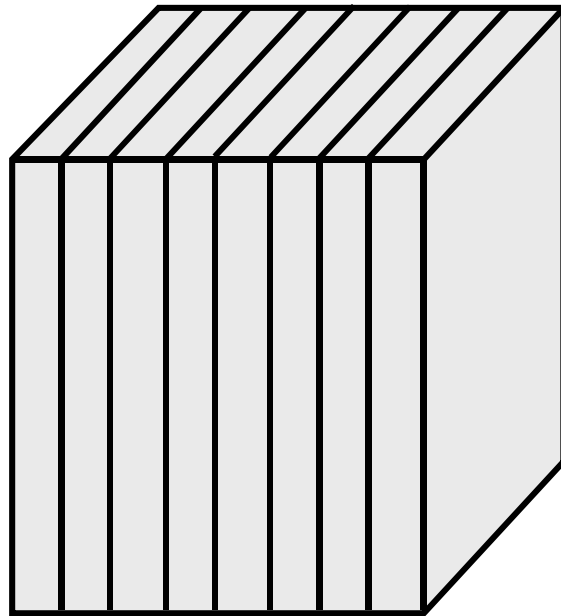


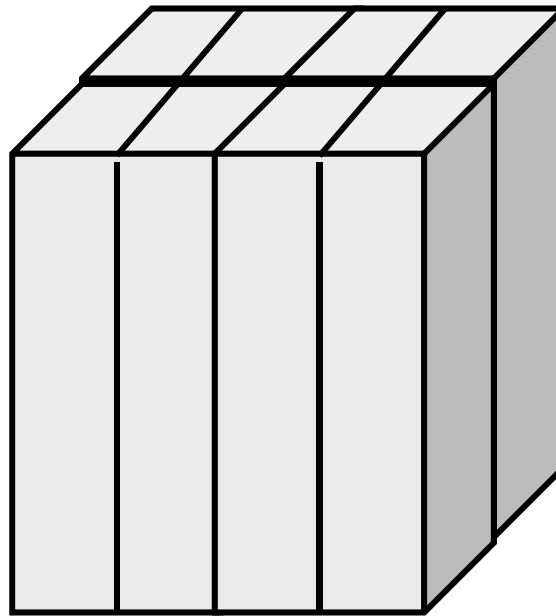
Assignment on Parallel FVM

- Evaluation behavior and performance of the 3D Poisson Solver
- Example
 - Strong Scaling
 - Fixed entire problem size
 - Weak Scaling
 - Fixed problem size/core, time for 1 iterations
 - Parameters
 - Problem size
 - Domain decomposition (1D-3D)
 - Flat-MPI/Hybrid
 - Number of Threads in OpenMP/MPI Hybrid

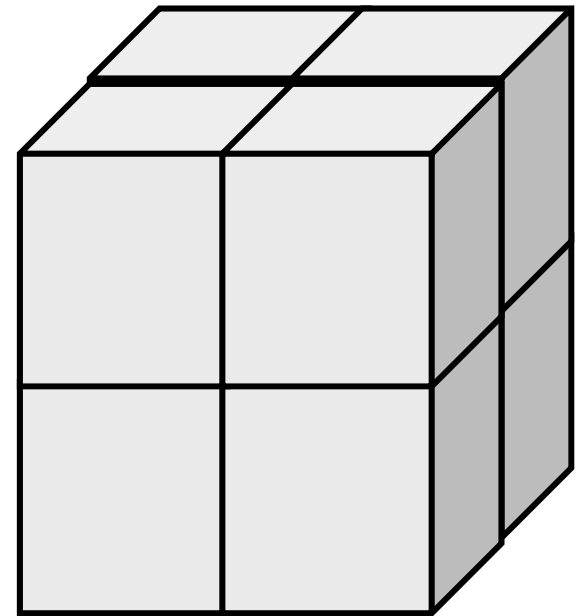
1D-3D Decomposition



1D



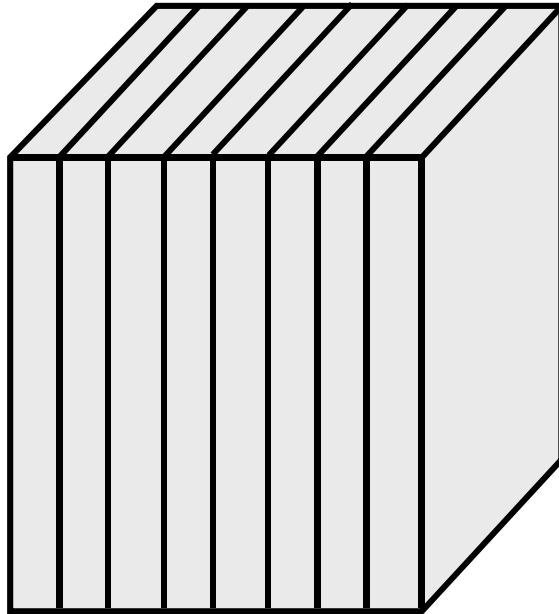
2D



3D

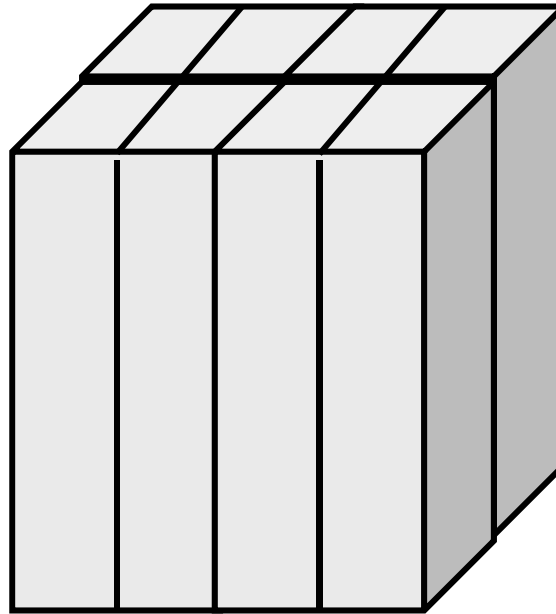
1D-3D Decomposition

Amount of comm.: each edge has $4N$ points, 8 domains



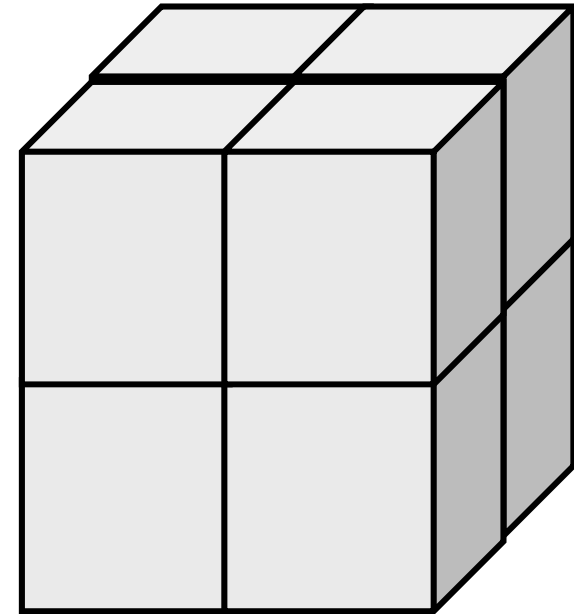
1D

$$16 N^2 \times 7 = 112 N^2$$



2D

$$16 N^2 \times 4 = 64 N^2$$

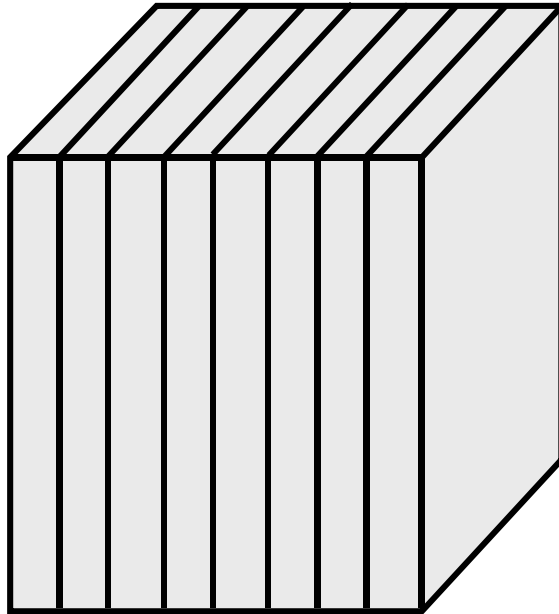


3D

$$16 N^2 \times 3 = 48 N^2$$

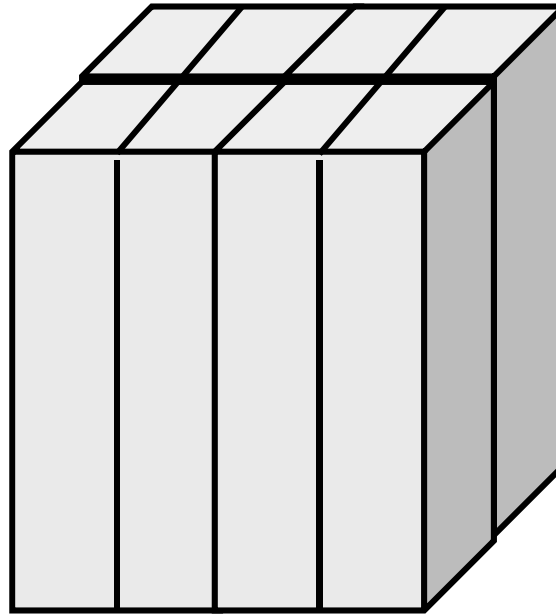
1D-3D Decomposition

mesh.inp



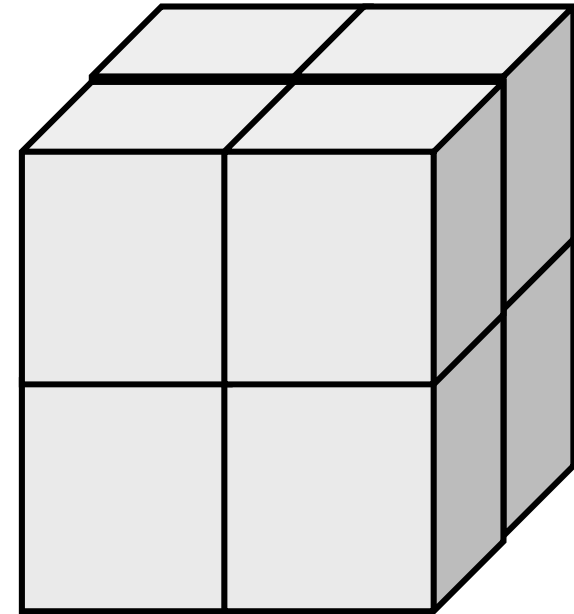
1D

```
64 64 64
 8  1  1
pcube
```



2D

```
64 64 64
 4  2  1
pcube
```



3D

```
64 64 64
 2  2  2
pcube
```