VIMSS:ESPP2 Scientific Research Project Management

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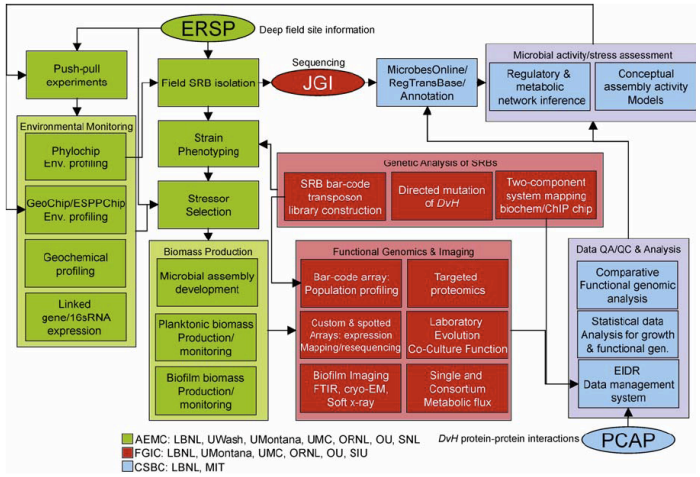
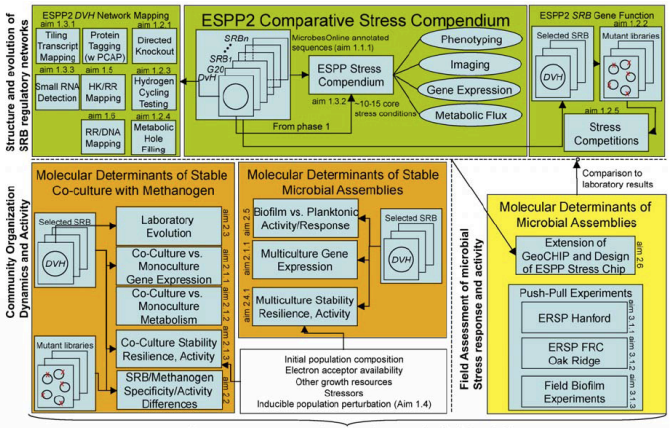
INTRODUCTION

The success of a mature scientific research program depends on maintaining an agile Performance Monitoring Project Management structure, which served the flagship VIMSS:ESPP effectively, while implementing more formal risk management oversight practices as proposed new technologies are integrated into the pre-existing core research groups. Project Management offers the stability of a rational and logical process for managing work in a virtual research institute. This (re)new research project initiated at three national laboratories and seven universities from coast to coast and is comprised of ~75 individuals collaborating within three core research groups: Applied Environmental Microbiology Core (AEMC), Functional Genomics and Imaging Core (FGIC) and Computational and Systems Biology Core (CSBC). We have found that there is a balance between tight project management to create synergy, focus and continuity to the project and well-tracked individual-investigator-driven initiatives and follow-up that must be struck to maintain creative engagement and productivity of the project team, all while remaining vigilant against scope creep. It has been our experience that frequent and rapid communication at different levels with different media is critical to exploiting the scale and diversity of the team project's capabilities for this multidisciplinary, multi-institutional collaboration.

TEAM SCIENCE APPROACH





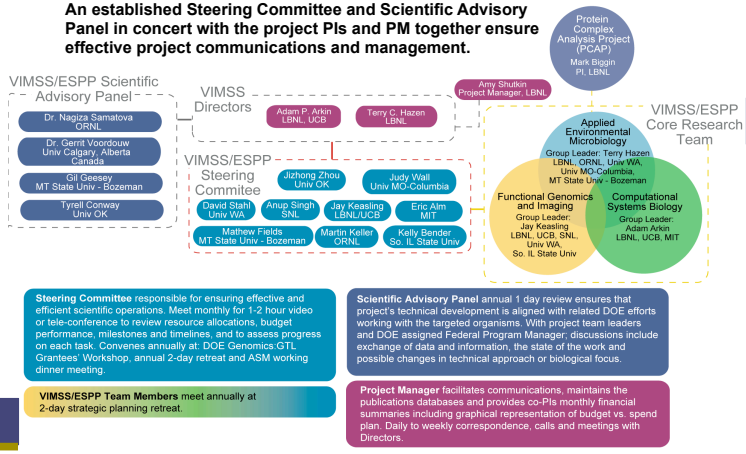
Overview of the data management, integration and analysis aims (above).

Project Management Plan Development & Implementation

The schedule is a crucial element of the Project Management plan and a key document for the Integrated Project Team (IPT). It shows the relationships between the individual team activities and the research and publication goals and milestones that need to be achieved on a dynamic timeline. The project tracking is reviewed during monthly audio/net conferences and is readily viewed and routinely updated via our shared wiki, a website that allows for collaborative editing.
In addition, we recognize that new discoveries made during the period of performance may be so significant that a high level review of the individual elements of the scientific program may be necessary. Due to the positive or negative impacts this could have on the project, it is advantageous to implement a trend program. Trend programs provide an early warning of conditions that could affect the outcome of a project (scope, cost or schedule). If the trend does have an impact, it will be incorporated into the baseline through a formal process. Alternatively a corrective action could resolve the trend with no impact to the overall schedule. Team leaders are thus responsible for alerting their core project PI as soon as they have made a new discovery or breakthrough, so that these implications can be evaluated.

Performance Monitoring & Communications

An established Steering Committee and Scientific Advisory Panel in concert with the project PIs and PM together ensure effective project communications and management.



Steering Committee responsible for ensuring effective and efficient scientific operations. Meet monthly for 1-2 hour video or tele-conference to review resource allocations, budget performance, milestones and timelines, and to assess progress on each task. Convenes annually at: DOE Genomics:GTL Grantees' Workshop, annual 2-day retreat and ASM working dinner meeting.

VIMSS/ESPP Team Members meet annually at 2-day strategic planning retreat.

Scientific Advisory Panel annual 1 day review ensures that project's technical development is aligned with related DOE efforts working with the targeted organisms. With project team leaders and DOE assigned Federal Program Manager, discussions include exchange of data and information, the state of the work and possible changes in technical approach or biological focus.

Project Manager facilitates communications, maintains the publications databases and provides co-PIs monthly financial summaries including graphical representation of budget vs. spend plan. Daily to weekly correspondence, calls and meetings with Directors.

COST ESTIMATION & BUDGET OVERSIGHT

A detailed five-year cost estimate includes all elements of the projected total cost including a quantifiable contingency based on risk. The proposed budgets are based on the original project's actual expenses, estimated current direct and indirect costs. This allows traceability of the estimate back to quantifiable data. Budgets are reviewed monthly by the PM and PIs. The budgets for the six subcontract project activities are administered centrally, monitored by the PM and independently controlled by the co-PIs at their institutional level.

SCHEDULE DEVELOPMENT & EXECUTION

The project scope, defined within the WBS (Work Breakdown Structure), is also referred to as the technical baseline. It is used to quantify the work in terms of the core research performed. The schedule activities are derived from the WBS and reported and updated via the online project wiki. The tasks can thus be rolled up, hyperlinked and annotated so that the research progress can be viewed and analyzed at any level of detail. Data elements that are common to both the budget and research baselines; typically names, budget fund numbers, duration and percent complete, will be consistent across the systems tracking these data elements. The project wiki is dynamically updated to a level that gives confidence in its accuracy.

RISK IDENTIFICATION & MANAGEMENT

Risk assessment and management is a knowledge-based function. During the Risk Planning stage the PIs select key Steering Committee members for a Risk Selection Team (RST). The RST is equipped with the appropriate knowledge and experience to evaluate the risk areas associated with a specific task.
The RST determines how identified risks will be handled. For example, they may be reduced, accepted, avoided or transferred. The expected outcome of the risk event can be reduced by lessening the probability of the occurrence. Risk contingency alone on research and development budgetary estimates can range from +15% to + 40% (DOE-G 430.1 chapter 20.F.2) because data required for the estimates may not be available due to the "state-of-the-art" nature of the project. The contingencies, however, become smaller as the project matures and becomes better defined. Finally, risks are actively monitored. The RST reviews risk handling strategies and projects forward to prevent or mitigate future risks.

ACKNOWLEDGEMENT

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