

PMI Research Working Session Asia Pacific - Sydney Australia March 2, 2008

Complexity in Project Management and the Management of Complex Projects

Key findings from this session are as follows:

- All projects are complex at some level, it is understanding what makes them complex that is important.
- Projects can be simplified by breaking down their parts. Once simplified, dealing with complexity becomes easier.
- People management is what complexity is all about, especially managing up (through upper management) as well as down.
- Project Managers that are good at handling complex projects have a tacit sense of what needs to be done and are proactive. These skills are learned over time, experience and mentorship, much as a craft is learned.
- The key elements of complex project management are communication, people skills, intuitiveness, proactively and integrity.
- If something external to a project affects the project, it automatically becomes part of the project and must be managed **accordingly**.
- A thorough risk assessment with all potential stakeholders identifies their issues allowing proactive management to mitigate external problems.
- The project manager needs to focus on the end goal of the project and manage all elements to that end, rather than managing the individual (technical) parts.
- *“And when it comes to solutions, simple is better. Elegant is better still. Elegance is the simplicity found on the far side of complexity” (page 3, *The Elegant Solution: Toyota’s Formula for Mastering Innovation*. Matthew E. May, 2007, Free Press, New York)*

Comment [j1]: Perhaps the more pertinent issue here is to consider (through a thorough risk assessment) all the potential stakeholder, identify their issues and proactively manage so that the "external" environment does not create a problem.

Panel Presentations Facilitated by Dr. Chris Stevens

Dr. Lynn Crawford. *Complexity and Project Management*

- There is a need for managers for more complex projects
- Increasing project needs, an aging workforce and a multiplicity of relationship models for projects drives a need to understand complexity
- Organizations categorize 10 top attributes for complexity.

	Attribute	Count	%
1	Project scope	45	16.0%
2	Technical complexity	39	13.8%
3	Number of functions and skills	30	10.6%
4	Organisational involvement	30	10.6%
5	Level of ambiguity / uncertainty	27	9.6%
6	Number of sites, locations, countries	26	9.2%
7	Organisational impact	24	8.5%
8	Clarity of goals / objectives	22	7.8%
9	Risk source and location	15	5.3%
10	Familiarity	13	4.6%
11	Standalone or component of larger project	11	3.9%
	N =	282	100.0%

Crawford, Hobbs & Turner, 2005

Management complexity

- Stability of the overall project context
- Number of distinct disciplines, methods, or approaches involved
- Magnitude of legal, social, or environmental implications
- Overall expected financial impact on project stakeholders
- Strategic importance of the project to the organisation or organisations involved
- Number and variety of interfaces between the project and other organisational entities

For report on application of this categorization across projects globally, see Aiken, A and Crawford, L.H. (2007). A study of project categorization based on project management complexity. In: *Proceedings of IRNOP VIII Conference, University of Sussex*, 19-21 September 2007, Brighton, UK: University of Sussex

- Not all projects are the same and arguably all projects are complex, if people are involved
- Being in charge of a project is not as much about control as it is about the ability to engage stakeholders and shift power relationships.

Understanding projects as Complex Responsive Processes of Relating

- The management of projects as a process of 'emergent enquiry'
- Developed through interactions and conversations
- Direction, planning and control are subject to evolution through ongoing interactions and conversations

'The emphasis shifts from the manager focusing on how to make a choice to focusing on the quality of participation in conversations from which such choices and the responses to them emerge.'

(Stacey, 2000, p.407)

- Breaking projects into the component parts mitigates complexity
 - Apply control, co-ordination and communications
 - Use PM tools and techniques
- 1. Understanding the needs of all user groups**
 - Complete needs analysis for each user group and tailor learning and communication to base knowledge levels
- 2. Removing barriers to adoption**
 - Understand impact of change in context different cultures within the organisation
 - Use real stats to assess impact and eliminate noise
 - Develop feedback channels, demonstrate willingness to incorporate changes and follow up
- 3. Change leadership**
 - Must be owned and driven from the top – management support gained early through presentations and demonstration of positive business impacts
- 4. Providing adequate support**
 - Communication, training, on site, local coordinators, Helpdesk
- 5. Seeking continuous feedback**
 - Debriefs, surveys and weekly PIRs
- 6. Coordinating all parties**
 - Centrally manage and communicate to all parties (internally & externally) roles, responsibilities and reporting lines
 - Balance the *release* and *rollout* schedules – i.e. understand the business impact of all releases
- 7. Knowing the environment/s you are deploying to**
 - Deliver the right product to suit the environment. We use a 100 day dashboard that identifies any technology differences (dual servers, WANs, keyboards etc) that need to be taken into account for the deployment
- 8. Testing thoroughly**
 - Ensure the technology in its various combinations and environments has been properly tested
- 9. Contingency planning**
 - Ensure you have correctly planned for problems such as DOA product, shipments not being made and incorrect infrastructure being delivered.
- 10. Deciding on 'GO / No GO'**
 - Have a clear process for when you should proceed (or not proceed) – who makes key decisions? Timing of when these Go/No GO calls must be made?

Dr. S. Jonathan Whitty. “C” for Craftsmanship not “C” for Complexity

- A craft skill is a memory embedded in your very being. It takes guidance and time to acquire the skill.
- Good project managers are not born with skills they learn them and perfect them over time.
- We do not understand how these good project managers acquire their skills nor do we know how to teach these skills to others.
- Focusing on complexity science per se will not provide guidance in understanding how to manage complexity in projects.
- The tacit skills of project managers capable of easily navigating dynamic and complex projects need to be understood
- Humans have developed as a species by reducing complex behavior NOT by embracing it.
- Complexity as we know it is often related to unknown events. But being able to “read” the signs allows those with tacit PM skills to see problems before they occur thus reducing complexity.
- Craftsmanship relates to the old system of mentoring or apprenticeship where the tacit knowledge of an elder can be passed on to the pupil.
- Therefore, skill is not how you do something; it is the repetitive and improving nature of honing practices to perfection.
- We need to understand not the skills needed but how they can be acquired. How do practitioners get better at learning skills?

Nicholas Yates. *Complexity in Building, Construction and Development Areas.*

- All projects are complex from someone’s point of view - the project owner or the project manager.
- It is the people that make projects complex and certain competencies can mitigate complexity.
 - Passive empathy. The level of consciousness in anticipating and predicting situations and taking control of them before they become problems.
 - Active empathy. The ability to quickly and accurately act on or communicate the situation. Ability to get to the core of problems through analysis and to develop and present solutions.
 - Persuasiveness. Able to influence others by listening, assimilating and communicating information. Ability to negotiate and be flexible yet provide accurate information to key stakeholders.

The Complex Project Management Initiative

- Australian, UK and US Governments and Defence Industry have supported an initiative to improve the international community's capability to deliver very complex projects across all industry sectors
- Three strands:
 - Competency Standard for use as a framework for assessment and development of complex project managers
 - Executive Masters and Continuing Professional Development in Complex Project Management (Pilot course being developed in Australia by Queensland University of Technology in collaboration with the international community)
 - Formation of the College of Complex Project Managers

Question and Answer Session: (edited to key questions)

Question #1:

Dr. Crawford mentioned ten reasons for complexity but where did these come from?

Comments:

The categorization comes from a research paper on categorizing projects. Part of the research looks at project complexity and the table presented in the slide gives the top 10 reasons for complexity as reported by respondents. Accordingly these results are actually from the practicing community.

Question #2:

How do internal politics (within an organization) contribute to project complexity?

Comments:

A1: Clients sometimes use project management vendors as a "scapegoat" when things go wrong. This is actually a valuable role to some clients and they may continue to work with a vendor how is willing to deflect blame in this manner.

A2: Tighter integration between the strategy of the organization, the executive sponsor and the project manager/project helps reduce political complexities

A3: Mature organizations are flexible in that they have a core set of project standards and then allow customization of methods to account for varying levels of complexity

Question #3:

How do you define project success beyond cost/time parameters?

Comments:

A1: Stakeholder satisfaction. Having a broad understanding of what satisfaction means to the end-users and what deliverables they are expecting. Know what they “value” is that they hope to gain.

Question #4:

How do you deal with project complexity due to the lack of project manager authority?

Comments:

A1: Appoint a C-level project manager to represent key projects to the executive level of the organization

A2: The tipping point of leadership comes when a project manager learns to manage above as well as they manage below. Good PMs should manage 2/3 up and 1/3 down.

A3: Map the project managers as general managers through the organization (in the actual org structure) in order to integrate them into the fabric of the organization.

Question #5:

How do you quantify someone as a complex project manager? NOTE: This question was in the context that seemed to target the CCPM (“Does a 1-year degree make someone qualified to manage complex projects?”).

Comments:

A1: It is not about complex project management, it is about the level of complexity in a project (all projects have some level of complexity since there is always a human element to a project).

A2: The learning around project complexity needs to be tacit, not taught in a course.

A3: Look at the medical profession where a new doctor may have knowledge but is not going to be allowed to do surgery on someone until he/she has gone through a residency program for the specialty.

A4: Complex project management is more about who you are as a PM rather than what you do as a PM.

A5: Dr. Crawford listed the benefits of the CCPM credential:

- 1) allows people to think about what they do (as PMs) for an entire year,
- 2) employers should value both experience and credentials, not one or the other
- 3) allows PMs to develop a language for complex PM
- 4) a credential can develop a positive correlation with competent practice over time through the ongoing evaluation of the performance of credential holders.

Question #6:

How does the panel define complex project management?

Comments:

A1: It is a series of things:

- 1) How does the PM deal with ambiguity? They should be constantly scanning the environment and adjusting the project as needed
- 2) How does the PM define project success? They should think about more than just on-time and on-budget
- 3) How does the PM deal with troubled projects? They should embrace a very macro view of the project and engage various stakeholder groups in order to evaluate risks in order to avoid getting into a troubled project situation.

Question # 7:

What is the relationship between complex project management and managing projects in complex environments?

Comments:

A1: The move toward organizational project management maturity (assessment and improvement) helps address this.

A2: Anything that can impact a project needs to be considered as part of the project, so there is no "macro" environment

A3: The PM needs to manage and collaborate with all stakeholder groups

A4: This is an area where PMs can add real value to an organization, in connecting all the dots to help successful deliver on complex projects

A5: This defines the difference between a project administrator and a real project manager. The PM needs to focus on the end goal of a project, not tasks in the project

A6: Depends on the comfort zone of a PM. PMs need to be comfortable managing up and around in the environment rather than just managing technical aspects of a project

A7: Measurement of outcomes needs to be evidence-based to help avoid the bias that all of us bring to the evaluation process. This bias comes from all sources and is rooted in basic survival motivations.

Question #8:

What do you ask people when hiring them to assure they can handle a complex project:

Comments:

A1: It is all about integrity so you have to understand the level of honesty in being willing to tell you what is wrong not just what you want to hear.

A2: I ask them to describe what they would do if they were a project that was in trouble and how they would fix it. The answer I am looking for is whether they will assess all the stakeholders and determine their expectations regarding the project.

Organizational Expectations and Needs Regarding Project Management

Introduction/Summary:

The purpose of this work session was to provide a view of organizational project management (expectations and barriers) from the perspective of the ROWS attendees, who are a mix of academics, project management practitioners and business leaders. This provides an alternative view of organizational project management as compared to a strictly “top-down” view from corporate executives.

The work session discussions tested and validated the hypothesis that organizational expectations regarding project management (and barriers to achieving those expectations) vary across different strategic foci. While there are certainly points of overlap between internal infrastructure projects, customer relationship projects, and innovation and commercialization projects, there were in fact unique expectations for each of these areas. The themes for organizational expectations of project management seemed to align as follows:

Strategic Focus*	Organizational Expectations for PM
Internal Infrastructure Management	Increased profitability through cost reductions and increased productivity.
Customer Relationship management	Increased customer loyalty. Better product/service positioning. Further market penetration within current markets. Customer-focused decision making.
Innovation and Commercialization	Improvement of products/services. Exploration/discovery or new markets. Increased competitive advantage through differentiation.

* Based on John Hagel III's [The Only Sustainable Edge](#)

Themes that surfaced around the barriers to meeting these expectations were:

Strategic Focus	Barriers to Meeting Organizational Expectations
Internal Infrastructure Management	Lack of clear organizational objectives or failure to communicate the objectives throughout the organization. Difficulty in gaining cross-functional support for “internal” projects.
Customer Relationship management	Complex and sometimes conflicting customer needs/requirements. The constant change/evolution of customer needs. Failure to consider the customer’s viewpoint.
Innovation and Commercialization	Internal resistance to change. Lack of an innovative corporate culture.

Also, several themes of barriers threaded throughout the different focus areas:

- A lack of project management governance or ineffective governance
- A lack of consistent processes and vocabulary across operating groups (co-located or distributed)

Further, the discussions raised the question of whether expectations and barriers also vary by government vs. private vs. academic sectors and also by industry.

When asked how they would change the current situation if they were the CEO, common comments were:

- Add an executive project management role
- Align projects to strategy delivery
- Create clear lines of accountability

Group Discussion Feedback - Table 1:

3. What are the organizational expectations (i.e., what business value should be created) for projects supporting each of the following businesses in your company?

Expectations for Internal Infrastructure Projects:

- a) Streamline processes
- b) Transparency of roles and responsibilities
- c) On-time delivery
- d) Improve quality
- e) Strict input of project quality plan
- f) Deliver project to specifications (time, cost, quality)
- g) Reduce probability of project failure
- h) Increase margin for projects using same input

Expectations for Customer Relationship Projects:

- a) Gain more future projects
- b) Long term business
- c) Find market opportunity for customer
- d) Gain more trust for customers
- e) Gain brand awareness
- f) Increase market share
- g) Performance of product
- h) Affordability

Expectations for Innovation and Commercialization Projects:

- a) Balance theory and practice
- b) New products under industrialization
- c) Competitiveness
- d) New contracts and opportunities

- e) Enhancing value of products/services
- f) Leading the product technology in the market
- g) Increasing cultural values
- h) Identify gaps/expectations in the marketplace

4. For each business type, what if any, barriers/issues prevent projects from achieving these expectations within your organization?

Barriers for Internal Infrastructure Projects:

- a) Multi-cultural communications
- b) Bottle necks in production capabilities
- c) Lack of prioritization of projects
- d) Internal projects
- e) Push back from managers due to increased workloads
- f) Processes/procedures across different countries
- g) Lack of people resources
- h) Lack of vision
- i) Lack of data/information
- j) Cost of time

Barriers for Customer Relationship Projects:

- a) Lack of vision
- b) Complex and diversified needs
- c) Inadequate pre-sales staff
- d) Project team attitude issues
- e) Ability to penetrate new customers/markets
- f) Lack of thinking from customers perspective
- g) Organization structure
- h) Lack of customer buy-in
- i) Poor customer communication

Barriers for Innovation and Commercialization Projects:

- a) Lack of quality resources
- b) Not realizing the risks of not doing the project
- c) Technical standard of new technology
- d) Internal resistance to change
- e) Requirements of customers and market
- f) Lack of product differentiation of what to innovate
- g) Lack of vision
- h) Inability to address diversity across globe
- i) Lack of creative ideas

- 7a. From a CEO perspective, what would you change about the execution of project management within your company?

- a) Establish a PMO/assign a senior executive to manage it
- b) Encourage professional development of project managers

- c) Increase accuracy in estimation
- d) Improve project management awareness in the company
- e) Move away from project focus to a strategy execution focus
- f) Specify qualification for selections of project managers (for current employees and new employees)
- g) Implement business process engineering
- h) Foster greater acceptance of ambiguity
- i) Walk the talk

Group Discussion Feedback - Table 2:

3. What are the organizational expectations (i.e., what business value should be created) for projects supporting each of the following businesses in your company?

Expectations for Internal Infrastructure Projects:

- a) Political promises and market expectations
- b) Community benefit and social benefits and shareholder benefits
- c) Lower cost of doing business
- d) Improved customer experiences and satisfaction

Expectations for Customer Relationship Projects:

- a) Market positioning and brand value
- b) Winning bids
- c) Repeat business
- d) Repositioning

Expectations for Innovation and Commercialization Projects:

- a) Customer satisfaction and shareholder return
- b) Repeat business
- c) Market edge, product differentiation
- d) Reduction in operating costs, maximized life

4. For each business type, what if any, barriers/issues prevent projects from achieving these expectations within your organization?

Barriers for Internal Infrastructure Projects:

- a) Inability to sell the value of a project
- b) Resistance to change
- c) Silos
- d) Complicated approval processes
- e) Inflexible and unscalable methodologies
- f) Confused governance
- g) Lack of appropriate project culture

Barriers for Customer Relationship Projects:

- a) Ineffective bid/no bid process
- b) Solution not aligned to the market
- c) Emphasis on political spin rather than facts

Barriers for Innovation and Commercialization Projects:

- a) No integrated leadership from development to sales
- b) Resistance to change/excessive change
- c) Silos
- d) Lack of executive management support

- 7a. From a CEO perspective, what would you change about the execution of project management within your company?
- a) Establish appropriate project enterprise culture
 - b) Improve skills and capabilities of personnel – training, mentoring and coaching
 - c) Effective leadership and governance structure
 - d) More effective use of PMOs – enable project teams
 - e) Clearer accountabilities and performance measurement (also reward and recognition)
 - f) Clean link between corporate governance and project governance

Group Discussion Feedback - Table 3:

3. What are the organizational expectations (i.e., what business value should be created) for projects supporting each of the following businesses in your company?
- a) Increase profit margin (but it is more complicated than that)
 - i) Control=better use of resources
 - ii) Better positioning in the market
 - b) Question: Who owns the organizational expectations?
4. For each business type, what if any, barriers/issues prevent projects from achieving these expectations within your organization?
- a) Turf protection/fearing innovation
 - b) Lack of influence of the project manager
 - c) Lack of knowledge transfer
 - d) Unrealistic expectations
- 7a. From a CEO perspective, what would you change about the execution of project management within your company?
- a) Increase the transparency of information
 - b) Make sure that project management is applied consistently and appropriately through the organization

- c) Increase accountability for innovation

Group Discussion Feedback - Table 4:

3. What are the organizational expectations (i.e., what business value should be created) for projects supporting each of the following businesses in your company?

Expectations for Internal Infrastructure Projects:

- a) On-time delivery/meets customer expectation
- b) Quality deliverables
- c) On-budget
- d) Operational excellence
- e) High availability of services
- f) Compliance to legal regulations
- g) Standardization

Expectations for Customer Relationship Projects:

- a) Customer profiling
- b) Increase efficiencies in data gathering
- c) Increase loyalty of customers
- d) Enable intelligent decision making

Expectations for Innovation and Commercialization Projects:

- a) Improve time to market
- b) Increase market share
- c) Increase profits
- d) Create a better user experience

4. For each business type, what if any, barriers/issues prevent projects from achieving these expectations within your organization?

Barriers for Internal Infrastructure Projects:

- a) Resource management (over allocation)
- b) Lack of governance (between BU and IT)
- c) No clear RAA (responsibility/accountability/authority) – lack of PM authority
- d) Organizational objectives not communicated downstream
- e) Lack of time and money
- f) Organizational politics
- g) Lack of consistency of processes and vocabulary

Barriers for Customer Relationship Projects:

- a) Lack of user adoption (for CRM projects)
- b) Customer needs change

Barriers for Innovation and Commercialization Projects:

- a) Mismatch in expectations vs. deliverables
- b) Internal culture to support innovation

7a. From a CEO perspective, what would you change about the execution of project management within your company?

- a) Elimination of multi-tasking
- b) Consistency of processes across business units
- c) Appoint a project management champion
- d) Strong endorsement and implementation of PM process across company
- e) Create a road map to vision/mission/strategy
- f) Feedback/understanding of root level
- g) Enhance PM power/placement in company
- h) Increase PM governance/steering
- i) Consistent PM framework/PM methodology/templates
- j) More knowledge management practices