



PROJECT MANAGEMENT  
CENTER FOR EXCELLENCE

A.J. CLARK SCHOOL OF ENGINEERING  
Civil & Environmental Engineering Department



# PROJECT MANAGER TRANSITION: A NEW SKILL SET FOR MANAGING LARGE AND COMPLEX PROJECTS

*Richard Wyatt*

*2019 Project Management Symposium*

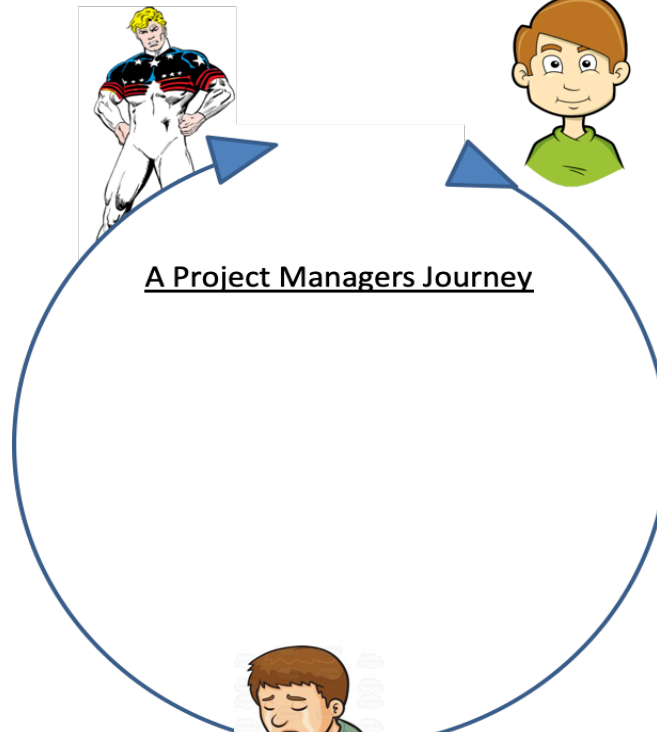


Master of Large and  
Complex Projects



Decides to become a  
Project Manager

?  
?  
?  
?  
?



A Project Managers Journey

Project Mgt School

- WBS
- Critical Path
- Manage the detail

Small Projects

- Detailed Plan
- Total Control
- Great Success**

Medium Projects

- Detailed Plan
- Some delays
- More contentious relationships
- Success but with difficulty**

Larger Projects

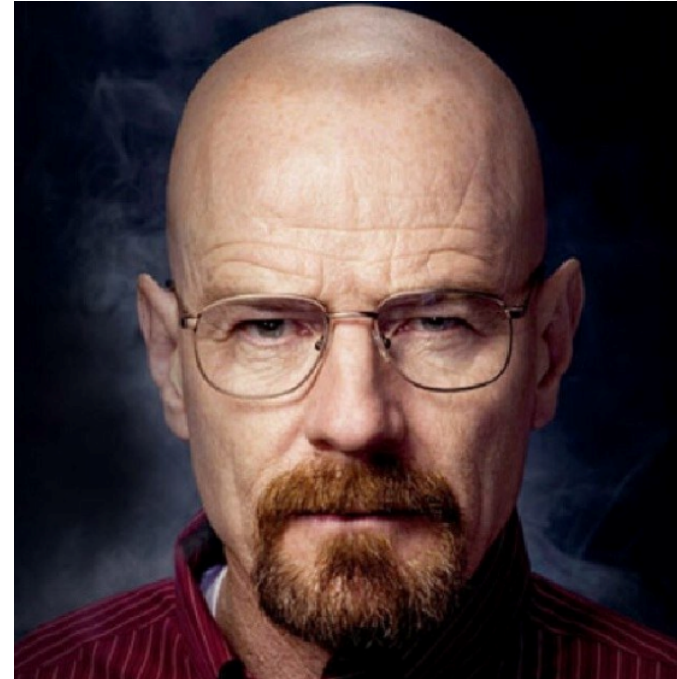
- Detailed plan, constantly needs changing
- Lots of time spend finding status
- Equal focus on all project elements
- One team always late, not prioritizing project
- Project delayed, functionality reduced, not a success !**





Associated Press







# Principles of Managing Large Projects

## 1: Heisenberg Principle



### Heisenberg Uncertainty Principle

The more precisely the position of a particle is determined, the less precision its momentum can be known.

### How this relates to Managing Large Projects

The more precisely you want to control a project, the more time it will take, both from a project manager and from project participants.

This effort grows exponentially as a project grows. To the point that a large project will grind to a halt with traditional project management techniques.

To manage a large, complex project leaders need to loosen their grip on project detail and delegate responsibility and hold those people accountable. The role is to manage people not to manage detailed tasks.





## Principles of Managing Large Projects 2: Command and Control is over-rated



### Command and Control

The US *Department of Defense Dictionary of Military and Associated Terms* defines command and control as: "The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission."

### How this relates to Managing Large Projects

If you manage a large project with a very long and detailed Work Breakdown Structure, decision points will come too quick and fast for a Project Manager act and maintain momentum.

The leader of large projects needs to ensure that the effort is divided up in to semi-autonomous Work-streams where the local leader is Accountable and Authorized to make decisions.



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Slide 8







## Principles of Managing Large Projects 3: Asynchronous Time Management



### Asynchronous Time Management

Leverage finite time by focusing on tasks and partners most likely to be a challenge

#### Traditional PM

- Track all activities equally
- Rely on self reported status
- 'Passive' escalation near or at deadline

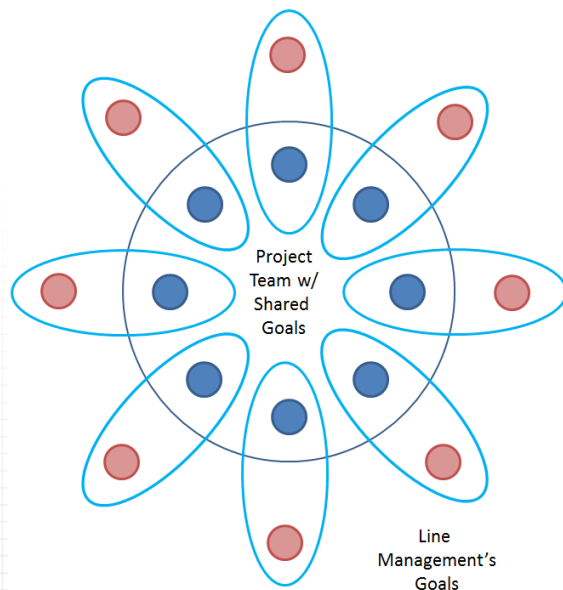
#### Major initiative manager focus based on

- Organizational alignment of teams
- Experience with team leadership
- Other demands on the partners
- Importance of project to partners management





## Principles of Managing Large Projects 4: Keep Goals aligned



Which team do you belong to?

### Sharing goals

Individuals are aligned with Project Managers, Line Managers each of which may have shifting priorities.

### In Project Management

In a project team, resources from various disciplines come together around a shared goal, deliver the project.

However, the line manager of each team member will have a number of goals which may conflict with the project.

### How this relates to Managing Large Projects

The Manager of Large Projects needs to be a diplomat and be aware that priorities may shift. Broad organizational knowledge is required to preempt any action that may compromise a project team member or team.



Associated Press

Every battle is going to surprise  
You. No plan ever survives  
contact with the enemy.



# Principles of Managing Large Projects

## 5: No Plan survives first contact with the enemy

Task Name	Duration	% Complete	Start	Finish	Precedes	Resource Names
<b>Sample Software Development Schedule</b>	<b>125 days</b>	<b>0%</b>	<b>Wed 12/1/10</b>	<b>Tue 5/24/11</b>		
<b>Scope</b>	<b>3.5 days</b>	<b>0%</b>	<b>Wed 12/1/10</b>	<b>Mon 12/6/10</b>		
Determine project scope	4 hrs	0%	Wed 12/1/10	Wed 12/1/10		Management
Secure project sponsorship	1 day	0%	Wed 12/1/10	Thu 12/2/10	2	Management
Define preliminary resources	1 day	0%	Thu 12/2/10	Fri 12/3/10	3	Project manager
Secure core resources	1 day	0%	Fri 12/3/10	Mon 12/6/10	4	Project manager
Scope complete	0 days	0%	Mon 12/6/10	Mon 12/6/10	5	
<b>Analysis/Software Requirements</b>	<b>28 days</b>	<b>0%</b>	<b>Mon 12/6/10</b>	<b>Thu 1/13/11</b>		
Conduct needs analysis	10 days	0%	Mon 12/6/10	Mon 12/20/10	6	Analyst
Draft preliminary software specifications	3 days	0%	Mon 12/20/10	Thu 12/23/10	8	Analyst
Develop preliminary budget	2 days	0%	Thu 12/23/10	Mon 12/27/10	9	Project manager
Review software specifications/budget with team	4 hrs	0%	Mon 12/27/10	Mon 12/27/10	10	Project manager,Analyst
Incorporate feedback on software specification	1 day	0%	Tue 12/28/10	Tue 12/29/10	11	Analyst
Develop delivery timeline	1 day	0%	Wed 12/29/10	Wed 12/29/10	12	Project manager
Obtain approvals to proceed (concept, timeline, secure required resources)	4 hrs	0%	Thu 12/30/10	Thu 12/30/10	13	Management,Project manager
Secure required resources	10 days	0%	Thu 12/30/10	Thu 1/13/11	14	Project manager
Analysis complete	0 days	0%	Thu 1/13/11	Thu 1/13/11	15	
<b>Design</b>	<b>22 days</b>	<b>0%</b>	<b>Thu 1/13/11</b>	<b>Tue 2/15/11</b>		
Review preliminary software specifications	2 days	0%	Thu 1/13/11	Mon 1/17/11	16	Analyst
<b>Develop functional specifications</b>	<b>21 days</b>	<b>0%</b>	<b>Mon 1/17/11</b>	<b>Tue 2/15/11</b>		
Use Case 1	2 days	0%	Mon 1/17/11	Wed 1/19/11	18	Analyst
Use Case 2	3 days	0%	Wed 1/19/11	Mon 1/24/11	20	Analyst
Use Case 3	1 day	0%	Mon 1/24/11	Tue 1/25/11	21	Analyst
Use Case 4	1 day	0%	Tue 1/25/11	Wed 1/26/11	22	Analyst
Use Case 5	1 day	0%	Wed 1/26/11	Thu 1/27/11	23	Analyst
<b>Interface Specs</b>	<b>8 days</b>	<b>0%</b>	<b>Thu 1/27/11</b>	<b>Tue 2/8/11</b>		
Interface 1	1 day	0%	Thu 1/27/11	Fri 1/28/11	24	Analyst B
Interface 2	1 day	0%	Fri 1/28/11	Mon 1/31/11	25	Analyst B

### Project Plan / Work Breakdown Structure

A step by step articulation of what needs to happen, in which order and by when in order to meet the delivery goals of time, budget and functionality.

### In Project Management

Project Managers are taught to make a detailed plan of the tasks, sequence and resources to deliver the project, before the project is kicked off. Starting with smaller projects, plans are detailed and specific.

### How this relates to Managing Large Projects

Managers of large projects need to create approaches to delivery that enable flexibility without administrative burden. These plans must rely on delegated responsibility where the known interface points are honored but local execution flexibility is enabled. Partner accountability is critical.



## Principles for Managing Large Projects and Programs

- Loosen grip on project details
- Enable autonomous but accountable workstreams
- Focus on where the challenges are most likely to occur
- Recognize that organizations are an interconnected web of sub-goals
- Manage plans that are flexible, autonomous within clear interconnection points



### Additional Principles

- Match the communication to the audience (Butterfly effect)
- Don't manage the pennies, optimize the output
- Failure need not be an option, there are levers to pull.
- Lead leaders
- Enable coexistence of Project Management Methodologies



# Questions?

Contact Richard Wyatt

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