**MPI**

The Message Passing Interface (MPI) is an open library standard for distributed memory parallelization. The library API (Application Programmer Interface) specification is available for C and Fortran. There exist unofficial language bindings for many other programming languages, e.g. Python3, or JAVA 1, 2, 3. The first standard document was released in 1994. MPI has become the de-facto standard to program HPC cluster systems and is often the only way available. There exist many implementations, Open source and proprietary. The latest version of the standard is [**MPI** 3.1](https://www.mpi-forum.org/docs/mpi-3.1/mpi31-report.pdf)(released in 2015).

MPI allows to write portable parallel programs for all kinds of parallel systems, from small shared memory nodes to petascale cluster systems. While many criticize its bloated API and complicated function interface no alternative proposal could win a significant share in the HPC application domain so far. There exist optimized implementations, open source and proprietary, for any HPC platform and architecture and a wealth of tools and libraries. Common implementations are [OpenMPI](https://www.open-mpi.org/" \t "_blank), [mpich](https://www.mpich.org/" \t "_blank) and [Intel MPI](https://software.intel.com/en-us/mpi-library). Because MPI is available for such a long time and almost any HPC application is implemented using MPI it is the safest bet for a solution that will be supported and stable on mid- to long-term future systems.

Information on how to run an existing MPI program can be found in the [How to Use MPI](https://hpc-wiki.info/hpc/How_to_Use_MPI) Section.