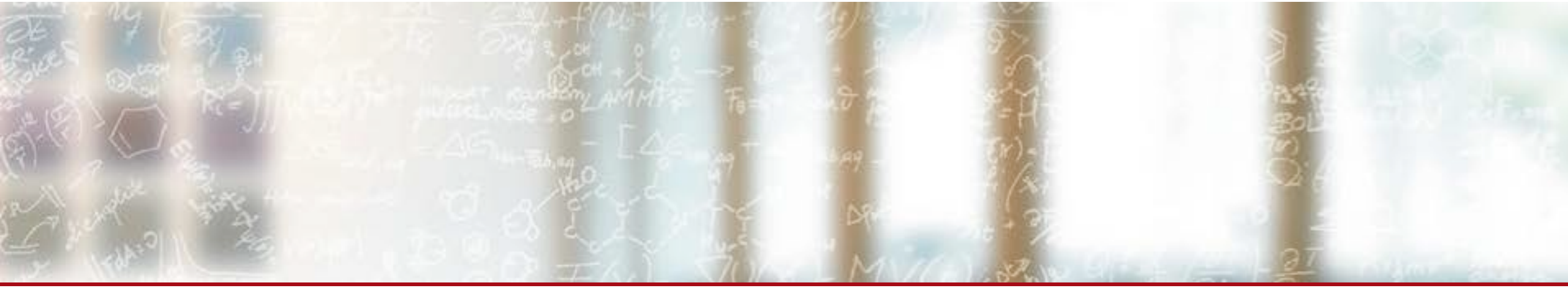
CSCS
Centro Svizzero di Calcolo Scientifico
Swiss National Supercomputing Centre

ETH zürich



Introduction to Shifter

Exploiting Supercomputers and Containers for Data Science

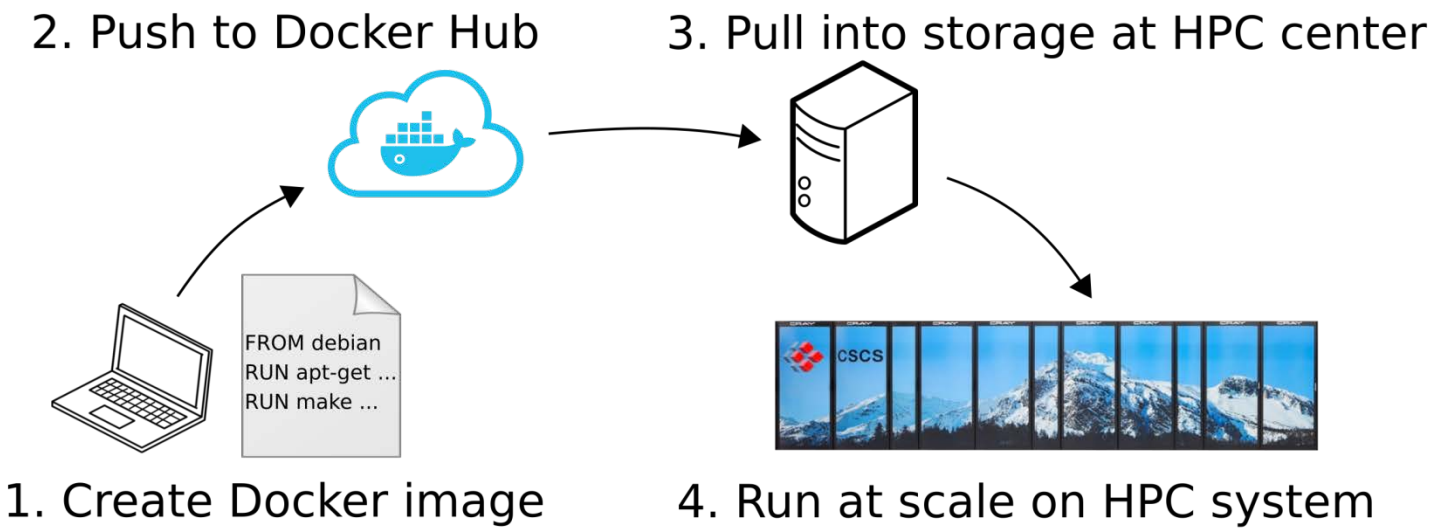
Alberto Madonna - CSCS

June 14th, 2018

Shifter

- *Docker-compatible* container platform specifically developed for HPC:
  - Security
  - Accounting
  - Native performance from custom HPC hardware
  - Integration with site infrastructure

- Enables flexible and convenient user workflows:



Highlights of CSCS Shifter from a user perspective

- Consistent experience
  - With Docker: closely resembling CLI
  - With host environment: env variables, uid/gid, file permissions, working directory
- Pull Docker images from any registry (not just DockerHub)
- Import images from local tar archives (no cloud upload required)
- Integration with the job scheduler (SLURM)
- Native performance from GPUs and custom interconnects (e.g. Cray Aries, Infiniband)
- Access to parallel filesystems inside containers

CLI comparison

- CSCS Shifter

```
# run container
$ shifter run [options] <image>[<:tag>]
<args>

# pull image
$ shifter pull [options] <image>[<:tag>]

# show list of images
$ shifter images

# remove image
$ shifter rmi <image>[<:tag>]

# load image
$ shifter load [options] <file> <image>
```

- Docker

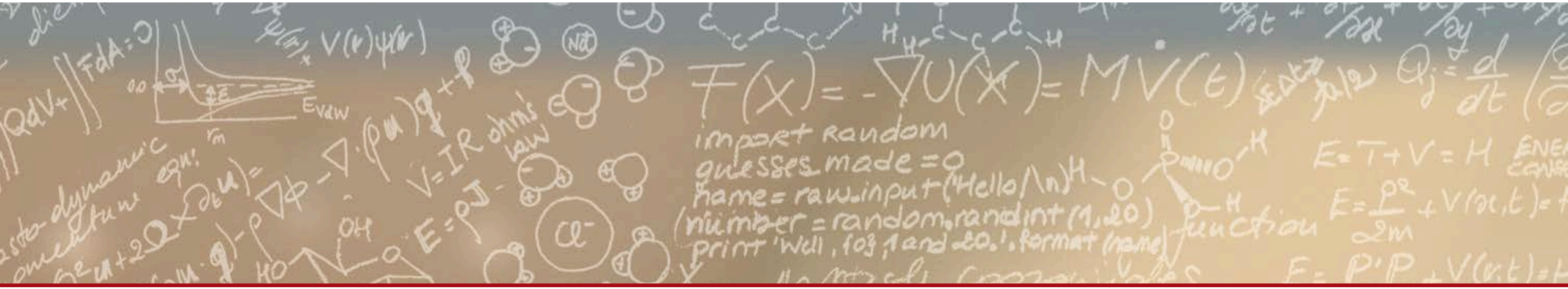
```
# run container
$ docker run [options] <image>[<:tag>]
<args>

# pull image
$ docker pull [options] <image>[<:tag>]

# show list of images
$ docker images [options] [repo[<:tag>]]

# remove image
$ docker rmi [options] <image> [image…]

# load image
$ docker load [options]
```

Live demo!

Further reading

- Full user documentation: https://user.cscs.ch/scientific_computing/supported_applications/shifter/

- Step-by-step guide: https://github.com/eth-cscs/containers-hands-on



Thank you for your attention.