Welcome to…

Developing a Testing and Continuous Integration Strategy for your Team

David E. Bernholdt, Patricia A. Grubel, James M. Willenbring

2:30-4:00pm EDT Monday 12 April 2021

Check this web site for the latest updates for this tutorial!

Last-minute updates, final slides, etc. at:
https://bssw-tutorial.github.io/

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License and Citation

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- **The requested citation the overall tutorial is: David E. Bernholdt, Patricia A. Grubel, and James M. Willenbring, Developing a Testing and Continuous Integration Strategy for your Team tutorial, in Exascale Computing Project Annual Meeting, online, 2021. DOI: 10.6084/m9.figshare.14376956**
- Individual modules may be cited as *Speaker, Module Title*, in Better Scientific Software tutorial…

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IDEAS productivity

ECP EXASCALE COMPUTING PROJECT

About Us

- David Bernholdt, ORNL
- Patricia Grubel, LANL
- James Willenbring, SNL


David B


Patricia


James

- Member of the IDEAS Productivity Project: http://ideas-productivity.org
- **Focus: Increasing CSE software productivity, quality, and sustainability**

The IDEAS-ECP team works with the ECP community to improve developer productivity and software sustainability as key aspects of increasing overall scientific productivity

1 Customize and curate methodologies

- Target scientific software productivity and sustainability
- Use workflow for best practices content development

2 Incrementally and iteratively improve software practices

- Determine high-priority topics for improvement and track progress
- *Productivity and Sustainability Improvement Planning (PSIP)*

3 Establish software communities

- Determine community policies to improve software quality and compatibility
- Create Software Development Kits (SDKs) to facilitate the combined use of complementary libraries and tools

4 Engage in community outreach

- Broad community partnerships
- Collaboration with computing facilities
- Webinars, tutorials, events
- *WhatIs* and *HowTo* docs
- Better Scientific Software site (https://bssw.io)

Join us for our information session
Advancing Scientific Productivity through Better Scientific Software
11:30am-12:30pm ET Wednesday

Or read our 2020 project report:
https://doi.org/10.2172/1606662

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Building an Online Community

https://bssw.io

- **New community-based resource for scientific software improvement**
- A central hub for sharing information on practices, techniques, experiences, and tools to improve developer productivity and software sustainability for computational science & engineering (CSE)

Goals

- Raise awareness of the importance of **good software practices** to scientific productivity and to the quality and reliability of computationally-based scientific results
- Raise awareness of the **increasing challenges** facing CSE software developers as high-end computing heads to extreme scales
- Help CSE researchers **increase effectiveness** as well as leverage and impact
- **Facilitate CSE collaboration via software** in order to advance scientific discoveries

Site users can…

- **Find information** on scientific software topics
- **Contribute new resources** based on your experiences
- Create content tailored to the unique needs and perspectives of a focused scientific domain

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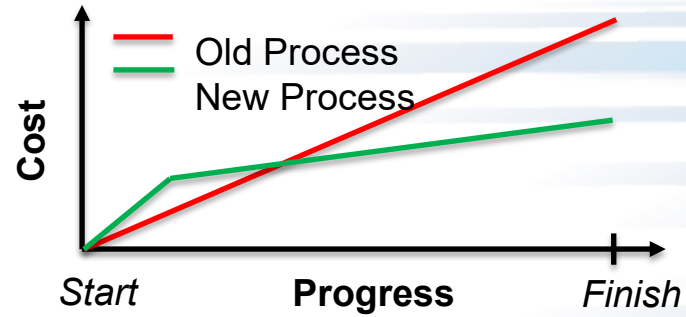
Follow IDEAS and BSSw

- IDEAS Productivity mailing list: http://eepurl.com/cQCyJ5
  - Announcements of IDEAS-organized events
    - Best Practices for HPC Software Developers webinar series
    - Strategies for Working Remotely panel series
    - Software-focused events at major scientific meetings (e.g., SIAM, ISC, SC, etc.)
  - Typically 2-3 messages per month
- BSSw Digest: https://bssw.io/pages/receive-our-email-digest
  - Updates on BSSw content
    - New blog posts, events, and resources
    - BSSw Fellowship
  - Typically 1-2 messages per month
  - Also: RSS feed: https://bssw.io/items.rss

Tutorial Objectives

Overview of best practices in software engineering explicitly tailored for CSE

- **Why:** Increase CSE software quality, sustainability, productivity
  - Better CSE software > better CSE research > broader CSE impact
- **Who:** Practices relevant for projects of all sizes
  - **emphasis on small teams**, e.g., a faculty member and collaborating students



- **Approach:**
  - **Useful** information, examples, exercises, pointers to other resources
  - **Not to prescribe any particular practices** as "must use"
    - Be informative about practices that have worked for some projects
  - Recommend a series of small, **incremental improvements**
    - Emphasize adoption of practices that help productivity rather than put unsustainable burden
  - **Customize as needed** for each project
- Remember: your code will live longer than you expect. *Prepare for it!*

We Want to Interact with You!

- We find these tutorials most interesting and informative (for everyone) if you ask questions and share experiences!
  - We learn too
- Please use chat to ask questions at any time
  - We will answer in in the chat or verbally
  - As time permits, we will also take questions at the end of presentations via chat or verbally
  - If we don't get to your question, follow up with us afterwards
- After the tutorial email us at bssw-tutorial@lists.mcs.anl.gov
  - With questions or feedback
  - The list moderator will allow your messages to be posted

Related Events at the ECP Annual Meeting (*all times Eastern*)

- IDEAS Desk – informal conversations about developer productivity and software sustainability
  - **Room 125** in the Gather.Town Side Meetings area
  - 12:30pm-2:00pm Monday through Friday
- Validation, Verification and Performance Suites, Proxy Apps, and Continuous Integration for Exascale Supercomputers
  - 10:00am-11:30am Wednesday
- Advancing Scientific Productivity through Better Scientific Software
  - 11:30am-12:30am Wednesday
- Hands-on with Progress Tracking Cards: A Lightweight Method for Improving Your Software Practices
  - 1:00pm-3:30pm Wednesday
- Benefiting from ECP CI
  - 2:30pm-3:30pm Wednesday
- ECP CI Startup Tutorial
  - 2:30pm-6:00pm Friday

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