2020 Collegeville Workshop on Scientific Software
Developer Productivity
July 21 – 23, 2020
Thanks to Our Sponsors

• Intel Corporation and The Mathworks, Inc.
  • Support to fund student staff

• 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 productivity
- Main purpose: Build community
Workshop Agenda

- All live sessions use Zoom
  - Panel: Single session
  - Discussion: Single session with random breakout assignments
  - TeaTime/Poster: Separate session for each
- Key Document: “Collegeville 2020 Main Page”
  - Google Doc
  - [https://tinyurl.com/Collegeville2020](https://tinyurl.com/Collegeville2020)
  - Single page to find out what is happening
Whitepapers & Recorded Content

• 29 videos on Collegeville YouTube Channel
  • 9 interviews with a variety of community members
  • 10 group discussion on productivity themes
  • 10 presentations from whitepapers

• 33 whitepapers on website
  • Most have related video content

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
  • To keep discussion organized around themes there is a special channel for each day (day-one-chat, day-two-chat, day-three-chat)

• Keep Zoom panel chat reserved for Q&A
Panel 3: Cultural Approaches to Improved Productivity

• Panelists:
  • Sandra Gesing, University of Notre Dame
  • Jan-Patrick Lehr, Technische Universität Darmstadt
  • Reed Milewicz, Sandia National Laboratories
  • Vanessa Sochat, Stanford University
  • Mary Ann Leung, Sustainable Horizons Institute
  • Mark Miller, Lawrence Livermore National Laboratory

• Moderator: Lois Curfman McInnes, Argonne National Laboratory
Sandra Gesing Opening Remarks: Cultural improvement approaches

• One or two high impact cultural approaches to improve productivity
  • Well-defined roles in developer teams
  • Well-defined processes

• Key roles in defining and implementing the above approaches
  • Team leaders, developers, computational scientists, facilitators

• Potential impact if approaches are successful
  • Managed expectations
  • Choice of focus of work on technical as well as on domain side
    => Happy developers;-)

• Existing “bright spots” or other signs of progress
  • Upcoming RSE teams and RSE associations, spread of word of success stories
  • Existing project management frameworks such as SCRUM and further developments of agile development
JP Lehr Opening Remarks: Cultural improvement approaches

1) Include productivity concerns and technological solutions more actively into (academic) teaching to better prepare (under-grad/phd) students
   - Communication, technological, positivity, writing, ...
   - Include (under-grad) students as full-project members: discussion, peer-review, documentation, design, writing papers, ...

2) Acknowledge the complexity of software development, the software stack, the system stack, etc.
   - Simply run these benchmarks, or make something faster
   - **Key roles** 1. “everybody”, 2. management / supervisor (Prof, PostDoc, PhD)
   - **Bright Spots** Conferences promote/request artifacts and reproducibility
Reed Milewicz: Opening Remarks

• **Approach**: Increase engagement with the software engineering research (software science) community

• **Roles**
  - **Software scientists**: We need to establish closer ties with software scientists in academia, and we need to create more roles for them in our institutions
  - **Scientific software developers**: We need to publicize our challenges and make them attractive to the software engineering community

• **Potential Impact**
  - Software engineering tools and processes that were built with our needs in mind
  - Pipelines for software-focused professionals

• **Signs of Progress**
  - Software engineering line organizations like Software Engineering and Research at Sandia and Research Software Engineering at Oak Ridge
  - In academia, the Software Engineering for Science group at the University of Alabama
Vanessa Sochat Opening Remarks: Cultural improvement approaches

Developer productivity comes down to developer happiness!

• Physical and mental well-being
• Self-compassion
• Practicing empathetic review

Each of us is empowered to make positive changes.

• Take responsibility for your goals, routine, and communication channels

Note from Lois: See Vanessa’s podcast series:
RSE Stories:
https://bssw.io/blog_posts/research-software-engineer-stories
Mary Ann Leung Opening Remarks: Broadening Participation

• Why broadening participation to improve developer productivity?

- Future Workforce Needs
- CSE complex, teamwork, creativity, collaboration
- Research → Diverse teams are more innovative

• High impact cultural approaches:

- expand networks
- cultivate inclusion
- address critical mass
- balance critical mass & integration

• Potential impacts if successful: innovation, sustainability

- innovation
- sustainability

• Examples: Sustainable Research Pathways, Broader Engagement @SIAM-CSE
Mark Miller Opening Remarks: Cultural improvement approaches

- Individual recognition of....
  - Equality != Inclusion (Equality < Inclusion)
  - Good/decent people can still be deeply biased
  - Anisotropy in dimensions of bias & inclusion

- More faith in organic, grass-roots, bottom up approaches than top-down
  - Individual + first tier management (w/support from top)

- Benefits of inclusion known but there are costs
- We do inclusion great for process/product
- People willing to talk about it now more than they ever have

2020 Collegeville Workshop on Scientific Software: Panel on cultural approaches to improve productivity
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 #day-three-chat
• 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
Workshop Zoom Group Photo Time

Everyone who’d like to participate:

Please turn on your camera and smile 😊
Discussions, Posters, Teatimes Instructions

• Please sign in to next Zoom session promptly at 12:30 pm US CDT
• At 12:35 pm, we will use Zoom breakout rooms with automatic random assignments to form discussion groups of 6 – 8 people
• Discussions are scheduled from 12:30 – 2:00 pm CDT
• Posters and Teatime theme discussions start at 3:00 pm CDT
  • There are two posters and four teatime themes today
  • Each discussion has its own unique Zoom link (see Main Page for details)
  • Please visit any and all of them as you have time and interest
• We will gather as one group for Closing Remarks at 4:30 pm CDT
• Questions?
2021 Collegeville Workshop on Scientific Software: Software Sustainability

July 20-22, 2021

https://collegeville.github.io/CW21/

• Register by joining Collegeville 2021 Slack workspace
  • https://collegeville.github.io/CW20/Registration2021.html