

User Expectations from and Contributions to DUNE

Discussion at the Dune User Meeting, 6.-8.10.2010, Stuttgart

This is a collection of poll and discussion results from the first DUNE User Meeting held in Stuttgart October 6th – 8th 2010. For the polls, a total number of 27 participants have been asked. The statements in the discussion results have not been voted on, meaning that a statement there can reflect the opinion of between 1 and 27 users.

Poll: Usage of DUNE Modules

- common, grid: 27
- grid-howto: 22
- istl: 21
- localfunctions: 19
- pdelab(-howto): 12
- fem: 9
- grid-glue: 5
- dumux: 5
- cornerpoint: 3
- solvers: 2
- multidomain(grid): 2
- rb: 2
- subgrid: 1
- disc: 1

Other Polls

- How many work with a DUNE release: 16
- How many work with the DUNE trunk: 13
- How many have write access to the core: 6
- How many have written a DUNE grid: 6
- How many use DUNE in teaching: 9
- How many use other PDE software for teaching: 5
- Whose None-DUNE-core project is publicly available: 11
- How many use adaptivity: 12 (+8 want to use it in the future)
- How many use parallelism: 11 (+8 want to use it in the future)
- Which primary university education do you have:
 - Mathematics: 19
 - Computer Science: 5
 - Engineering: 3
 - Physics: 2

- Which applications do you target with your DUNE based code:
 - Numerical method development: 17
 - Porous media: 14
 - CFD: 7
 - Computational biology: 4
 - Petroleum engineering: 5
 - Solid mechanics: 3

What Users Like about DUNE

- grid-howto (esp. ease of parallelism)
- complete stack
- ability to easily move from 2d to 3d
- ability to use different grids
- code can easily be accessed and adapted
- no bad macros
- development and usage of code in groups
- international community
- fast response to mailing list questions

What Users Don't Like about DUNE

- too abstract
- not easy to install
- buildsystem too complicated (to maintain)
- grid implementation complicated and time consuming
- difficult to suggest extensions to the grid interface
- too many and too long warnings
- long compilation times
- difficult to find out about the availability of a certain feature
- no wiki
- deprecated warnings do not give an alternative
- mailing list too general

User Expectations/Wishes from DUNE

- packages
- incremental grid testing environment
- separate flyspray from general DUNE mailing list
- (OpenMP) parallel iterator concept
- thread safety (at least for the interface)
- random access to entities (and intersections)
- include motion of mesh vertices in the grid interface (see UGGrid)
- predefined way of suggesting extensions
- grid or solver implementations on GPU

- project hosting by DUNE
- list of publications using DUNE
- list of groups using DUNE

User Contributions to DUNE

- gallery
- wiki setup and contributions
- advertise your project on the website
- code
- make your project available
- advertise the use of DUNE at conferences and in papers
- add to the publication and group list
- share problems and solutions (-> wiki)