CIF21 DIBBs: Ubiquitous Access to Transient Data and Preliminary Results via the SeedMe Platform | Award Number: 1443083
PI: Amit Chourasia, Co-PI: Michael Norman, University of California San Diego

SeedMe is a platform that enables easy sharing and lightweight visualization of transient and preliminary data for research computing community by offering cyberinfrastructure as a service, along with and a modular customizable software stack.

CHALLENGES

Deferred project start
The project is building software that leverages the open-source *Drupal* web content management system. During the proposal stage, we chose Drupal version 7, but during project startup it became clear that the imminent Drupal version 8 was a better choice for several reasons:

- Drupal 8 offered significant new features useful for the project.
- Drupal 8 would quickly become a popular platform, and a better basis for our released software.
- Drupal 8's new object-oriented style would speed up our software development.

Unfortunately, the release of Drupal 8 was delayed for several months, which delayed the start of our project. In the interim, we refined the user interaction design, developed non-Drupal internal APIs, and wrote data handling code for a variety of project and community file formats.

Development
Drupal 8 brought a new internal design with new APIs. This created project challenges including:

- Undocumented and under-documented Drupal APIs.
- Incomplete and quirky functionality in the first Drupal 8 releases.
- Delays as necessary third-party code was gradually released for use atop Drupal 8.
- Unexpected staff turnover had detrimental effect on development with loss of knowledge due to personnel transition.

To develop atop Drupal 8, the team must rely upon reading internal Drupal source code to understand functionality. This slows down software development.

FUTURE CHALLENGES

Service and support
Like many projects, SeedMe must address several challenges for a longer term and broader impacts:

- SeedMe installations will run live to provide their community with a collaboration infrastructure. This requires at least minimal on-going operational effort to support end-users.
- SeedMe provides storage and web access to user data, textual, and visualization content. This requires a persistent and maintained hosting infrastructure.
- SeedMe's software stack is based on Drupal 8, but software releases with new features, bug fixes and security fixes occur every month or so. Maintaining project software requires at least minimal effort to test and debug for new releases.

Sustainability
New platforms, like SeedMe, face challenges to instill initial and long-term trust from end-users who must be confident in project longevity before integrating it into their workflows. Research funding sources, however, are not long term. A business model is required to sustain a project, but charging for services too early in project life raises barriers to adoption. Even with a business model, the research community is small and it is difficult to charge a reasonable price that is also enough to sustain a project.

Additionally, project teams are primarily technology experts interested in building new platforms with the latest tools. These teams are rarely equipped with entrepreneurship skills, or interests, in building a sustainable business.