



Description

You hear it everywhere: the project was delayed and over-budget. Whether it be bridges, space shuttle launches, or federally funded science projects, poor research project management can lead to abysmal consequences. Consider the example of the [BepiColombo](#) mission, a project to send an orbiter and lander to Mercury. While originally budgeted at 450 million euro for a 2008 mission, only the orbiter was developed in 2013 and at a cost of over 1 billion euro!

In academic sciences, project management for scientists is important. While a contract might be extended for a federal grant, the funders will remember who could not manage a project correctly. Meanwhile, if working on a degree, such as a PhD, managing a large research project is critical for sticking to a timeline. Given that the typical constraints of a project include the science goals, time, risks, and costs, [research project management](#) becomes critical to the success.

Why Project Management Matters in Science

Successfully obtaining and completing a research grant requires intellectual and scientific self-awareness. In this honesty, a scientist can better predict the true costs and requisite time to complete his or her projects. Furthermore, having a detailed and well-designed project plan is foundational to convince a funder that you can do a project efficiently.

Managing a scientific research project often requires a variety of organizational and leadership skills. Scientists [naturally acquire these skills](#) over time due to experiences with failed experiments, planning a research question, and writing manuscripts. Yet, a principal investigator also needs to be aware of the more abstract caveats of a research laboratory and its personnel. Research teams are affected by internal politics, including the resources of their institution and the skills and motivation of the team members. The practical demands of any project can be easily over-looked; therefore, management techniques are needed to overcome the constraining factors.

So, what can a scientist do? Being a skilled and creative scientist isn't enough – they must also manage projects carefully.

Key Areas to Manage

When managing a research project, there are several concerns that an investigator might have. There are various important considerations for conducting science team meetings, which include preparation, participation, conduct, and follow-up. Furthermore, information flow should be carefully maintained to provide sufficient information so that all team members understand the process and the project. Finally, a researcher must be ever vigilant of the boundaries of the project (i.e., the scope of the research). Without careful monitoring, the scope of the research may creep into a new field. A project might thus lose its focus and the planned goals may never be achieved. It is important to remember the desired outcome and plan tasks, while regularly reviewing the progress and modifying the next steps accordingly.

Management Tools

Several tools exist to help manage a research project, including Evernote for science, citation management software programs (e.g., Endnote or Mendeley), calendars that can be synced across devices or shared with collaborators (e.g., Google Calendar), and drives that can help researchers share or backup data for collaborations or protection from cyber attacks that can result in data loss.

In addition to these ubiquitous tools, there are additional management tools that can help a researcher be both a scientist and a project manager. One such tool is [LabGuru](#), which offers a collaborative project planning platform and allows for document storage. Meanwhile, a schedule developer that allows for timelines, flow charts and activities/responsibilities to be communicated, such as Microsoft Project and GANTT charts provide more centralized tools.

As scientists prepare to manage large research projects, one should make several considerations within the project constraints. Furthermore, many research project management tools are available to facilitate the requisite tasks. As academic sciences become more competitive due to limitations in funding and resources, a well-managed and realistic project plan can be one way to guarantee research success.

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