

COLABS – Long Term Vision

Comprehensive services in support of scientific software stewardship and sustainability

Elevate scientific software development through

- Availability of well-trained professionals
- Extensive training
- Education
- Community-building efforts
- Advocacy for both better software and for the people responsible for it

A modest research component on the “science of scientific software”

- In the spirit of SSSDU workshop report
- To help improve COLABS services and training and the broader community.

The Research Software Engineer role

People with many job titles contribute to the development and maintenance of scientific software



Software professional



Computer Scientist



Domain scientist



Computational
Scientist

COLABS adoption of term RSE

- ❑ ..As part of a world-wide movement which has settled on the term "research software engineer" (RSE) for this role
 - ❑ "those who regularly use expertise in programming to advance research" -- US-RSE (professional society)
- ❑ Many research-oriented institutions have a hard time valuing contributions to software development and sustainment
 - ❑ This applies to full and part time RSE's
- ❑ COLABS will advocate for better recognition and rewards for software-related contributions with member institutions and sponsors

Any of them can assume full or part time role of research software engineer

COLABS – Near Term Approach

- ❑ Help to ensure continuity of software projects
 - ❑ Selected with input from ASCR and other interested offices
- ❑ Project personnel involved in sustainment activities are lent to COLABS for a negotiated portion of their time.
 - ❑ They can work only on the project lending them, or can choose to also offer their effort to other projects that can use their expertise
 - ❑ Those willing to offer their expertise form a pool of available resources for specific services that projects might need
 - ❑ Examples – help in porting to specific platforms, stand up CI-CD pipeline, containerization etc
- ❑ Build up a training program – leveraging investments in BSSw tutorials, Intersect (from NSF)
 - ❑ Expand the pool of available expertise
 - ❑ Make sure that project personnel have access to learning they need to be effective

COLABS – Medium Term Approach

- ❑ Continue to offer help to ensure continuity of software projects
- ❑ Work towards stability and guaranteed funding for services offered by COLABS
- ❑ Help projects transition to a model where they rely more on COLABS for common services
 - ❑ Also seeking expertise for specific tasks on an “as needed” basis
- ❑ Expand the pool of available expertise
- ❑ Engage with educational institutions to influence curricula and input into an on-boarding training program
 - ❑ Cast a wider net for recruitment

COLABS Long Term Activities

A Partial Catalog of Sustainability Services

Central Services

- Services that are more effectively centralized
- Setup and maintenance of CI/CD pipelines
- Building and maintaining containers

Essential Services

- Baseline levels of effort
- Specific activities determined with help from COLABS

Advanced Services

- Above baseline levels
- Porting, test development, refactoring, etc.
- May include lightweight proposal process

Coaching

- Help with assessment and improvement of software practices.
- Use COLABS training to help clients in enhancing sustainability

Subject Matter Experts

- Pool of experts needed occasionally by projects
- Test design
 - UI/UX design
 - Security protocols
 - Licensing etc.

COLABS Activities – Special Cases

Incubation

- Help with initial setup and development
- Training project personnel
- Help bring the project to a self-sufficient operational level

Assuming Maintenance

- Mature project without enough resources
- Of value to community
- With guidance sponsors or community
- Funding options
 - Some funding set aside by COLABS
 - Sponsors provide necessary funding
 - Users contribute efforts to COLABS for project maintenance

Working with COLABS

- ❑ Embedded project staff
 - ❑ COLABS can provide support and training
 - ❑ Advocacy
- ❑ Projects in need of help (or unaware that they need help)
 - ❑ COLABS can provide needed services
- ❑ Pool of expertise that most projects need only occasionally
 - ❑ Get the help without having to hire someone

Benefits to COLABS Members

- ❑ Professional development and growth opportunities
- ❑ Training to stay current with the state-of-the-art
- ❑ Access to a community of like-minded people
- ❑ Appropriate recognition of contributions to COLABS clients
- ❑ Advocacy for recognition and career path
- ❑ Greater (funding) stability for staff in RSE roles

Benefits to Project (PI)

- ❑ Greater stability for services critical for project
 - ❑ Less need to cut corners on quality and user-engagement
 - ❑ Some continuity in face of erratic funding cycles
- ❑ Support for capabilities that can be hard to sustain (especially for smaller teams)
- ❑ More diversified expertise available when needed

Benefits of COLABS for Sponsors

- ❑ Increased attention to and action on software sustainability
- ❑ Economies of scale in sustainability services
 - ❑ The design of COLABS can support the needs of multiple sponsors
 - ❑ ASCR is the initial sponsor
 - ❑ Can imagine other DOE offices funding COLABS to support application projects, SciDAC projects, experimental and observational user facilities, etc.
- ❑ Better match of tasks and expertise for more efficiency
- ❑ Highly trained workforce
- ❑ More professional development, career support --> greater retention
 - ❑ COLABS also plans a significant workforce development component to build a stronger, deeper pipeline for growing needs for people in the RSE role
- ❑ Possibility of bridging funding gaps for useful software

COLABS Design is Scalable in Multiple Dimensions

Organizational scalability

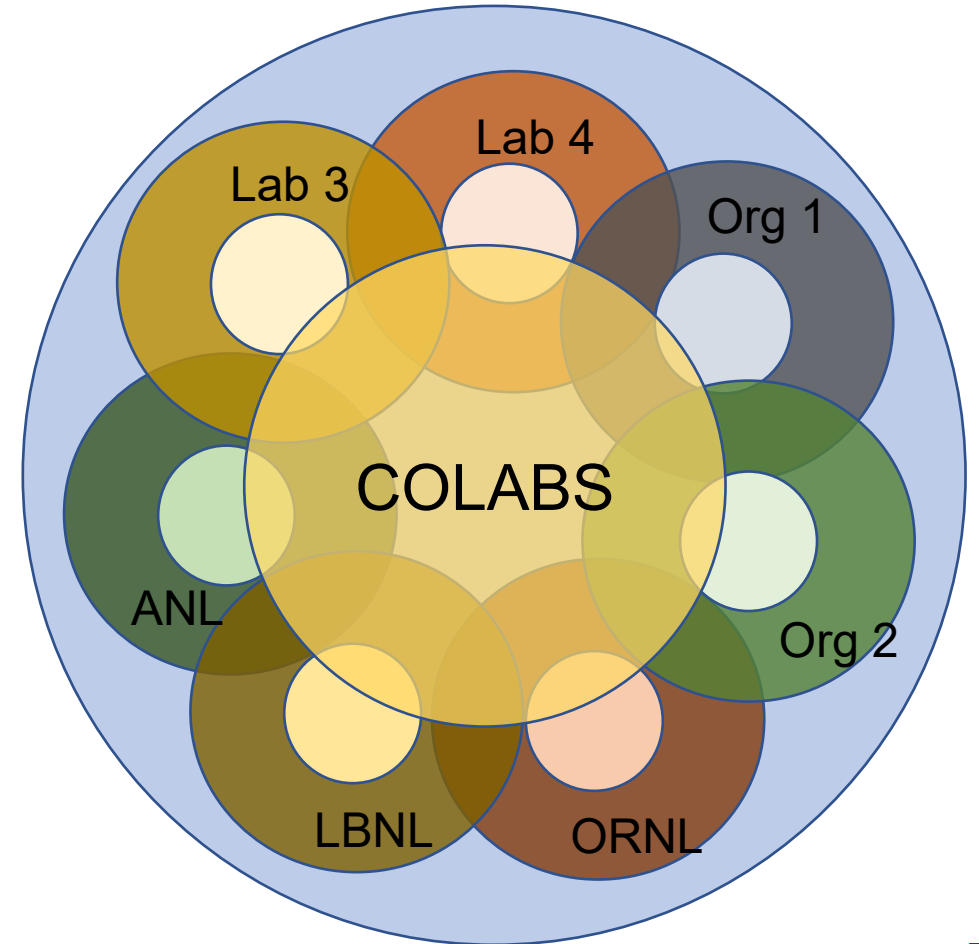
- ❑ We envision an institutional footprint for COLABS which is similar to that of the constituency it is meant to serve
- ❑ Tempered by the desire to maintain critical mass for communities of practice to be meaningful at the institutional level

Budgetary scalability

- ❑ The services COLABS provides can be scaled to the budget available (within limits, of course) -- more funding --> more services

Scalability to additional sponsors

- ❑ The same structure and governance model, and to a large extent the same (types of) people can support multiple sponsors
- ❑ ASCR is first sponsor. Others could be Office of Science offices, user facilities, DOE applied offices, etc.



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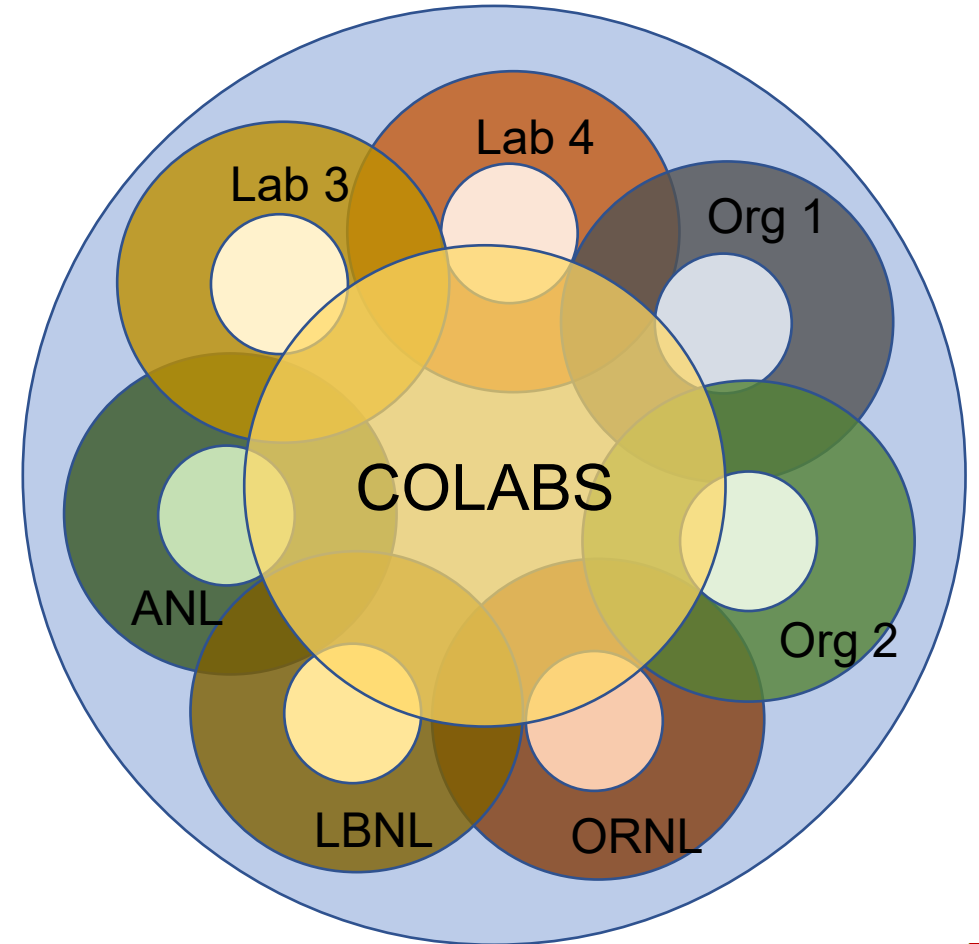
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We urge you to help us connect with your program office if you like our vision