

COMPUTEROME 2.0 USERS WORKSHOP

CENTER FOR HEALTH DATA SCIENCE (HEADS)
FACULTY OF HEALTH AND MEDICAL SCIENCES,
UNIVERSITY OF COPENHAGEN, APRIL, 2021

*Selected slides from Megan Guertner @Computerome team



PART1

INTF  DUCTION

BACKGROUND

Established in 2014, The Danish National Life Science Supercomputing Centre, Computerome, is a High-Performance Computing (HPC) facility specialised and securely optimised for life science research.

Our users benefit from the fast, flexible and secure infrastructure and the ability to combine different types of sensitive data and perform analysis.



Users Include

- **Research groups from all Danish universities**
- **Large international research consortiums**
- **Those in the public health care sector**
- **Industry**

MISSION

Computerome's primary focus is dedicated to Life Sciences offering a cutting-edge secure infrastructure, software and scientific tools that are a first-choice for research and clinical users.



Key offerings:

- Large international research consortiums
- Security
- Compliance
- Public
- Customized Capabilities
- Automation Features
- User-Driven Development

| PURPOSE

Being one of the world's most powerful supercomputers dedicated to Life Science research, Computerome plays a vital role in undertaking ambitious research projects, among others in personalised medicine and in the development of new drugs.

Computerome 2.0 meets the current and future increasing demands for secure and faster computing capacity of vast data volumes required by the research communities.

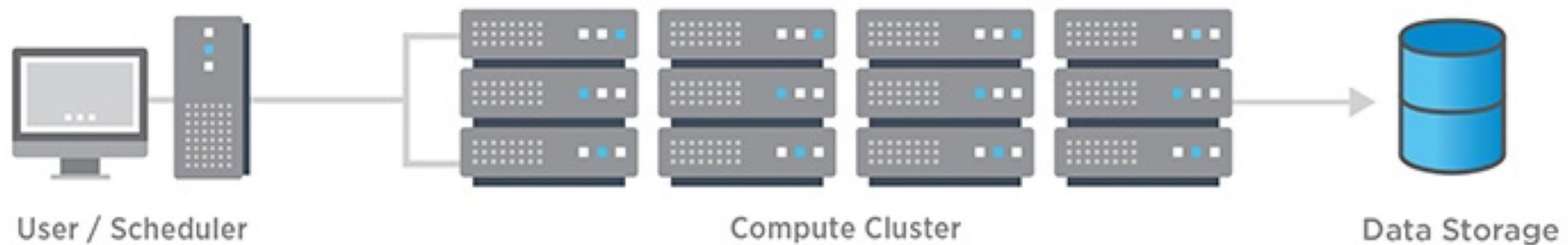




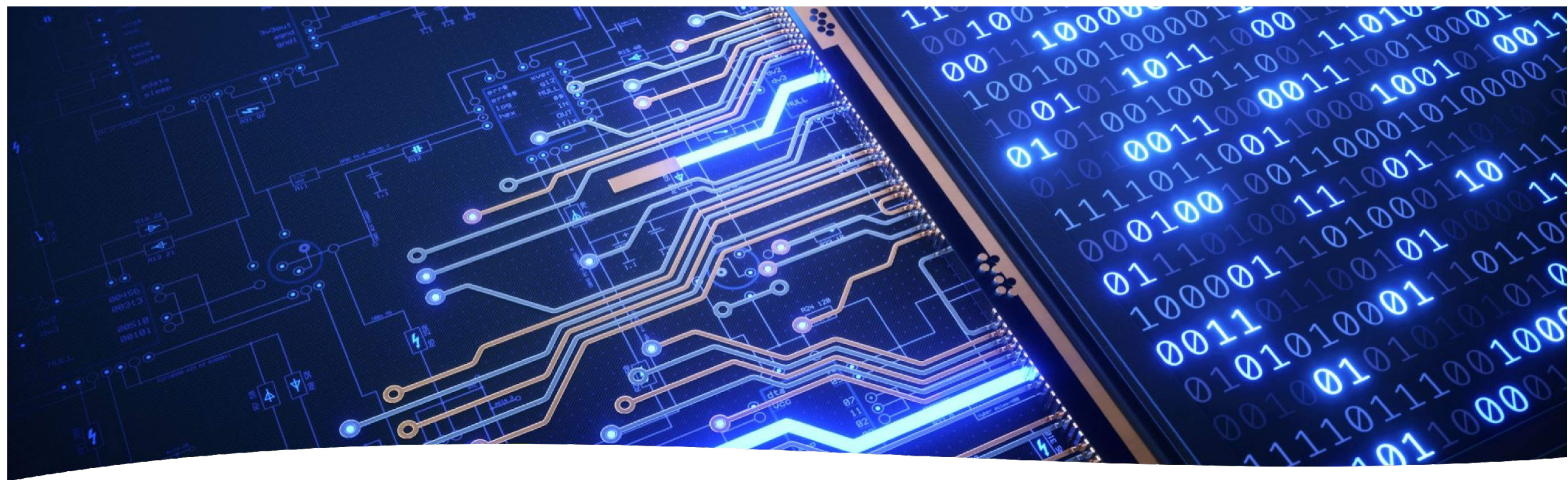


HIGH-PERFORMANCE COMPUTING SYSTEM

- An HPC cluster consists of hundreds or thousands of compute servers that are networked together.
- Each server is called a node. The nodes in each cluster work in parallel, boosting processing speed to deliver high-performance computing.



- !! ONLY run jobs on a HPC when you can't run it anywhere else.



HIGH-PERFORMANCE COMPUTING

Hardware systems

- CPUs, GPUs, storage, secure cloud...

Supports different programming languages

- C, Fortran, Python, R...

Parallel programming paradigms

- Algorithms, shared memory and distributed memory parallelism

Software tools

- Modules, applications, schedulers, debugging tools, etc.

Nodes, Processors and Cores

When working in a HPC environment it is important to differentiate between nodes, processors and cores as these terms are often used interchangeable.

Nodes: The physical server. Each node will consist of multiple processors, shared memory and other hardware.

Processor: This is the Central Processing Unit (CPU), each having one or more core.

PPN: Term used when scheduling job and describes the number of booked processors per node.

Cores: This is the actual computation unit of the CPU

-> we mostly deal with Nodes and PPNs

Nodes, Processors and Cores

