

Introduction to Project Management

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Why so much focus on Project Management?

- Some key challenges with scientific, research, and digitization projects:
 - Scientists want to do research, not administration
 - Project administration can be time consuming, which distracts scientists from their main interests
 - Funding agencies desire accurate cost estimates and predictable outcomes



Why so much focus on Project Management?

- Scientific, research, and digitization projects can get into trouble when:
 - Objectives are not well defined
 - Communication is inadequate
 - Trouble is diagnosed at vulnerable times
 - Cost overruns
 - Delays
 - “Near death” syndrome



There has to be a better way!

- Impart experience of current scientists & managers to those in emerging projects
- Educate emerging scientists & managers in the basics of project management
- Emphasize value of leadership and teamwork



Goals for today

- Clarify what we mean by:
 - Project
 - Project Management
 - Project Manager
- Introduce you to the basics of project management
- Introduce you to some tools and techniques to begin managing projects

What is a project?

A project is a temporary endeavor undertaken to create a unique product, service, or result.

<http://www.pmi.org/About-Us/About-Us-What-is-Project-Management.aspx>

- This is code for:
 - Specific and desired outcome; not routine
 - Defined beginning and end in time
 - A budget that limits resources

What is project management?

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

<http://www.pmi.org/About-Us/About-Us-What-is-Project-Management.aspx>

- This is code for:
 - Provides structure that promotes success
 - Focuses the team on goals and outcomes
 - Balances time, resources, and scope
 - Promotes effective communication

What is a project manager?

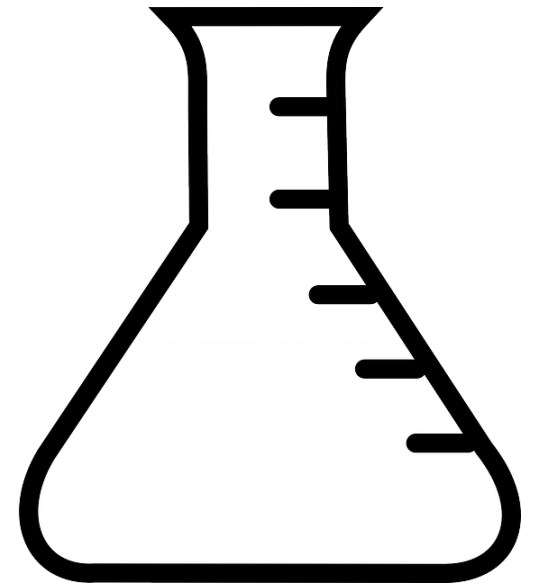
The project manager is the person assigned by the performing organization to achieve the project objectives.

Project Management Institute (PMI)

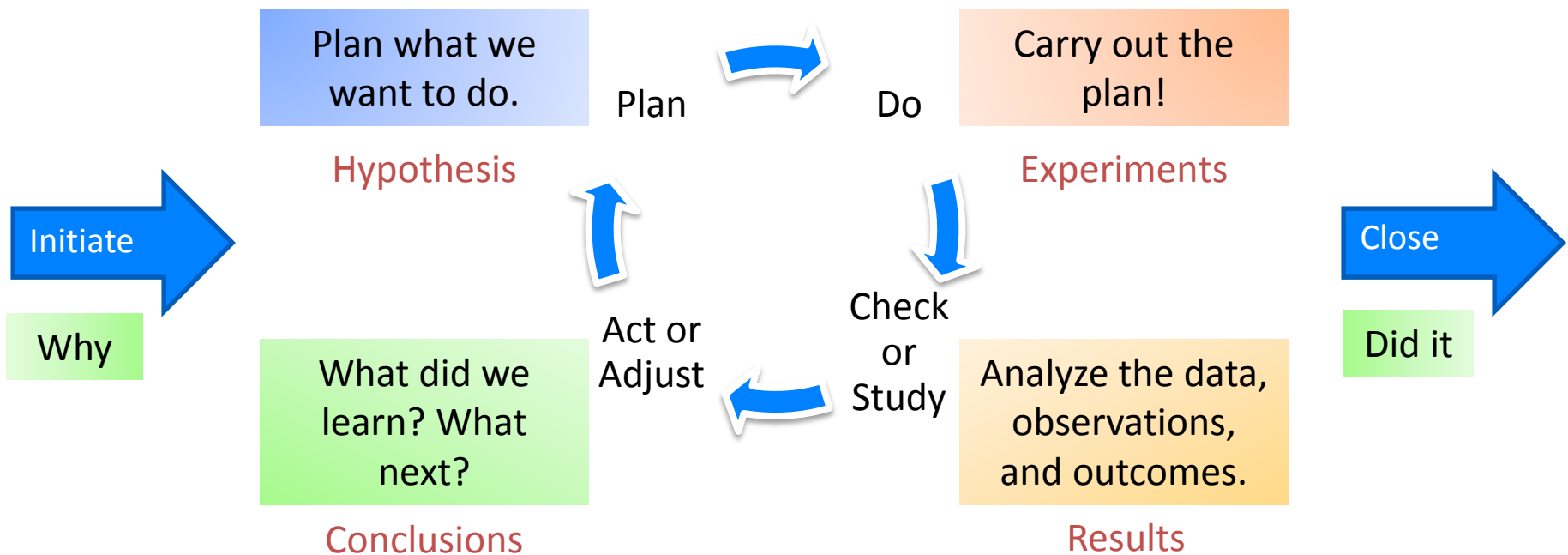
- This is code for:
 - Responsible for meeting (or exceeding) stakeholder needs and expectations
 - Responsible for planning, execution, and closing
 - Responsible for applying PM in the manner and dosage appropriate to the specific team

The essence of project management

- Guiding project from inception to successful completion
- Predictably meeting project requirements within established constraints



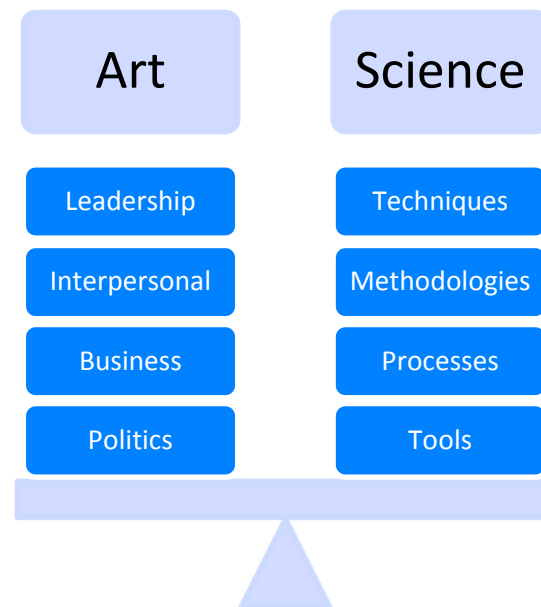
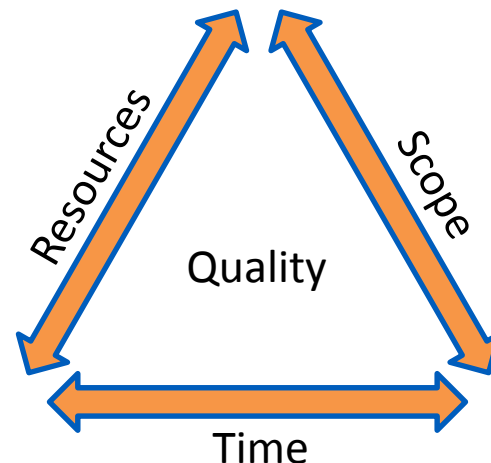
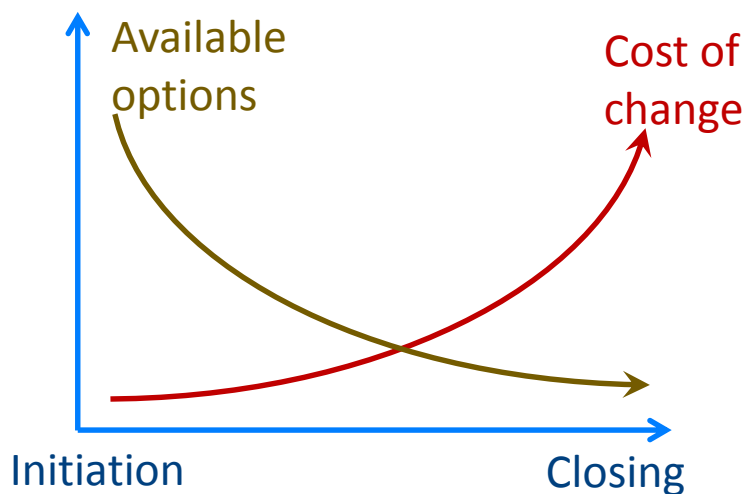
The project management process has its roots in the scientific method...



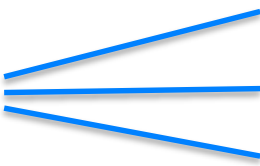

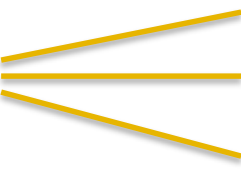

Walter Shewhart / W. Edwards Deming / PMI

We always must strive for balance...

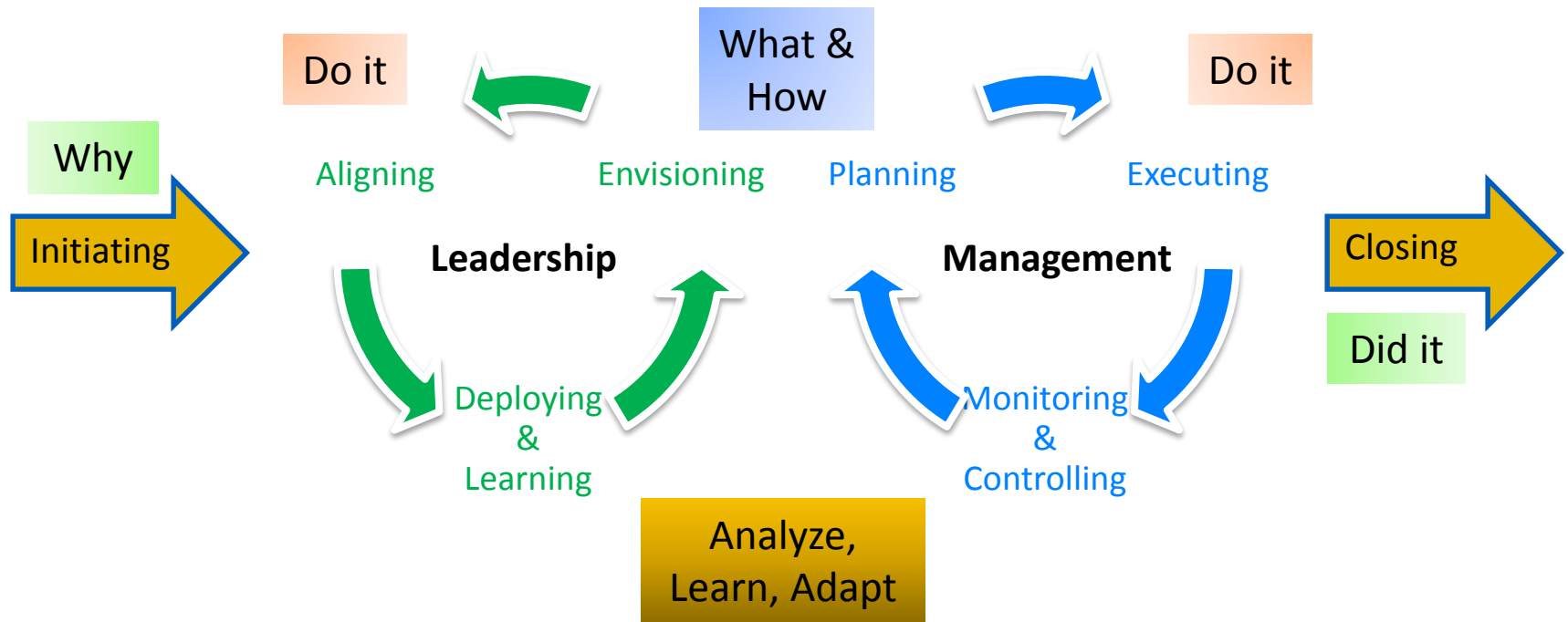
- Resources are limited
- Never enough time
- Everything has risk
- Must work with humans



Traits of successful project managers

- **Visionary** 
 - Have foresight tempered with realism
 - See both the forest and the trees
 - Don't attempt to be omniscient
- **Reliable** 
 - Get things done; be proactive
 - Say what you mean; mean what you say
- **Organized** 
 - Be pragmatic – what is essential vs. not?
 - Seek alternatives and different viewpoints
 - Keep the ball rolling
- **Flexible** 
 - Adapt, overcome, improvise
 - Wear the right hat at the right time

So, let's integrate leadership into the process...



Hybrid of PMI & CH2M HILL Project Delivery System

Example outputs at each stage...

Leadership		Management	
Initiating	Customer focus, Team building	Feasibility, Scope of Work	Initiating
Envisioning	Vision, Mission, Strategy	Workplan, WBS, Schedule, Budget	Planning
Aligning	Politics, Communication, Endorsement	Task lists, Deliverables	Executing
Deploying	Implement, Enforce	Trending, Evaluation	Monitoring
Learning	Assess, Incorporate	Corrective action	Controlling
Closing	Satisfaction	Delivery	Closing

What are the secrets to success?

- **Initiation** is where you establish your scope of work. Lack of agreement or understanding will cause scope creep.
- **Planning** is where you gain a better understanding of what needs to get done and then communicate it to the team and stakeholders.
- **Closing** is when you have agreement from all stakeholders that the project is finished.



But, wait! That's not where things get done!

- **Executing** is where the “work” gets done,
- **Monitoring** is where we measure progress, and
- **Controlling** is where we make minor course corrections!

- Remember:
 - Scientists and engineers, in particular, resist being told what to do or how to do things
 - Management often doesn't understand “the work”
 - People tend to be optimistic in progress assessments

Initiation

- A simple statement of the **Project Objective** can be your most powerful tool:
 - **What** are you going to do?
 - **How** are you going to do it?
 - **Why** are you doing it?
- Achieve stakeholder endorsement before starting work
- The **Project Objective** is your baseline for measuring scope creep



Planning is absolutely vital!

- Create a **workplan** as guide and map for your team:
 - **What** needs to be done?
 - **Who** is doing the work?
 - How much will the work cost (**budget**)?
 - When will the work be done (**schedule/milestones**)?
 - **How** the work will be done?
 - How will you manage **communications**?
 - How will you manage **risk**?
 - How will you manage **change**?
 - What **metrics** will you use to track **progress, quality, and scope**? How will you measure them?
 - What are the internal and external **dependencies**?



Closing

- If you've done your job well, closing is easy:
 - Customer/stakeholder needs and expectations have been met or exceeded
 - Customer/stakeholders know exactly what was delivered
 - Customer/stakeholders are satisfied
 - Closing is simply a matter of acknowledging that everything was delivered as agreed
- What if they still want more?
 - Aren't you glad you made that **Project Objective** statement and got stakeholder endorsement?



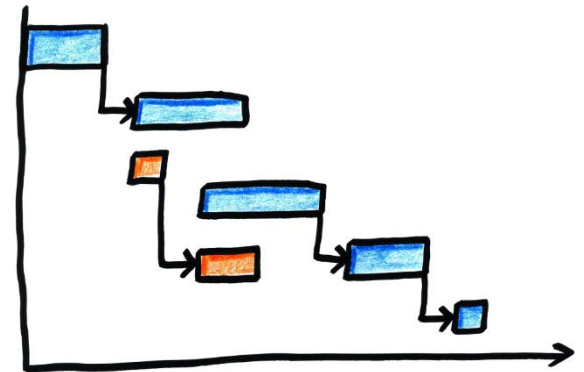
Some comments about Progress...

- Avoid using “percent complete” ...
 - People are overly optimistic (or guess) (or lie)
 - 80/20 rule: the last 20% takes 80% of the time
 - Work (and meetings) expand to fill available time
- Binary completion is a more accurate progress measure
 - Is it done? Yes or No
- The key is to plan **milestones**
 - Milestones are significant events that often take several activities and a lot of work to complete
 - If they are measureable, they are useful tools for setting goals and measuring progress



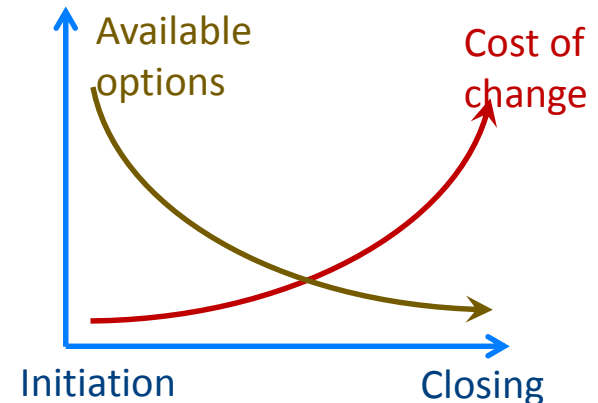
Some comments about Timelines...

- Ultimate goal is a realistic project schedule
- Basic steps in developing a timeline:
 - Define the activities
 - Determine the sequencing
 - Estimate the duration of each activity
 - Take into account interdependencies
- Suggestions for success:
 - Know the critical path – this series of activities determines the *earliest time* you can finish
 - Establish a baseline to measure against
 - Allow for contingencies
 - Nobody can work at 100% capacity all of the time



Some comments about Change...

- Change is *inevitable*.
 - *Accept it* because you cannot stop it.
 - Stakeholders change their minds
 - Requirements morph after a “freeze”
- How you plan for and deal with change is what matters!
 - *Evaluate* changes based on their ability to advance the project objectives
 - Use the **Project Objective** statement as your baseline
 - *Quantify the impact* of changes in terms of scope, schedule, resources, quality, and risk
 - *Prioritize* changes based on overall impact
 - Let the *customer* prioritize major changes
 - Keep all stakeholders in the loop



Some comments about Risk...

- Risk management is important because stuff happens
 - *Nothing is risk-free*
 - Risk increases the longer your project runs
- Like change, how you plan for and deal with risk is what matters!
 - Identify the likelihood and impact of the risk
 - Can you prevent the risk from happening? Can you avoid it altogether?
 - What will you do if it happens? Can you reduce the impact?



Some final thoughts...

- Identify a suitable person to manage project
– skill set, temperament, commitment
- Project plan – get and stay organized;
anticipate & plan for risks & change;
interface with institutional procedures
- Flexibility in all aspects – don't be schedule
or budget driven, but rather outcome driven
- Decisions – often easier to beg for
forgiveness than to ask for permission

Some final thoughts...

- Communication – utilize various media to reach different kinds of people; hold regular meetings; keep stakeholders involved
- Seek out lessons learned – what works; what doesn't; mentoring
- Delegate – don't attempt to do everything
- Leadership is always important
- Balance your time, resources, and scope

Some potentially useful tools...

- Documents & budgeting
 - Google Docs, Microsoft Office, LibreOffice
- Scheduling
 - Microsoft Project – “the standard”
 - Ganttter – <http://www.ganttter.com/>
 - ProjectLibre - <http://www.projectlibre.org/>
- Project management
 - OpenAtrium – <http://openatrium.com/>
 - Basecamp – <https://basecamp.com/>
 - OpenProject – <https://www.openproject.org/>
 - Redmine – <http://www.redmine.org/>
 - asana – <https://asana.com/>

Some potentially useful resources...

- iDigBio's Project Management Resources:
https://www.idigbio.org/wiki/index.php/Project_Management_Resources
- Project Management Institute: www.pmi.org
- DoIT Project Management Advisor:
www.pma.doit.wisc.edu
- Improving the User Experience: www.usability.gov
- Project Science: www.projectscience.org

Project Management Lessons from *Star Trek*

- Non-interference is the Prime Directive
- Keep your phaser set on stun
- Humans are highly illogical
- Live long and prosper
- Infinite Diversity in Infinite Combinations
- Having is not so pleasing a thing as wanting
- Tribbles hate Klingons and Klingons hate Tribbles
- Enemies, like Romulans, can be cloaked
- Don't put all your senior officers in one shuttlecraft
- Insufficient data does not compute
- When logic fails, trust a hunch



Thank you!

Questions?



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