Project Management for Scientists

Project Definition

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Outline

- Questions to Ask at the Beginning
- Stakeholders
- Key Players
- Project Rules
- Project Charter
- Statement of Work
- Responsibilities and Authorities

What Defines the Project?

- Specifications, science requirements
- Contract
- Request for proposal
- Any document specifying project need/objective
- Is it a project?
  - Clear beginning and end?
  - Specific, measurable (SMART) objectives?
  - Unique one-time effort requiring custom solution?
  - Quick response required?

Questions to Ask at the Beginning

- Will I work alone, or are others involved?
- Who will be on the team?
- Who will use the end product?
- Who will specify the requirements?
- Who will approve the final product?
- Who is paying the bill?
- What is the availability of other team members?
- Do I have the authority to ask for help?

Stakeholders

- Anyone with stake (interest) in project
- Anyone influenced by project or its results
- Individuals, organizations

- Stakeholders:
  - Make all important decisions during definition, planning
  - Establish agreements, goals, constraints, strategies, schedules, budget
  - Judge success of project

Leading Stakeholders

- Identify stakeholders (diverse group)
- Determine stakeholder requirements and expectations
- Manage their influence in relation to requirements
- Control who becomes a stakeholder
- Manage upward

Key Players in Science Projects

- Project sponsor (project owner) provides funding
- Project scientist (defines science scope)
- Project manager (makes project happen)
- Project team (members)
- Customer/recipient
- Institute management
- Advocates, opponents, innocent bystanders

Key Players Example: EPICS

For Phase A study:

- Project sponsor: *ESO, NOVA*
- Project scientist: *Keller (Leiden Univ.)*
- Project manager: *Bettonvil (ASTRON)*
- Other key project stakeholders: *NL, CH, and other European science communities*
- Team members: Venema, Roelfsema, Schmid, Waters, Stam, Keller
- Customer/Recipient: ESO

Project Sponsor

- Sponsor has formal authority over and ultimate responsibility for project
- Projects often cross organizational boundaries
- Project manager often lacks sufficient authority
- Project sponsor can solve problems
- Primary task is to help team to be successful

Project Scientist

- Primary responsibility for science capabilities
- Larger projects: leads Science Working Group
- Prime contact for all science-related issues
- Authority to make science decisions
- Must work together with project manager

Project Manager

- Project “conductor”, leads project management tasks
- Moves things along in harmony
- Often at equal level with project scientist role in scientific projects
- In industry: project lead

Successful Projects (LO1)

1. **Agreement among project team, customers, and management on the goals of the project**
2. Plan that shows an overall path and clear responsibilities that can be used to measure the progress of the project
3. Constant, effective communication among everyone involved in the project
4. **A controlled scope**
5. **Management support**

Agreement on Project Goals

- Can be difficult
- Stakeholders: diverse group with diverse interests
- Agreement
  - find before project starts
  - also on how to change project goals (see Change Management)

Controlled Scope

- Project is largely unknown when starting
- Uniqueness leads to:
  - Challenge and fun of projects
  - Overruns in budget and schedule
- Define rules on how to control/manage scope (science capability)

Management Support

- Project rarely has authority over all stakeholders
- Project sponsor is crucial ingredient for success
- Agreement on project rules with:
  - Project Charter
  - Statement of Work
  - Responsibility Matrix
  - Communication Plan

Project Charter

- Formally announces project existence
- Makes key players public
- Demonstrates management support
- Establishes project managers/scientists rights and authority
- May be combined with statement of work

Project Name

- Good for marketing
- Can be a lot of fun
- List potential words
- Synonyms for these words
- Be aware of cultural sensitivities
  - Swedish International Development Cooperation Agency (SIDA)

Project Budget & Schedule

- Budget and how flexible it is
- Schedule and how flexible it is
- Reason for budget (limits) and deadline
- Reliable estimates?
  - Often unclear in scientific projects
  - End date often unclear in scientific projects

Assumptions

- Document major assumptions underlying project
- Factors/situations assumed to exist or not exist
- Example: availability date of key resource is not well defined ➔ make guess and document this assumption
- Do not assume away all risks
- Make reasonable assumptions
- Document assumptions
- Discuss assumptions with project sponsor

Statement of Work (SOW)

- SOW is top-level summary, often project charter
- Outlines vision, strategy: guide for decision making
- Clearly defines scope: clear limits of what will be done
- Deliverables
- Cost and schedule estimates
- Objectives: Measure of success
- Stakeholders
- Chain of command: organization chart, communication plan

Responsibility (RACI) Matrix

- Details responsibility of each involved group
- Shows cross-organizational interaction
- Entries of RACI matrix:
  - **R**esponsible (conducts work, one or several)
  - **A**pproval authority (accountable, only one)
  - **C**onsultation (2-way communication)
  - **I**nformation (1-way communication)

Task	C.U.Keller	E.Zariem	Students
Lectures	R, A	C	I
Define problems	R, A	R	I
Solve problems		A	R
Correct Exercises	A	R	C

Communication Plan

Answers the following questions:

- Who needs information?
- What information do they need?
- When and how will they get it?
- What response is required within what time frame?

May also define:

- Regular project meetings
- Escalation procedure
- Repetitive information through different channels

Example Communication Plan

- Monthly Technical Activity Report: prepared from project team input, covers monthly team activities and relates them to schedule
- Monthly Financial Reports: Finance & Control will provide project manager with reports on costs, direct labor hours and cost, commitments of funds
- Quarterly Reports: Project manager will prepare summary of project status; budget, subcontracts, and technical problems, compared to project schedule
- Technical Reports: numbered reports, prepared by project team, will provide record of technical work