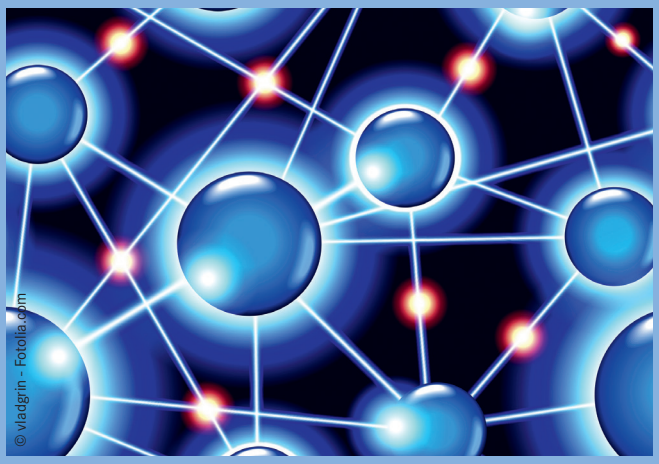
PRACE LOFAR Human Brain Project

JÜLICH Forschungszentrum | JÜLICH SUPERCOMPUTING CENTRE

# NETWORK AND SECURITY RESEARCH AND PROVISIONING




### High-Speed Networking and Security

- in HPC and Cluster Computing
- in local and European infrastructures and projects

## PRACE

- European Tier-0 HPC Infrastructure (since 2010)
- EU Implementation Projects coordinated by JSC (2008 – 2019)
- Distributed HPC environment for Tier-0 & Tier-1 systems
- JSC: Responsible for design, implementation and operation of the PRACE Multi-Domain VPN network

## HBP Human Brain Project

- EU – FET Flagship programme 2014 – 2024
- JSC leads
  - Subprogramme 7 – High Performance Computing
  - Design, implementation and operation of the HBP HPC network infrastructure and related IT security policies and procedures

## HPC Networking

- Tailored network solutions
- Heterogeneous HPC environment
  - Multi-Terabit Switch Fabrics
  - Low-Latency Interconnects
  - Design, deployment and tuning
- Technology evaluation for HPC
  - Emerging network standards
  - Proprietary developments jointly with industrial partners
  - Addressing current & future HPC networks
- Monitoring solutions for HPC networks

## LOFAR

- Virtual radiotelescope
- > 45 antenna stations each generating 3 Gbit/s of data
- JSC: Coordination & support of data and network for German partners
  - Bundling, archiving and local processing of data at JSC
  - Multi 10 Gbit/s star network (center at JSC)
  - 2 * 10 Gbit/s uplink to Groningen
  - AENEAS: network- and data-infrastructure preparation project for next generation distributed radiotelescope Square-Kilometer-Array (SKA)

## Security for FZJ and participation in projects

- High-speed firewalling
- Intrusion detection
- Security policies and procedures
- Secure operation of HPC systems in VOs
- Security within Collaborating Infrastructures WISE, AARC2, EOSC-Hub

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