2021 Collegeville Workshop on Scientific Software

Software Teams
July 20 – 22, 2020

Thanks to Our Sponsor

- College of Saint Benedict & Saint John's University
  - Home institution, host of Zoom resources
- Thank you!

Meeting Purpose

- Explore commonalities, differences, complementarities, workforces of
  - Academia
  - Industry
  - Labs
- Build knowledge and awareness to improve software teams
- Main purpose: Build community

Workshop Agenda

- All live sessions use Zoom
  - Single Zoom link (via registration)
  - Breakout rooms for discussions & teatimes

Time (US CDT)	July 20 Get Details	July 21 Get Details	July 22 Get Details
9:45 am	Opening Remarks		
10:00 am	Panel 1: Software Teams Experiences & Challenges	Panel 2: Technical Approaches to Improved Software Teams	Panel 3: Cultural Approaches to Improved Software Teams
11:30 am	Break & Slack Discussions	Break & Slack Discussions	Break & Slack Discussions
12:30 pm	Discussion 1: Software Teams Experiences & Challenges	Discussion 2: Technical Approaches to Improved Software Teams	Discussion 3: Cultural Approaches to Improved Software Teams <
2:00 pm	Break & Slack Discussions	Break & Slack Discussions	Break & Slack Discussions
3:00 pm	TeaTime 1: Software Teams Experiences & Challenges	TeaTime 2: Technical Approaches to Improved Software Teams	TeaTime 3: Cultural Approaches to Improved Software Teams
4:30 pm			Closing Remarks

Whitepapers & Recorded Content

- 13 whitepapers on website
- 16 videos on Collegeville YouTube Channel

Make use of this content during and after the workshop

Use of Slack during meeting

- We encourage Slack chat during the meeting at any time
  - Especially during panels and breaks
- Try to keep Zoom panel chat reserved for Q&A

Panel 2: Technical Approaches to Improve SW Teams

- Panelists:
  - Keith Beattie, Lawrence Berkeley Lab
  - Alicia Grundhoffer, Oak Ridge National Lab
  - Sarah Knepper, Intel
  - Reed Milewicz, Sandia National Labs
  - Barry Smith, Argonne National Lab
- Moderator: Lois Curfman McInnes, Argonne National Lab

Keith Beattie: Opening Remarks: Technical improvement approaches

- High-impact technical approaches to improve SW teams
  - Regular meetings with agenda-driven, facilitator-led, virtual/screen-share sessions resulting in date-driven releases.
  - CI system/acceptance for each PR: automated tests, coverage reports, style guide, static analysis, generated docs – all locally runnable.
- Key roles in defining and implementing the above approaches
  - Facilitator: not a domain expert but a SW Eng expert, sets tone and pace during meetings
  - Sr contributors
  - Jr contributors and Users
- Potential impact if approaches are successful
  - People keep showing up to meetings
  - More feature requests than you can get to
- Existing "bright spots" or other signs of progress
  - Bug reports, contributions, citations

2021 Collegeville Workshop on Scientific Software: Panel on technical approaches to improve SW teams

Alicia Grundhoffer: Opening Remarks: Technical improvement approaches

- Approaches to improve SW teams
  - Documentation
  - Communication
  - Scalable and repeatable processes
- Key roles
  - Project coordinator
- Potential impact
  - Better understanding of tasks and goals across team
  - Closer team collaboration
  - Improved visibility across team
- Signs of progress
  - Discussions on what is helpful to the team and what can be improved
    - Implementation of feedback

Sarah Knepper: Opening Remarks: Technical improvement approaches

- Intel oneAPI Math Kernel Library (oneMKL)
    - Closed source product, long history, large code base
    - Multiple teams, multiple developers per team

- Code reviews (tools: git)
    - Knowledge sharing
    - Cross pollination (other teams involved)
    - Reduce process burden (e.g., can't merge w/o approvals)

- [Heavily modified] Agile/"scrum" development (tools: MS Teams, JIRA)
    - Team name/identity
    - Meetings: demo!, team sync, grooming/planning, (previously) daily lunch/coffee
    - Know who's doing (and who did) what

Reed Milewicz: Opening Remarks: Technical improvement approaches

INCREMENTAL IMPROVEMENT

- **Pursue** intentional strategies for software process improvement
  - *Example*: The Productivity and Sustainability Improvement Planning (PSIP) toolkit, which provides tools and resources to set, measure, and realize improvement goals.

- **Promote** continuous learning
  - *Example*: The Best Practices weekly round-table in the Department of Software Engineering and Research at Sandia, Tech Talks on the Avondale team.

- **Adopt** evidence-based best practice in software engineering
  - *Example*: Performing rapid reviews of software engineering literature to inform team decision-making.

Barry Smith: Opening Remarks: Technical improvement approaches

- Technical need: getting the right information/conversations to the right people in the right format. Do not bother people with irrelevant, unimportant, or badly formatted information. *Remove the need for our brains to filter the information firehose.*
  - What to filter
    - Everyone has their unique information needs and ways of working
  - How to filter
    - Difficult when material is unformatted conversation
  - Where to filter
    - Centrally, individually?
  - How to annotate (label) and format the filtered information
    - Difficult in email and slack channels. Potentially easier in MR and issues.

Q&A Protocol

- Use Zoom chat to type your question (brief form)
- When your question is mentioned, unmute to ask verbally
- Unless asked to speak, please keep muted
- For general chat about panel, use Slack #general
- Panel ends at 11:30 am CT or when no more questions
- Stopping screen sharing now so we can see faces ☺
- Will start up to give instructions for Discussions

Discussions Instructions

- Please return to Zoom session promptly at 12:30 pm US CDT

- At 12:35 pm, we will use Zoom breakout rooms with automatic assignments to form discussion groups of 6 – 8 people

- Discussions are scheduled from 12:30 – 2:00 pm CDT

- Each discussion group creates a Group Notes file via shared Google doc:
  - Find Day 1 Group Notes template (linked in Slack#contribute)
  - Make a copy (one person from your discussion group)
  - Co-edit the document, recording names, experiences, challenges

- Contents of Group Notes will be synthesized into a blog posting on https://bssw.io
  - Separate blog post for each day
  - List your name in your Group Notes if you want attribution as a contributor

Teatimes Instructions

- Teatime theme discussions start at 3:00 pm CDT
  - Use the same Zoom link
  - There are five teatime themes each day
  - Each discussion has its own breakout room
  - We will send a broadcast on the half-hour to signal an opportunity to change themes (or stay)
- We will not gather as one group until tomorrow morning's panel
- Questions?