Euroean Trilinos User Group Meeting 2023

Alexander Heinlein[1]   Matthias Mayr[2]

June 29 - 30, 2023

[1] Delft University of Technology

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I. Welcome to EuroTUG 2023

European Trilinos User Group Meeting 2023
Delft University of Technology, June 28-30, 2023

Link to registration

What is EuroTUG?

- EuroTUG Meeting = European Trilinos User Group Meeting
- Meeting series for Europe-based users and developers of the TRILINOS projects:
    - learn about recent developments in TRILINOS
    - report on their use cases and experiences with TRILINOS
    - interact with the TRILINOS leadership and core developers
    - form a European network of TRILINOS users and developers

Acknowledgement:

EuroTUG 2023 acknowledges the support of the following institutions:

- TU Delft Institute for Computational Science and Engineering (DCSE)
- Delft High Performance Computing Centre (DHPC)

Organization

Schedule:

- June 28, 2023 (today): Tutorial "Trilinos for Beginners"
- June 29 - 30, 2023: User & Developer Presentations

Detailed schedule on the EuroTUG website: https://eurotug.github.io

Organizers:

- Dr. Alexander Heinlein, TU Delft, FROSCH developer
- Dr. Matthias Mayr, University of the Bundeswehr Munich, MueLu developer

External support

- Mike Heroux, SNL
- Siva Rajamanickam, SNL
- Luc Berger-Vergiat, SNL
- Nathan Roberts, SNL
- Damien Lebrun-Grandie, ORNL

Practical information

Wifi

- Please use eduroam if possible
- If you do not have access to eduroam, please send an SMS with the code *ETUGM* to +316 3525 0006

Breaks, Lunch, Dinner

- All the breaks (including the lunch) breaks will be in the Aula Conference Centre
- **Dinner Wednesday:** We will go to a Pizza place (Pavarotti Delft) next to the train station. If you want, you can join us.
- **Dinner Thursday:** (self-paid) conference dinner at 19.00 pm:
  Eetcafé De Verbeelding, Verwersdijk 128, 2611 NL Delft

Photos

- Please sign on the list of participants that you are Ok with us taking photos during the meeting
- We will take a group photo at the beginning of the lunch break on Thursday

Technical program

Thursday, June 29, 2023:

09:00 Welcome & Opening (Alexander Heinlein, Matthias Mayr)

09:10 Developer Talk: "Linear solvers in Trilinos" (Luc Berger Vergia, SNL)

09:40 User Talk: "Parallel Scalable Domain Decomposition Methods in Pharmaco-Mechanical Fluid-Structure Interaction" (Lea Saßmannshausen, U Köln)

10:10 User Talk: "Diagonally-Addressed Matrix Nicknack: How to improve SpMV performance' (Jonas Schulze, MPI Magdeburg)

10:40 Break

11:10 Developer Talk: "Intrepid2 for Fast High-Order Assembly" (Nate Roberts, SNL)

11:40 User Talk: "Speeding up sparse iterative solvers in Trilinos using RACE" (Christie Alappat, FAU Erlangen)

12:10 User Talk: "Computing transition probabilities in stochastic ocean-climate models using Trilinos" (Sven Baars, U Utrecht)

12:40 Lunch Break

- 14:00 User Talk: "Adapting an Epetra-based application to use MueLu block transfer operators: experiences from a beginner" (Nasser Alkmin, U Innsbruck)
- 14:30 Tutorial: "Kokkos" (Damien Lebrun-Grandie, ORNL)
- 16:00 Break
- 16:30 Tutorial: "Kokkos" (Damien Lebrun-Grandie, ORNL)
- 17:30 End
- 19:00 Dinner at Eetcafé De Verbeelding, Verwersdijk 128, 2611 NL Delft, https://www.eetcafedeverbeelding.nl

Friday, June 30, 2023:

09:00 Tutorial: "The Kokkos Ecosystem" (Damien Lebrun-Grandie, ORNL)

10:30 Break

11:00 User Talk: "How to use TrilinosWrappers in deal.II to parallelize your code" (Jan Philipp Thiele, U Hannover)

11:30 User Talk: "Development of physics-based multi-level block preconditioners in Trilinos/MueLu" (Max Firmbach, UniBw Munich)

12:00 Lunch Break

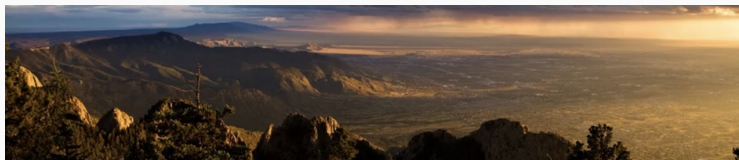13:00 Keynote: "High Performance Computing at the TU Delft" (Kees Vuik, TU Delft)

14:00 Roundtable Discussions

15:00 End

Optional add-on: Kokkos experts will be available until 17:30 to answer individual questions.

2023 Trilinos User Group Meeting

October 31 – November, 2023, 8 am to 12 pm MDT each day

Hybrid format:

- attend in-person at Sandia in Albuquerque, NM
- on-line via MS Teams
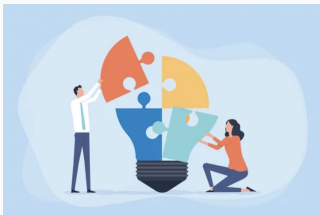- details will follow on Trilinos website

Tentative agenda:

- Tuesday, Oct. 31st – Keynote Speaker and Product Area/Package Updates
- Wednesday, Nov. 1st – Application and User Talks
- Thursday, Nov. 2nd – Developer's Day

Share your TRILINOS development, usage, experience. Contributions are welcome!

II. Roundtable discussions

Roundtable discussions

Format:

- Small-group discussions
  - Split into groups of ≈ 5 people
  - Duration: 30 minutes
  - Each group can pick 2 topics
- Exchange in plenum
  - Each group reports key findings
  - Duration: 15 minutes

Topics:

- How to build a European/international Trilinos community? E.g., Slack channel, mailing list, etc.
- How to contribute to Trilinos? How could the Trilinos team encourage contributions to Trilinos?
- How to make Trilinos better accessible and beginner-friendly? How to use it in teaching? E.g., via a Python-interface (PyTrilinos), etc.
- Maintenance of Trilinos: Is Trilinos is too large and unmaintainable? How to share the burden of software maintainance

Feedback survey

Please take a few minutes to fill the following survey:

https://survey.unibw.de/eurotug2023/

III.   Closing

Thank you!

Speakers:

- Christie Alappat
- Nasser Alkmin
- Sven Baars
- Luc Berger-Vergiat
- Max Firmbach
- Damien Lebrun-Grandie

- Nate Roberts
- Lea Saßmannshausen
- Jonas Schulze
- Chris Siefert
- Jan Philipp Thiele
- Kees Vuik

Organizational support:

- Alexander Heinlein
- Mike Heroux
- Matthias Mayr
- Siva Rajamanickam

Access to material from EuroTUG 2023

- Tutorial materials
  - Slides will be published on the EuroTUG website
  - Docker container and tutorial instructions are publicly available on GitHub:
    https://github.com/EuroTUG/trilinos-docker
- User & developer presentations: many slide decks will be published on the EuroTUG
  website

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Future plans for EuroTUG:

- planned to be held at Helmut-Schmidt-University Hamburg in 2024
- Details will follow: https://eurotug.github.io

Stay tuned!