



Managing Innovation

H. Dominic Covvey, Associate Editor

Dominic Covvey is a Professor and the Director of the Waterloo Institute for Health Informatics Research at the University of Waterloo.

Have you seen the ad on TV where the guy searches the basement and wall-spaces and discovers the couple “has bankers”? I sometimes wonder if the equivalent search in eHealth projects would end up with the discovery that we “have project managers”!

Over the years I have been a player in many projects, and, recently, most of these projects have had Project Managers. I would like to raise some issues regarding project management and get a conversation going about it.

Project Management Professionalism

First, though, I need to make it clear that I respect professional project management. Without it we would not get skyscrapers or airplanes built or systems implemented. I reserve particular praise for the Project Management Institute (<http://www.pmi.org>), which has performed a key role in professionalizing project management and in making quality training available. With my money, I would not hire a person to manage a significant project without that person at least being PMI-certified.

Innovation Projects

I need also to make it clear that virtually all of the projects in which I participate are research projects or development projects wherein significant innovation is the goal. It may be worthwhile explicitly calling these “innovation projects”.

In the case of innovation projects, we know what we want to accomplish and we may have pre-conceived approaches to get the outcome we want, but we often need to adapt how we proceed or even experiment with our methodology.

Maybe an example would illustrate the challenges of innovation projects. Consider the development of a patient portal. Let’s say we want to use the portal as an instrument for improving patient compliance with a therapeutic regimen and managing health system utilization behaviors. This isn’t something you just build like a birdhouse. When we start we may not really know what is required and we may not know the detailed characteristics of the patient population – for example the prevalence of depression and the reactions of the patients to technology. We may also need to see how the patients

will react to our ingenious ideas as to system functionality before we “freeze” the design. There are often many aspects of the definition of the system that will require interaction, learning, re-thinking, new insights, adaptation, revision, re-engineering and the like.

Software Engineering Tools for Innovation

We are fortunate in that modern software engineering has delivered approaches to software development that include prototyping – developing initial versions of parts of the system that can then be tried, reacted to, redefined and revised. Another example is iterative development, where we take the system (starting with a prototype) through stages of successive refinement until the desired system behaviors and other characteristics are achieved. Systems development using these techniques is very different from the classic software development model where requirements were identified up front, and then development proceeded until the system was complete according to the requirements. In these more modern approaches we actually develop requirements throughout the process, do design throughout the process, and sculpt the solution adaptively to what we learn in the process.

Unfortunately, it seems that the nature of contracts may be part of the challenge we face. After all, to control the work and costs and be able to command the production of what we want, we seem to need things to proceed from requirements and to handle everything else as change-requests, each often with a discrete mini-agreement and costs. Contracts tend to be embodiments of a command-and-control development framework.

Management Tools for Innovation

From the management field, though, we are again fortunate. There is one very interesting management paradigm that addresses innovation and avoids the worst aspects of the “command-and-control” paradigm that works so well for non-innovative projects. This has been labeled “chaordic management”, and was popularized by Dee Hock who led the development of Visa (1). “Chaordic” is a term combining “chaos” and “order”, which stems from roots in complexity theory. Complexity theoreticians have observed that apparently highly organized behavior, like bird flocking ([http://en.wikipedia.org/wiki/Flocking_\(behavior\)](http://en.wikipedia.org/wiki/Flocking_(behavior))), can be produced under the control of a very few rules (see

“Boids”: <http://www.red3d.com/cwr/boids/>). This shows the link to non-command-and-control management. Chaordic management techniques empower project teams to alter methods and tools in response to changing needs, environments and tool availability (i.e., high-change environments), while ensuring that all participants work towards the same purpose. This sounds like innovation, and Dee Hock’s creating Visa as a collaboration among major competing banks was, in fact, an innovation. Maybe there is gold in that “thar hill”! Interestingly, there is an expert on the role of complexity in management in Canada at York University in the Schulich School of Business (<http://www.schulich.yorku.ca/SSB-Extra/Faculty.nsf/faculty/Zimmerman+Brenda#>).

Bring It All Together

If we pull all this together, maybe we can agree about the following: (1) that professionally-executed project management is needed, (2) that innovation projects are not the same as building a standard building, (3) that we need an approach to project management that addresses the nature of innovation projects, and (4) that chaordic management or other non-command-and-control frameworks might be the basis for creating a genre of project management more suited to innovation projects.

I wrote this article mainly out of frustration, but also with a sense that this is a fertile area itself for innovation and worthy of our attention.

From my perspective, something has to be done about this if we really want to have successful projects that are truly innovative, and more of the same won’t cut the mustard. There are a number of messages I’d like to get across:

- Project management is a reasonably well-defined discipline and a matter of professionalism. As such, it has associated competencies (knowledge, skills, experience and attitudes) that must be learned and that are taught in recognized programs. Textbook, amateur project management is really not acceptable or respectable. Anyone claiming to be a project manager should be trained in project management and preferably certified in it. A corollary to this should be that imposing one’s incompetence on others should be at least a misdemeanor. By the way, it is probably the case that there is, in fact, a project management persona – people who like people and can work with them while bringing a productive discipline to that work. Luckily, I’ve been graced to have met a few of these rare birds.
- Classic command-and-control (also called top-down) project management should not be assumed to work or even be appropriate in the management of innovation projects.
- A better framework for the management of innovation projects needs to be evolved (or made known if it is already there), and those who aspire to be project managers of innovation projects should be trained and preferably certified in this framework.

- The practice of assigning non-qualified individuals to be project managers should be stopped, a deep breath taken, and solutions found to availing organizations of competent project management professionals.

Conclusions

Meanwhile, as Health Informatics professionals, we need to recognize that getting real training in this area is not optional. As employers, we need to understand the kinds of professionals we need and what their qualifications are. And, as teachers we need to wrestle with how to imbue the necessary competencies in our students – at least those who ever want to subject others and their work to project management in any form.

As I mentioned earlier, I would welcome a discussion on this. There are probably a number of you that have faced this before and some may have already come to conclusions or solutions.

Reference

1. D. Hock, *The Birth of the Chaordic Organization*, Bantam Doubleday Dell Publishing Group, ISBN: 0385482191, 1999. ●

Iterative Development:

The basic idea behind iterative development or enhancement is to develop a software system incrementally, allowing the developer to take advantage of what was being learned during the development of earlier, incremental, deliverable versions of the system. Learning comes from both the development and use of the system, where possible. Key steps in the process were to start with a simple implementation of a subset of the software requirements and iteratively enhance the evolving sequence of versions until the full system is implemented. At each iteration, design modifications are made and new functional capabilities are added.

From: http://en.wikipedia.org/wiki/Iterative_and_incremental_development

Innovation:

Innovation is inventing and problem solving—figuring out things that we don’t know how to do already. Repetition is doing things we have done before—repeating things that we know how to do... Innovation is unpredictable but not uncontrollable. One of the ironies of chaordic approaches to development is that control comes from letting go, not holding on—at least for the innovative parts... Creativity comes from alternately focusing and defocusing, from trying alternatives, from setting the problem aside for a few days and letting it percolate in the subconscious mind.

*From: *Agile Software Development Ecosystems*, J. Highsmith, Addison Wesley, ISBN: 0-201-6043-6 May 2002.*