanging fruit" problems where you might be able to quickly prove technical feasibility but where, at the end of the day, you are still not showing something of real value to management.

Also, it's easy to get caught up in the power and flexibility of the data analysis and visualization tools that are now available. As hard as it sometimes for those of us who are technically inclined to admit, management doesn't necessarily care what tools we're using. Nor does management care how we manage our projects.

Management wants results. The sooner we focus our new data management and analytic methods on solving important problems, the better.

Understanding the Challenges of Big Data Project Management: “The Data Must Flow”¹⁰

I'm currently researching [big data project management](#) in order to better understand what makes big data projects different from other tech related projects. So far I've interviewed more than a dozen government, private sector, and academic professionals, all of them experienced in managing data intensive projects. What I'm finding is that professionals with experience managing such projects believe that big data projects do share characteristics with other types of projects.

Such similarities, however, have less to do with technology than with how projects are governed in relationship to other enterprise processes and systems. For example:

1. Much learning is needed. Many if not most organizations still have a lot to learn when it comes to making use of emerging big data analysis techniques. Understanding the potential costs and benefits of predictive and descriptive analytics is unevenly distributed throughout most organizations. Senior leadership support aside, this means that adoption of new analytical techniques and data sources as standard inputs to management and decision-making still has a long way to go and heavily dependent on what types of costs and benefits are experienced along the way. Organizations that are already to some extent "data-driven" in their decision-making will be better positioned to

adopt new techniques than those that are not already engaging with data analytics methods. Organizations that are not already data-driven will take longer to recognize and internalize big data benefits.

2. Data type matters. Data types that are already well defined and understood will more readily become adopted for and used by organizations than highly specialized or process-specific data. An example of the former: financial data subject to standard audit definitions and practices. An example of the latter: specialized process or transaction data that can be easily misinterpreted (or even misused) if made available without appropriate contextual information to support its interpretation.
3. Overlapping enterprise changes. It is often difficult to separate the planning and management of big data projects from other ongoing organizational changes. An example is pushing for making better use of data science techniques at the same time the organization is moving data management and application hosting to the cloud from in-house data centers. Scheduling and risk management in such situations becomes more complex given the sequence in which cost and benefit dependencies emerge.
4. “The data must flow.” As the emergence of corporate email did for previous generations, managing data at the enterprise-level forces management to face data ownership and data siloing issues that hinder managing data as an enterprise-level asset. Just as the impe-

¹⁰ Published Oct. 20, 2015:
<http://www.ddmcd.com/flow.html>

rial edict "the spice must flow" recognized the interdependency of the houses in the Dune universe, so too must "the data must flow" be the watchword in organizations taking a holistic view of data and its potential uses. This may be a complex undertaking in organizations where data management systems are not integrated or where organizational units have traditionally operated independently. Even where resistance to unified data governance is not highly politicized, basic differences in enterprise technology architecture may still have to be accounted for if managements wants to make data management more systematic and aligned with corporate strategy.

5. Enterprise portfolio management. Data governance needs to be integrated with enterprise portfolio management. What this integration will look like will necessarily vary from organization to organization. If we view enterprise portfolio management as a systematic planning and management of all corporate resources in alignment with corporate business and performance objectives, relevant data need to be viewed likewise as resources to be managed. That means that business process, technical project, and data management will all need to be integrated as projects are organized into programs for efficient management.

Managing data and metadata at an enterprise level to facilitate efficient tool use can be a complex undertaking. This is especially true when corporate actions such as transitioning IT resources to the cloud, constantly upgrading technologies, and increasing attention to privacy and security must also be considered. Such complexity should not be a cause for discouragement but should help drive the organization

to become more disciplined in how it generates value from its data.

If what Nate Silver said in [a recent presentation](#) is true – “Big Data has Peaked, and that’s a Good Thing” – perceptions about big data are maturing. Perhaps we *are* becoming better positioned now than before to make disciplined assessments of the costs as well as the benefits of big data.

Planning for Big Data: Lessons Learned from Large Energy Utility Projects¹¹

What can we learn from working with large energy utilities and their data that will help others plan and manage "big data" projects?

Let's first consider how "big data" projects can differ from the large database systems we're already accustomed to. They do have similarities. Implementing big data projects, especially those that are designed to connect with or support existing products or services, still requires careful planning, collaboration with stakeholders, capture and understanding of requirements, thorough testing before rollout, training, and support. Nothing new there.

But there are differences. Data volumes – potentially in the petabytes – may be such that traditional storage, networking, and data structuring approaches are insufficient. This requires consideration of how to supplement or replace traditional data management architectures and infrastructure which in turn raises the issue of possible duplication and additional costs.

We also have to consider skill sets and staffing requirements. Managing a new technology stack that integrates in different ways with legacy IT systems may require skills not currently on staff. The new data may need to be analyzed with modeling and visualization tools that differ from existing analytical and reporting tools. Add to this the management issues associated with servicing the business with these new tools: are we focusing on financial modeling? Customer

demographics? Remote sensor data? Exploration for new markets? Uncovering opportunities with existing customers?

Are we counting on discovering and building on little-known patterns and trends that might -- or might not -- help us generate new products or new services? Are the potential users of these new "big data" services willing to put the time, energy, and money needed into developing and taking advantage of hoped-for new insights? Or will they demand immediate payback in the short term?

The major concern here is not just managing new technology but the degree to which the new technology has to be integrated with existing systems and processes. Data projects with a primarily analytical or exploratory focus will have different integration requirements from those that focus on supplementing or replacing existing systems and processes; it is the latter category that we are most concerned with in this paper.

Key Insights

In the energy utility business when we're considering "smart meters" that report on and interact with household energy consumption data, we're talking about potentially huge increases in data tied to energy consumption at the household level. This involves potentially significant changes to existing systems and business processes throughout the sponsoring utility, major customer support and training requirements -- and significant startup costs.

Data growth challenges are significant and have to be viewed along at least three dimensions, as suggested by the Gartner Group:

¹¹ Co-authored with Thomas Sipp and published October 17, 2013: <http://www.ddmcd.com/large.html>

- Volume - potentially in the petabytes. Where and how will the data be stored, in what format, and for how long?
- Velocity - the speed of data being collected and processed. What are the data sources and how are they managed? What channels will data travel over and what bandwidth will be required?
- Variety - the range of data types and varied sources. What changes or supplements to existing data dictionaries and metadata will be required?
- Accessibility – there must be a way to easily retrieve and utilize the information in a meaningful way.
- Privacy – Customer records must be protected. Also, an individual consumer must not be able to view or edit anyone else’s information.
- Protection – Both the operational (shorter-term “live” data) and archived files must be kept secure from both external and internal nefarious influences.

Even if we do solve the data management and data handling issues, we still need to deal with system integration and process changes and costs. These will be driven as much by the need for new technology and skills as by the unique mix of systems and business processes we need to change or integrate with.

Example: Smart Meter Program for a Major Public Utility

As an early adopter of “smart grid” approaches to managing energy distribution, the management of one major public utility set the following four primary business objectives for its “smart meter” project:

- Increase the accuracy of consumer billings.
- Improve outage management through real-time notification of system problems.
- Enable individual consumers to improve how they manage energy costs.
- Reduce overall costs by automating the collection of energy usage information.

In the light of the massive amounts of data required to accomplish these goals, several data-related requirements were established:

One of the major challenges pertained to the architecture, particularly the IT infrastructure. The amount of data that was anticipated was enormous – it was estimated that multiple petabytes (thousands of terabytes or millions of gigabytes) would need to be collected. Because of the volume of data, mass storage had to be planned and procured.

Collection of data from individual homes was also a challenge. Some homes had internet access so the data could be transmitted over the web. Others required a direct line using radio transmissions from the meter to the nearest device on a utility pole.

Lessons Learned

Experience gained in executing projects such as the above has relevance to many organizations. Here are some examples:

Business Ownership. Responsibility for each new data element must be established early on. Defining and managing how data are defined, managed, and used cannot be left to chance as data volume, speed, and variety have significant cost and performance implications.

Stakeholder Involvement. In the case of smart meter projects where data collection devices are placed in customer homes, project “stakeholders” will include both company employees as well as the customers themselves. Multiple

business functions will be involved in defining requirements, in system design, in installation, and in operation. How customer involvement is managed will in turn drive public perceptions, technology adoption, and ultimate success.

Funding. Project funding for massive data projects is always an issue. If customer rates will be impacted by the project and rates are determined by a governmental commission, and if significant investment must be made before going “live,” a major effort requiring involvement of multiple business functions will be necessary to obtain rate change approval and funding.

Marketing. Individual consumers can be suspicious of new technologies, particularly when a device attached to their homes is involved. Communities might object on the grounds of accuracy, requiring extensive testing. Government officials might express concern that the privacy of their constituents will be compromised. Ameliorating such concerns in a society growing more aware of digital privacy issues may require significant time and resources.

Business Process Change. Even if the technical side is planned and executed relatively well, the necessary changes to business processes will often encounter challenges. It is highly recommended to map out impacts to the various business functions before implementing a project of any magnitude. Remember: stakeholder involvement is a key element in any project’s success -- especially in large “big data” projects.

Risk and Change Management. Murphy’s Law – what can go wrong will go wrong – must be considered. Risk Management and Change Management must be important components of any project and are especially critical to the success of large, complex projects involving so many “moving parts.”

Conclusions

The smart meter project referenced above touched on many business processes, required engagement with many different stakeholders, and involved a significant front-end effort to secure funding.

Not all projects will be so complicated, such as those that leverage existing data or those which don’t touch on as many business units and business processes that require changes.

Initially it was the complications of the IT infrastructure changes that defined much of the complexity and scale of the smart meter project. New routes to collecting, distributing, and interacting with data had to be created. It wasn’t possible to just “piggyback” on existing data collection, management, and distribution methods. New ones had to be developed. Yet, it was also the coordination of many business process changes with multiple departments and functions that was required to be successful.

Implementing the smart meter project also required evolution of a changed relationship with the customer. This profoundly influenced the company’s operations and business processes. The ultimate success of the project was a testament to the efforts of many dedicated people working together -- as will be the case with other “big data” projects that involve significant system and process changes.

Ten Basic Suggestions for Planning and Managing Data Intensive Projects¹²

If you're a project manager you've probably read articles or attended seminars titled something like "Why Projects Fail." I've written stuff like that [myself](#).

When you are faced with planning or managing a "data intensive project," is there anything in particular you need to keep in mind about this type of project that might help make your project a success?

What follows was written from the perspective of a project manager with experience where a primary project focus has usually been on generating, managing, transforming, or presenting data of various kinds.

There's nothing really new here. If you have any kind of project management experience you'll recognize a lot of what follows. Yet it pays to always keep these things in mind since you'll need to explain what you're doing -- and why -- not just to your team but to all your project's stakeholders.

Here are my "ten basic suggestions":

1. Don't let tools drive your policy.
2. Have a plan and be prepared to change it.
3. Know your stakeholders.
4. Be transparent.
5. Keep track of where you are and where you're going.
6. Be honest about the costs.
7. Stay human.
8. Support collaboration.

9. Always be thinking about boundaries.
10. Understand where the data comes from and where it's going.

1. Don't let tools drive your policy.

It's tempting to want to take advantage of the increasingly powerful tools that are available for harvesting, manipulating, analyzing, and presenting data. We obviously have the ability to process and analyze data in ways far superior to what was possible a few short years ago. Still, it's important not to succumb to the "new shiny object" siren song if it distracts you from doing what needs to be done using the tools already in hand. Also, try to avoid the "When all you have is a hammer everything looks like a nail" trap. Make sure the tool matches the task. This is as true now as it was 30 years ago.

2. Have a plan -- and be ready to change it.

Regardless of what project-management "religion" you belong to you need to be able to articulate what you're trying to accomplish and what the steps are that are needed to take you there. And, you need to be able to share this plan with your team and your stakeholders in a language they understand. At the same time, plans change. It's just the way things are. The client's mind changes, sequesters happen, a critical team member leaves, a plane crashes into a building. Remember that your goal is not to preserve "the plan," your goal is to satisfy the client's requirements. Also, if your plan is so complex and detailed that just keeping it up-to-date takes your attention away from managing the work, watch out!

¹² Published July 16, 2015:
<http://www.ddmcd.com/basic.html>

3. Know your stakeholders.

“Stakeholder involvement” is another traditional project management success driver especially when you define “stakeholder” as any individual or group that influences the path data take in their lifecycle from the point of creation to usage, replacement, or retirement. Stakeholders won’t always be friends, but you know what they say about keeping friends and enemies “close.”

4. Be transparent.

The opposite of “open” is “closed.” If the goal of your project is to make data open, accessible, and/or useful, then the processes by which this is accomplished may also need to be open. Too much secrecy in a project -- especially at the beginning when requirements are being established -- can lead to mistrust, inefficiency, and resistance later on. I am reminded of a case study interview I once conducted for a project with a known but knowledgeable critic of my client’s project. “No one ever asked me,” she told me angrily after I finally managed to secure an interview to get her advice. As a result, we lost her valuable input.

5. Keep track of where you are and where you’re going.

This “tracking” requirement goes hand-in-hand with the project objectives and the project plan. You need to stay on top of knowing who’s doing what, what needs to be done next, and whether you need to change anything about the project. With data intensive projects you also need some measurement of how the data or data-based deliverables stand at any given time. Progress reporting can’t just focus on schedule maintenance and resource reporting. You also need to track how the data and associated pro-

cesses and services are progressing as well, especially when you are trying to deliver useful functionality on a regular basis.

6. Be honest about the costs.

Whatever the project setting, be it government, private sector, or nonprofit, resources to perform and manage the data project will need to be estimated, allocated, requisitioned, assigned, and or purchased. One of the most basic definitions of a project manager’s responsibility is making sure the resources (e.g., people, technology, systems, data etc.) are appropriately assigned and managed. Even if no additional resources are budgeted for project -- a not unheard of situation especially in government -- resources will have to be begged for, borrowed, or stolen. The project manager will be responsible for how resources are managed and how they contribute to project success -- ideally “within budget,” however that is defined.

7. Stay human.

No matter how highly automated or algorithmically focused the data project becomes it’s always necessary to keep in mind the human element associated with each piece of data, software, or process. Even when a software release management process is moved to the cloud and its workflow is automated, some human oversight -- and communication about the status of the process -- will be needed. One of the most important reasons for maintaining the human role in project communication has already been mentioned: when plans change, humans will have to address discrepancies between the plan and what actually happens.

8. Support collaboration.

Team members will need to share information and work together on common tasks. Ideally a common platform for communication and shar-

ing information will be available to all those involved in the project. In reality different teams will most likely use different tools to support different work streams since the information sharing needs of software developers will be different from the needs of executives or marketers. Still, there will need to be agreement on a system via which all team members and stakeholders can communicate. An example might be email or messaging via an Internet-based collaboration tool. This practice must still allow for the specialized collaboration needs of different teams, for example, pre-release testing versus post release user support.

9. Think about boundaries.

Many "open data" programs are initiated in response to a desire to open up data assets for public use via portals, analytical and visualization tools, and API's. It's often found that staff members -- "internal users" -- are also heavy users of easy to use open data systems as well. Thinking about the similarities and differences between internal and external users is something that needs to be incorporated into project planning right from the start. Will the same data access systems and services support both groups? If not, what are the schedule and research implications if the two groups have different needs? Also, what are the implications of having multiple organizations within the organization having responsibility for the data that will be made available through the open data program? Do relationships with these internal groups need to be managed individually? Are there standards or other data transformations processes that will need to be implemented with different data sources? Such "boundary" issues as these -- physical, organizational, technical, and political -- will need to be considered when drafting the project plan.

10. Understand where the data comes from and where it's going.

Executive management will be most effective if it understands what processes and transformations will be made to the data as it progresses from initial capture through delivery and retirement. The project manager will need to make sure that management has this understanding. This may be one of the most serious challenges faced by the project manager given that data flow within organizations has for so long been seen as an IT concern.

In the above list I have skipped over many important details given my focus on how generic project management concerns can be adapted to planning and managing projects designed to make data more accessible and useful.

It is also impossible for the project manager to ignore how data management and data governance are handled in the organization as a whole. An individual project cannot be expected to change how the organization manages data overnight. Part of the project planning process must therefore include an assessment of the organization's ongoing data management and governance practices and how they overlap with the goals of the individual project.

Oh, Great, Another "Why Projects Fail" Article¹³

CIO recently published another one of those "why projects fail" articles. This one is called [15 Ways to Screw Up an IT Project](#).

It's the usual list -- failure to define requirements, scope creep, not securing management buy-in -- it's the usual litany that we all know and love.

As a project manager I recognize all the problems mentioned here. It's tiresome. Yet it continues to hold truth, no matter how certified, trained, or book-learned we become about this black art called "project management."

So why haven't we learned?

I'm not completely sure. I don't think it's a problem that is unique to IT projects. While most of the projects I've been involved with have had a strong technology, software, or database management component, they've always had a strong business process focus as well.

One thing I've noticed is that -- and I don't know if this is typical or not -- the more a technology-focused project becomes involved with the business side of things, the less control an IT-oriented project manager has over the unified set of actions and outcomes that need to be orchestrated.

Management techniques that more tightly integrate the IT with non-IT staff in the delivery and review of smaller value-generating deliverables is one approach to overcoming the possibility of having things spin out of control. Unfortunately, this "divide and conquer" approach may not work on larger or more complex projects where

a mix of both creative and repetitive tasks need to be controlled using different management approaches. Plus, someone in senior management is always going to be breathing down your neck for status updates about those good old standby performance criteria: cost, budget, and progress against schedule. It's the real world.

It's always easy to focus on "failure to define requirements and expectations" as reasons for project failure. Even if you adhere to budget and schedule and deliver on time a thing that's not wanted or expected, you lose. It also pays to assume that things will evolve and change as you work your way through the schedule. That means you need to maintain flexibility and ongoing involvement and honesty with decision makers and stakeholders.

That's good in theory but I have occasionally experienced pushback from clients who thought my projects required too much management involvement. "We hired you to manage this thing so stop bothering me and go manage it!"

Again, nothing new here. You have to assume that (a) things will change, (b) not everyone is going to have the same level of involvement and understanding as you and your core staff, and (c) problems are going to crop up along the way that require thoughtful consideration by stakeholders whether they want to be involved or not.

Welcome to project management!

¹³ Published July 17, 2013: <http://www.ddmcd.com/fail.html>

Is the Project Management Office Evolving or Devolving?¹⁴

Michael McWha's [Commentary: The incredible shrinking project management office — four challenges to the traditional mandate](#) in the Washington Post's **Capital Business** suggests that traditional project management offices are "losing ground" for four reasons:

- **Project delivery:** More projects are being managed by business units or by part time project managers.
- **Performance measurement:** Traditional efficiency and ROI measures are increasingly less important than difficult-to-measure impacts on knowledge worker performance.
- **Portfolio management:** internal funding decisions are increasingly being made above the level of individual projects.
- **Project manager development:** Given the rising importance of part time project managers, demand for PMO-supplied project management is being reduced.

I have no hard evidence to support or refute what McWha says. In my own career I've experienced several different models of Project Management Offices (PMOs) ranging from those having centralized control over multiple project schedules, resources, and staff, to those operating through a centralized support organization doing paperwork, reporting, and administrative support for a distributed group of pro-

ject managers reporting through different departments. Depending on the circumstances you can make a case for either approach.

One consideration is whether you have the resources and management skills — and clout — to support either approach. As a consultant I've usually been in a position to manage or be part of a team that supplements a client's existing project management resources. In some case those resources might be meager and my team supplied everything from basic systems support to day to day management and administration. I've also been part of teams that had to learn and adjust to local standards, systems, and procedures even when they weren't well suited to project management and oversight. As the saying goes, welcome to the real world, Neo.

In years past it always seemed to me like it was usually the IT department that had a firm handle on the formalisms of project management, whether those formalisms were traditional project management and scheduling approaches or more contemporary and flexible approaches such as those represented by Lean and Agile methodologies.

Nowadays it seems it's more common to see less of a divide between IT and business, especially in smaller or newer organizations. Younger project staff especially seem more willing to use collaboration and networking tools for sharing information in real-time or via online documentation or networking files. It's not unusual, for example, to see tools such as Google Drive, DropBox or GitHub used not just by IT but by non-IT staff as well, even when "approved" systems such as SharePoint are available.

This improving ability to share and collaborate goes a long way, I think, to overcoming one of the biggest causes for project failure — the lack

¹⁴ Published April 5, 2013: <http://www.dmc.com/devolving.html>

of a cohesive approach to problem solving based on a shared understanding of goals and objectives. At the same time, improvements in communication and collaboration don't reduce the need for leadership. Leadership needs to be familiar and comfortable with software and network based tools that allow for rapid sharing among team members, even when these tools seem to fly against traditional bureaucratic or hierarchical traditions.

Perhaps the "flattening" of organizations and increasing expectations for information sharing have been overlooked by McWha in his list. Or perhaps they are the reasons why the role of the traditional project management office is changing.

If you've ever run a PMO, you know how much of your time and energy are devoted to gathering, analyzing, and distributing information. Perhaps we are seeing that the project management organization is changing because how people communicate and share information is also changing.

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