

Open Software in Parallel Computing

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24 September 2016

Parallel Computing

- Programs that work on multiple processing units to solve problems faster or to solve large problems
- Programs that work on multiple processing units to solve problems in the same time using less energy

Motivating Example

- There are 20 sweets which need to disappear
 - Method 1: I eat them all - how long would this take?
 - Method 2: Each person in the room eats one - how long would this take (including distribution time)?

Motivation for Open Software

- Do not reinvent things
- Examined by many people
- Reproducible science
- Standardization
- Can modify for your own use
- Open is not necessarily free (avatud \neq vaba)

Example Open Software

- GCC and CLANG compilers
- Message Passing Interface implementations
- Numerical libraries - linear algebra, Fourier transform
- Visualization software
 - **ParaView** <http://www.paraview.org/gallery>
 - **VisIt** <https://wci.llnl.gov/simulation/computer-codes/visit/gallery>
 - **Further examples** <http://woiv.org/videos.html>

Example Open Software

- Allows student involvement

- [http://hpcadvisorycouncil.com/events/2015/
isc15-student-cluster-competition/team_tartu.php](http://hpcadvisorycouncil.com/events/2015/isc15-student-cluster-competition/team_tartu.php)
- [http://hpcadvisorycouncil.com/events/2016/
isc16-student-cluster-competition/teams_tartu.php](http://hpcadvisorycouncil.com/events/2016/isc16-student-cluster-competition/teams_tartu.php)