Although commodity architectures are cluster-like

- Several HPC users with sequential applications
- These applications have to be executed
  - Hundreds/thousands/millions… of instances
  - With or without dependencies
  - No communication at all
    - Different outputs
- Examples:
  - RNA sequencing analysis
  - Image Analysis
  - Perl / Python scripts
Create a Easy Solution to:

- Join all these execution in one “big parallel job”
  - Avoid sequential!!
  - Reduce the execution time
-

- Schedule the tasks

- Efficient use of the resources
Internally
- 1 Master
- N Workers
Internally
- 1 Master
- N Workers
Internally
- 1 Master
- N Workers
User has to define

- Task file
- Number of Workers

```bash
mn4:/apps/GREASY/latest/INTEL/IMPI/example> cat short-example.txt
/bin/sleep 20
/bin/sleep 10
/bin/sleep 5
...
```

```bash
mn4:/apps/GREASY/latest/INTEL/IMPI/example> cat bsc_greasy.slurm.job
#!/bin/bash
#SBATCH --job-name=greasy
#SBATCH --output=greasy-%j.out
#SBATCH --error=greasy-%j.err
#SBATCH --ntasks=4
#SBATCH --workdir=
#SBATCH --time=00:05:00

FILE=short-example.txt

#########################################
# Run greasy!
#########################################
/apps/GREASY/latest/INTEL/IMPI/bin/greasy $FILE
```
Greasy LOG

[2014-09-30 16:00:40] Start greasing /gpfs/scratch/bsc99/bsc99002/GREASY/sum2/example/short-example.txt
[2014-09-30 16:00:40] INFO: File with 3 correct Tasks
[2014-09-30 16:00:40] INFO: MPI engine is ready to run with 16 workers
[2014-09-30 16:00:40] INFO: Current Working Dir /gpfs/home/bsc99/bsc99002/scratch/GREASY/sum2/example
[2014-09-30 16:00:40] INFO: Run on 1 nodes
[2014-09-30 16:00:40] INFO: Job ID 700598
[2014-09-30 16:00:40] INFO: Allocating task 1 located in line 1 to Worker 1
[2014-09-30 16:00:40] INFO: Allocating task 2 located in line 2 to Worker 2
[2014-09-30 16:00:40] INFO: Allocating task 3 located in line 3 to Worker 3
[2014-09-30 16:00:40] INFO: Worker 2 on node s04r1b77
[2014-09-30 16:00:40] INFO: Worker 1 on node s04r1b77
[2014-09-30 16:00:40] INFO: Worker 3 on node s04r1b77
[2014-09-30 16:00:45] INFO: Task 3 located in line 3 completed successfully on node s04r1b77. Elapsed: 00:00:05
[2014-09-30 16:00:50] INFO: Task 2 located in line 2 completed successfully on node s04r1b77. Elapsed: 00:00:10
[2014-09-30 16:01:00] INFO: Task 1 located in line 1 completed successfully on node s04r1b77. Elapsed: 00:00:20
[2014-09-30 16:01:00] INFO: MPI engine finished
[2014-09-30 16:01:00] INFO: Summary of 3 tasks: 3 OK, 0 FAILED, 0 CANCELLED, 0 INVALID.
[2014-09-30 16:01:00] INFO: Total time: 00:00:20
[2014-09-30 16:01:00] INFO: Resource Utilization: 10.93%
[2014-09-30 16:01:00] Finished greasing /gpfs/scratch/bsc99/bsc99002/GREASY/sum2/example/short-example.txt
GREASY
Advanced features

- **Retry mechanism**
  - You can set GREASY_MAXRETRIES=N

- **Extended documentation**
  - /apps/GREASY/latest/INTEL/IMPI/doc

- You can set dependencies between tasks with ‘[# expr #]’

```
task 1
[# 1 #] task 2
[# -2, 2 #] task 3
task 4
[# 2-4 #] task 5
```
GREASY
Advanced features

Fault tolerance
- When something goes wrong -> helpful report
- Restart feature
  - Greasy writes a .rst file with all the tasks not able to execute

Thread Support
- High memory requirements

Different Engines
- MPI, SSH, ...

Extended debug info
- GREASY_LOGLEVEL
Thank you!
For further information please contact support@bsc.es