Building enterprise project management capability 3A

Improving project management maturity through innovation and learning

Barriers to innovation and learning

by Professor J. Rodney Turner

As I said last month it sounds easy to achieve but there are barriers that stop organizations succeeding in taking advantage of knowledge. New ideas and knowledge come under pressure from many directions.

Figure 2: The problems of attenuation and defferal

Attenuation, deferral and centralization

Attenuation: At each step of the process there is a loss of signal. About 25% of the new knowledge is lost at each step. So, of all the new, good ideas generated, only 75% are selected. Of those selected, only 75% (now 56% of the original ideas) get retained. Of those retained only 75% (now 40% of the original) get distributed. And of those distributed, only 75% (now 30% of the original) get re-used on other projects. Of all the good ideas generated, only one third get used on another project. That is a large loss of good knowledge to the organization; although I must admit I find it surprising that it is as much as one third that gets re-used.

Deferral: There is also a delay from when new ideas are created to when they are used on new projects. This can be as long as eight years. Often new ideas are identified and selected through post-completion reviews, with the emphasis on post-completion reviews.

If the project lasts two years, then a new idea created at the start of a project is not identified and selected until the post-completion review two years later. Then it can be two years before that idea is stored, two more before it gets written into the next release of the project management procedures, and two more years before those new procedures are used on projects.

This means there can be a delay of eight years from when new ideas are created to when the organization derives benefit from them.

People try to overcome this problem by using the corporate Intranet. A project manager enters new ideas he or she may have into the Intranet straight away, where they are immediately available for other people to use. The problem with this approach is that the new ideas are not properly tested and selected. Yesterday's hearsay is today's perceived wisdom, and what works in a specific circumstance my not be generally applicable.

People talk about the viscosity of information in organizations. In the first case, information is highly viscous, taking eight years from creation to use. In the second case, it has no viscosity at all, taking less than 24 hours.

What you need is something somewhere in between. You need a delay from new ideas being created, selected and stored, during which time the ideas are properly tested, and good ones selected and bad ones rejected. Three to six months is a good period of time for that.

Many organizations achieve that by having members of the project management community working in the project office, called gatekeepers, who sift through the information before it is entered into the Intranet.

The Intranet is then used to make the selected ideas immediately available for other people to use. The gatekeepers work with the members of the project management office responsible for maintaining the procedures to incorporate the selected new ideas into the procedures, and then post the patches to the procedures on the Intranet at regular intervals, say, once every three months.

Figure 2 illustrates the problems of attenuation and deferral.

Centralization: The third issue here is centralization. I originally saw this as a problem. Project managers think innovation and learning are somebody else's responsibility. All they have to do is conduct their reviews, and feed information into the centre, and somebody else will take care of it from there.

We thought this was a problem. However, the evidence is that innovation and learning are better in organizations where they are centrally controlled. I have just talked about the need to have gatekeepers to sift out the good ideas from the bad, and people at the centre to take responsibility for updating the procedures. But we are still concerned that project managers think that improving project performance is not their concern.

Sometimes project managers feel unempowered to make changes. I have been working with a famous computer company where project managers positively feel that they are not allowed to make innovations in how they manage projects. All innovations are controlled from the head office in the United States, and they 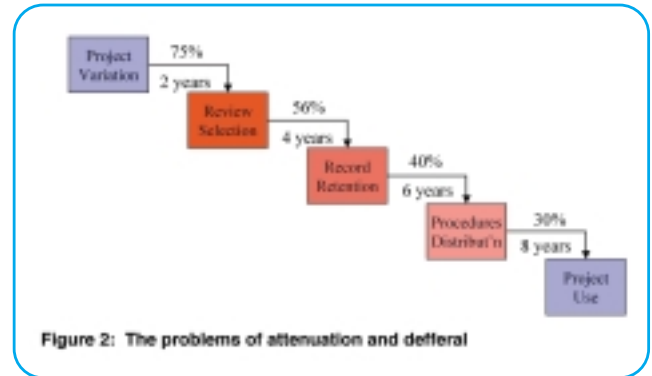just have to do as they are told. I find that scary for such a large organization – but it is successful, and part of that success is due to its consistency of approach.

Competency traps

Project-based organizations are more exposed to competency traps than routine operations are. A competency trap is where there is an established way of operating which works, though it may not be the best way. A superior process exists, but you fear trying the alternative for risk of failure. There are many competency traps in a project-based environment, including:

Fear of failure: In a routine environment it is easier to try something new. If it doesn't work at the first attempt, you can try to improve next time, and if it doesn't work at all, you can go back to the old ways. It is much easier to experiment in a routine environment.

On a project you only do it once. If it doesn't work first time it doesn't work at all. There may be a way of doing your project that is twice as good as your preferred way, but with, say, a 20% chance of failure. So, if you were going to do it several times, on average you would be 60% better off doing it the better way.

In a routine environment, you can give it a go, find out where the flaws are and get it right second time around. But on a project, as you only do it once, people prefer the certain, though less efficient way. They are trapped in the inferior way of working.

Fear of blame: The individual project manager's calculation makes it even less likely that they will try something new, especially if they work in a blame culture. In that case, if the project goes well, they are likely to receive little praise, but neither will anyone blame them. However, if it goes badly they will receive a lot of criticism.

So, if they adopt the inferior approach, they will have a quiet life. If they adopt the superior approach there is an 80% chance again that nobody will notice, but there is a 20% chance

they will be blamed when the project goes wrong.

Therefore, they adopt the safer, inferior approach. I talked above about the organization for which I used to work where the odd mistake was tolerated. If people are trying better, new ideas, but making the very occasional mistake, on average the company will be better off, and the new ideas can be adopted. But that does require a tolerance of people making the odd mistake. If people are always making mistakes, well, as I said before, you don't want them.

Projects are coupled systems: Another problem arises because projects are coupled systems. A change in one area has an impact in another. That means you need to optimize the project as a whole. You cannot make a small change in one area to improve that without having an impact elsewhere. A change you make in design can have an impact on delivery; a change you make in delivery can have an impact in procurement; a change you make in procurement can have an impact back on design.

Thus, finding the superior approach to delivering the project means not making small, piecemeal changes, but changing the project as a whole, which can be difficult and risky. It is different in a functional organization. Because of the routine nature of the production processes, the steps become decoupled. You can make a change in one area without it having an impact on another.

Contracting practice: Many standard forms of contract also limit innovation. Under some payment structures, the contractor will make less profit the less the project costs. So they are hardly likely to recommend new ways of working that reduce project cost. The client needs to find ways of letting the contractor share in the benefit of any improvement in project performance through what is called a gain-share pot.

Problems also arise if there is more than one contractor because the project is a coupled system. If one contractor makes a change to reduce their cost it can cause another contractor to increases their cost. The contractors can then fight with each other, rather than trying to find the best possible project solution that gives the maximum benefit to them and the client. Unfortunately, the best solution for the client may not be the best solution for one of the contractors.

In order to encourage that contractor to adopt what for them is an inferior approach to achieve the best overall performance for the client, they need to be rewarded out of the gain-share pot.

Fear that our competitors will steal the innovations: This is one of the saddest competency traps, a fear that if we improve our project performance our competitors will steal our ideas. Better that we remain locked in inferior ways of working than develop new ideas that out competitors will steal!!!

The Japanese adopt the attitude that their innovations will give them a two-year advantage over their competitors, since it will take them that long to steal the ideas.

These competency traps can lock project-based organizations into inferior ways of working, making them unable to make the improvements they feel they should be achieving.

Rigid control procedures block innovation

The final barrier to innovation and learning is in the nature of project management. Traditional project management emphasizes rigid control, and rigid control blocks innovation.

Rigid evaluation criteria: Project management has developed rigid evaluation criteria for assessing the value of projects and their contribution to corporate wealth; for example, techniques such as net present value, NPV, and internal rate of return, IRR (Lock, 2000). However, these do not properly evaluate innovations. For innovative projects, alternative techniques are necessary but, unfortunately, are much more difficult to apply.

Rigid resource utilization: Standard project management techniques also suggest tight assignment of resources, allocating the precise number required to do the job. This is not really appropriate for most projects. Projects are risky, and some flexibility is required to deal with uncertainty. But it is especially inappropriate for innovative projects. People with time to think develop

Table 2: Nonaka and Takeuchi's learning cycle

From \ To	Implicit knowledge	Explicit knowledge
Tacit knowledge	Socialization Sharing/creating tacit knowledge through experience	Externalization Articulating tacit knowledge through reflection
Explicit knowledge	Internalization Learning and acquiring new tacit knowledge in practice	Combination Systematizing explicit knowledge and information

much more innovative, creative solutions.

Rigid control: Traditional project management approaches also suggest tight control. This may be appropriate on engineering projects, but not on innovative projects, and especially not at the research stage. Innovative projects should still be managed, but at the research stage more organic approaches are appropriate, emphasizing facilitation and coordination of the people working on the project. At the development stage there can be more rigid deadlines, the new product needs to be delivered to market by a certain date. Thus the appropriate form of control, organic or rigid, depends very much on the type of project and the stage it is at.

Facilitating innovation and learning

So, what can project-based organizations do to facilitate innovation and learning? In my earlier articles I described what the innovation management literature suggests organizations should do to support innovation. Here, I would like to focus on two issues:

● top management support
● supporting learning through the project management community.

Top management support

I cannot stress enough the importance of top management support in improving maturity and enterprise-wide project management capability through innovation and learning.

Without senior management support, junior people will either fear making changes or not take the initiative.

A manager in IBM told me that junior people may avoid making honest reports in project reviews for fear of upsetting middle managers. Particularly they fear that if they make an honest report it may put their boss in a poor light. Organizations must learn not to shoot the messenger, and the support of senior management will help junior people to make honest reports.

The nature of the organization will also have an impact here. If the organization has a blame culture, nobody will give honest reports, either for fear of attracting blame to themselves or through fear of damaging their colleagues, particularly their boss.

A learning organization, on the other hand, will welcome honest reviews, and treat them as opportunities to improve.

Some people may not make changes because they have done something a certain way for a long time, and they just don't want to try new things. They are locked into a competency trap. They may fear that if they try something new and it goes wrong, they will lose their job. Senior management need to make it clear that it is the other way around: if they don't try something new they will lose their job. If they aren't occasionally making mistakes, people will be asking why they aren't trying new things. Top management need to make it clear that they want to see innovative ways of working.

Learning to improve maturity

So, how can an organization, through the project management community, create a learning environment to improve maturity? Nonaka and Takeuchi (1995) suggest a four-step process linked to the four practices of improving maturity (see Table 2). In this cycle the project management community learns to cycle between implicit and explicit knowledge. To be competent, an organization needs both implicit and explicit knowledge.

Explicit knowledge is written, codified knowledge, often written into the project management procedures.

Implicit knowledge, or tacit knowledge, is inherent knowledge that people and the project

management community have within themselves. It is their ingrained skill, which they draw on subconsciously to do their work.

To be competent, an individual and an organization need both implicit and explicit knowledge.

Nonaka and Takeuchi's cycle shows the organization cycling between implicit and explicit knowledge, converting implicit knowledge to explicit knowledge, and using that to generate new implicit knowledge. I find it easiest to explain starting at the socialization step.

Socialization: The project management community consolidates its tacit knowledge through reflection and review. Through its quarterly meetings, discussion and subsequent socializing, tacit knowledge is identified and drawn out. It selects the tacit knowledge considered valuable for further use.

Externalization: Through further reflection the community articulates that tacit knowledge and converts it into explicit knowledge. It decides what should be retained in its systems and procedures.

Combination: The community systematizes that explicit knowledge into systems and procedures, retaining it for further use. It can now be distributed to project managers throughout the organization.

Internalization: The project management community can now use the explicit knowledge, and through use convert it into new tacit knowledge. It can also try new ideas through a process of variation and thereby acquire new tacit knowledge.

Returning to socialization.

Thus we see how the practices (procedures, benchmarking, reviews and the project community) support the four steps (variation, selection, retention and distribution), and together they support organizational innovation and learning through Nonaka and Takeuchi's cycle leading to increasing project management maturity, increasing enterprise-wide project management capability.

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