

INTRO TO SURF HPC CLOUD

By Nuno Ferreira

SURF

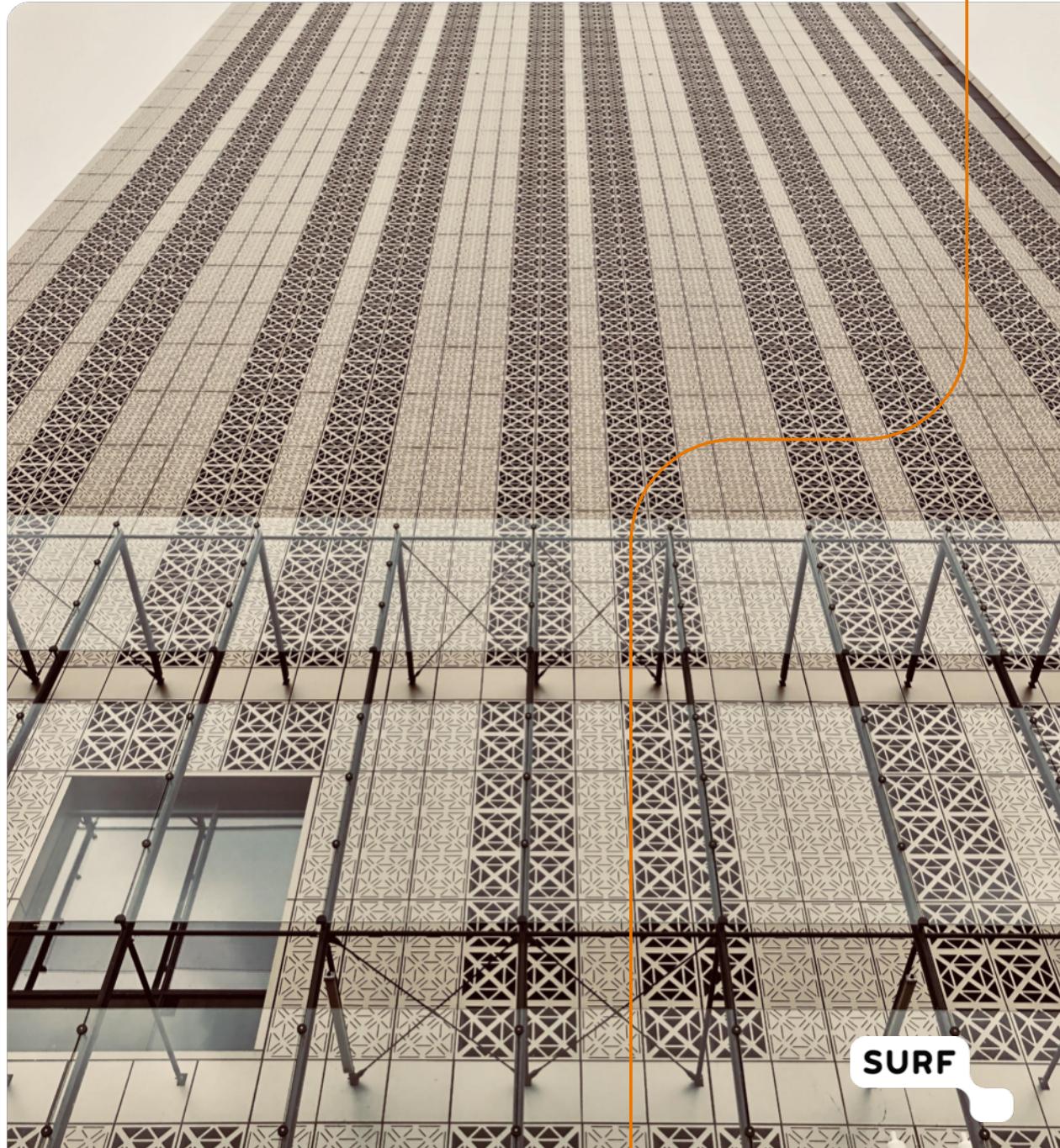
Agenda

- **13:10** An introduction to SURF HPC Cloud
- **13:45** Demonstration
- **14:00** Hands-on
- **15:00** Break
- **15:15** Hands-on (cont.)
- **17:00** End

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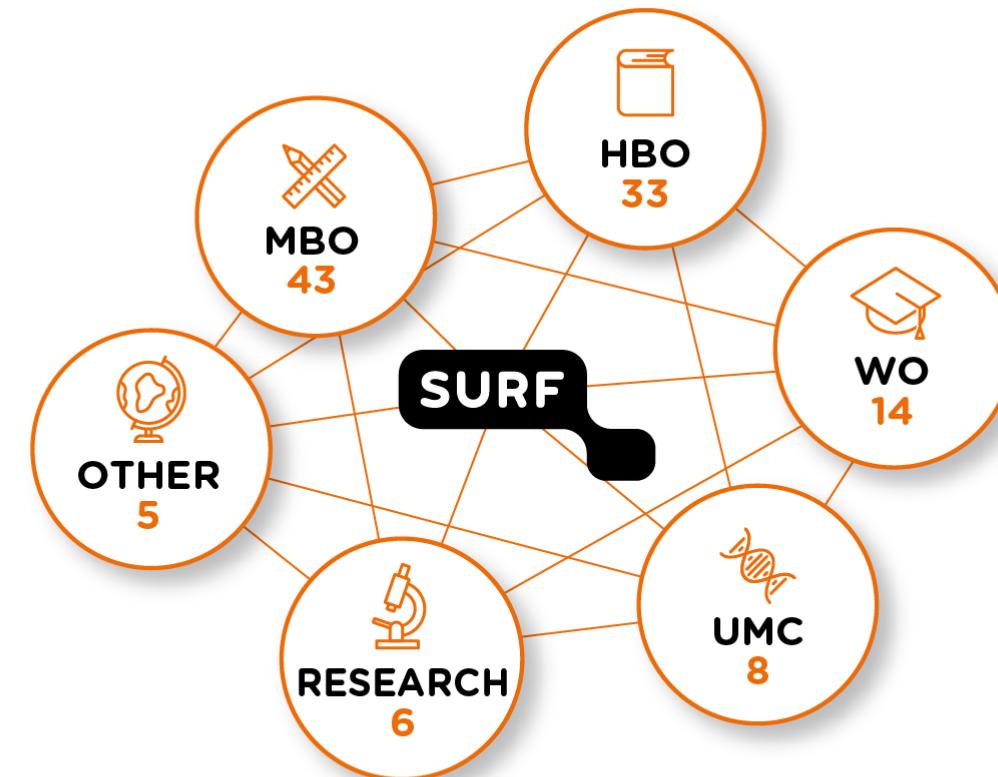
NATALIE DANEZI

ROBERT GRIFFIOEN





We are SURF



WO: Research-oriented higher education
HBO: Higher professional education
MBO: Vocational education and training
UMC: University teaching hospital



What SURF does for research

- **High-end Compute services**

- Supercomputing
- Cluster computing

- **Data processing & analysis**

- Scalable data analytics
- Grid services
- Infrastructure as a Service
- Visualisation

- **Data storage & management**

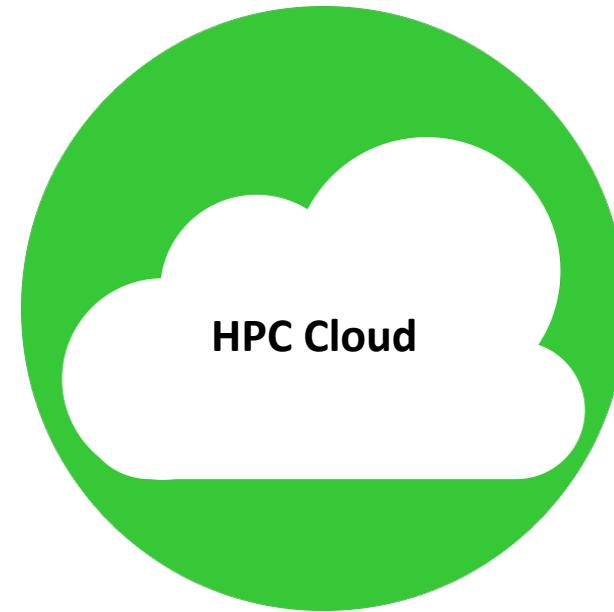
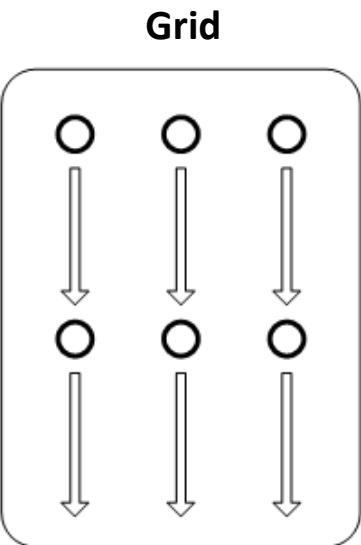
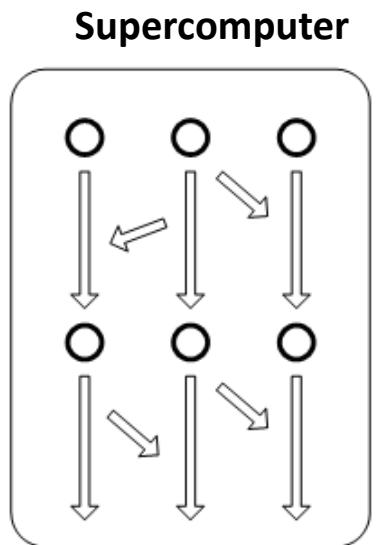
- Online data services
- Data preservation services
- Data management services

- **Network & collaboration services**

- Fast networks for data transfers and compute scale out
- Federated access & identity management solutions



Why different services?



What is Cloud Computing?

“Ask 10 people what the cloud is, get 11 answers.” [?]

“Cloud computing is a model for enabling ubiquitous, convenient, **on-demand network access** to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be **rapidly provisioned and released** with minimal management effort or service provider interaction.”



Essential Characteristics

- On-demand self-service
- Network access
- Resource pooling
- Elasticity
- Measured service

Service Models

- Software as a Service
- Platform as a Service
- Infrastructure as a Service

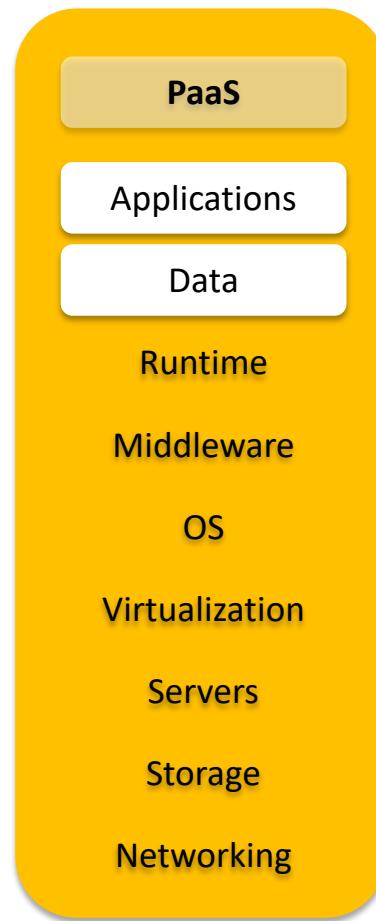
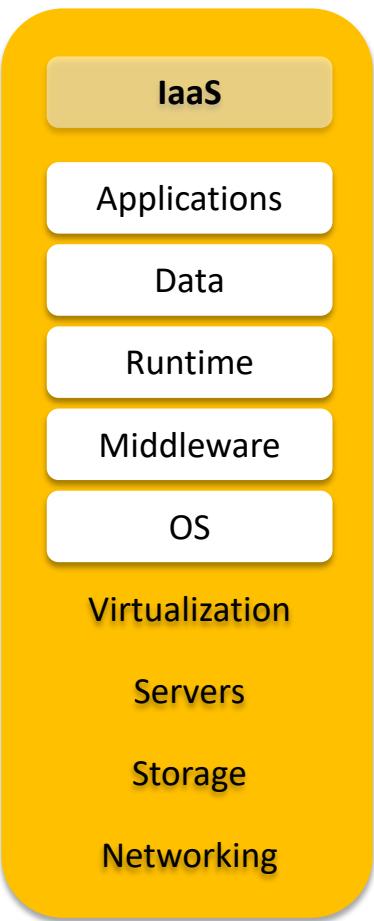
Pizza as a Service



You Manage

Vendor Manages

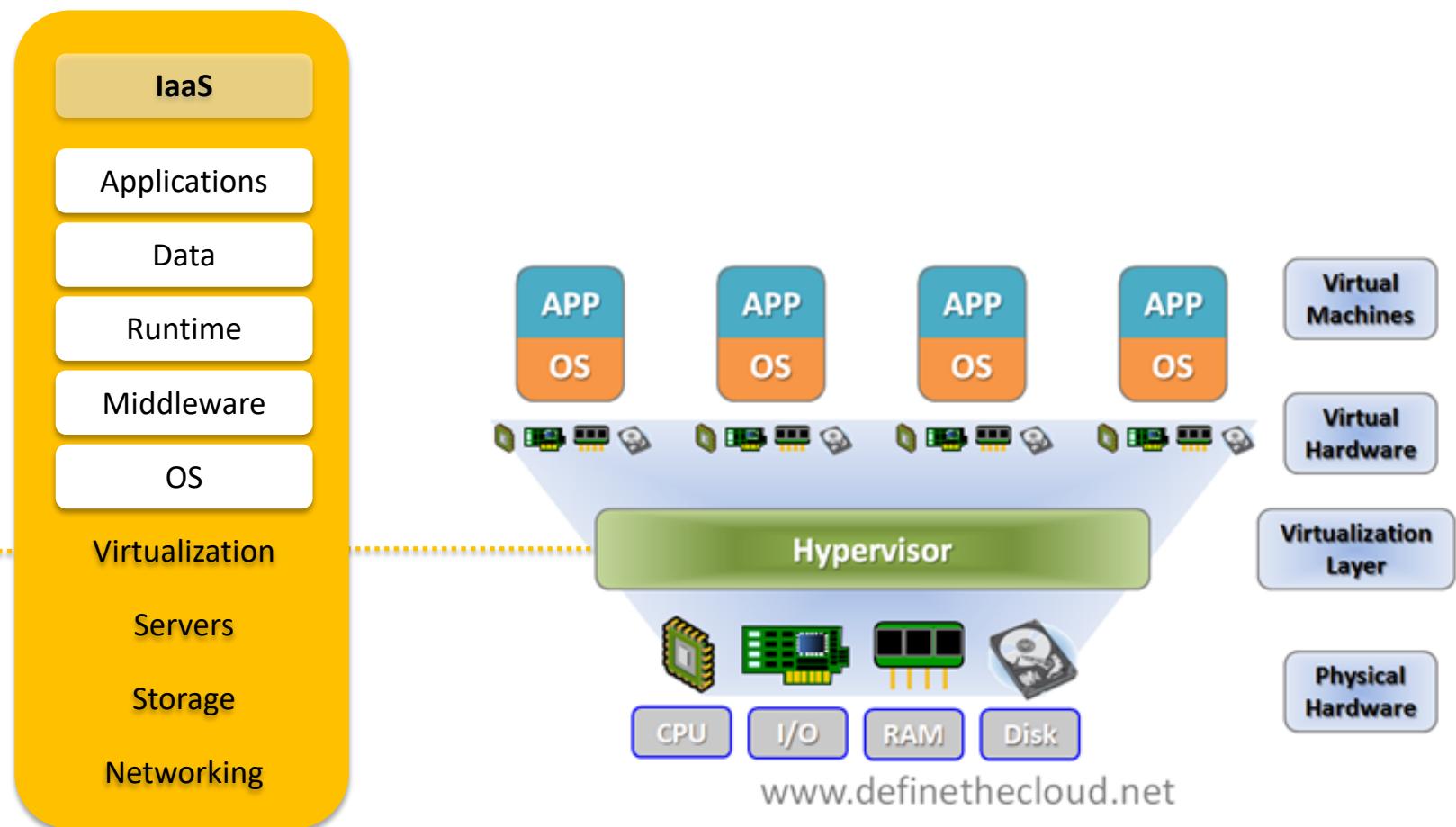
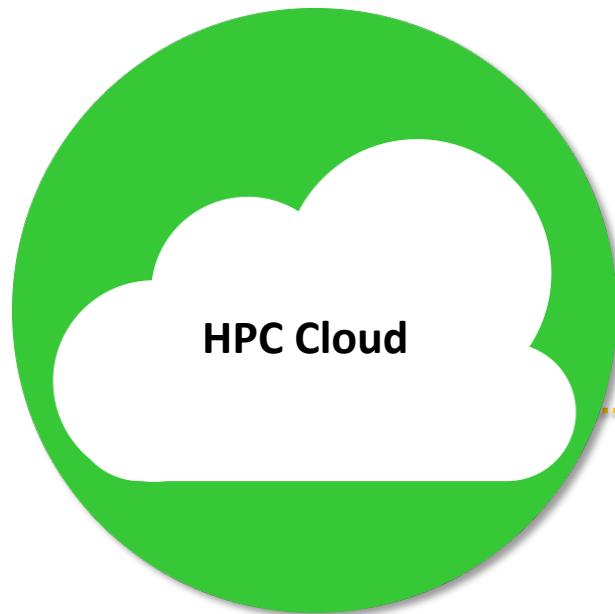
Cloud Service Models



You Manage

Vendor Manages

Infrastructure as a Service



You Manage

Vendor Manages

SURF

HPC Cloud Resources

Compute Nodes



	#	CPU	Memory	Storage	GPU
Intel(R) Xeon(R) CPU E5-2698 v3 @ 2.30GHz	21	32	256GB	3.2TB	
Intel(R) Xeon(R) CPU E5-2698 v4 @ 2.20GHz	10	40	512GB	3.5TB	
Intel(R) Xeon(R) Gold 6148 CPU @ 2.40GHz	7	40	576GB	3.0TB	
Intel(R) Xeon(R) CPU E5-2640 v3 @ 2.60GHz	6	32	256GB	800GB	4 (Nvidia GRID K2)
Intel(R) Xeon(R) CPU E5-2609 v4 @ 1.70GHz	2	16	128GB	800GB	4 (Nvidia Tesla P100)

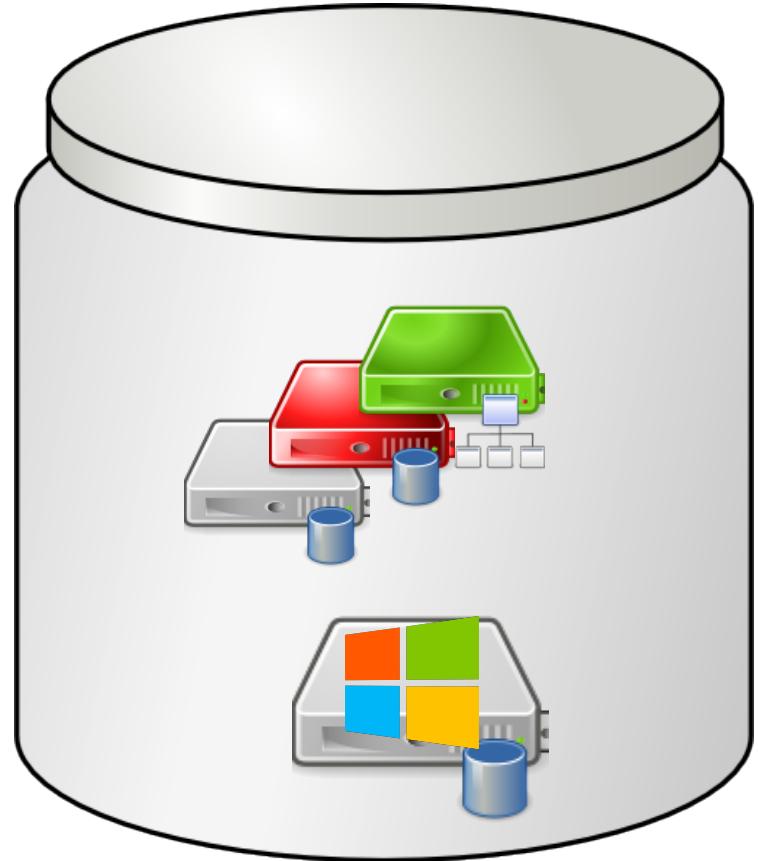
Storage Nodes

- 510 TB Ceph * 3 redundancy

Network

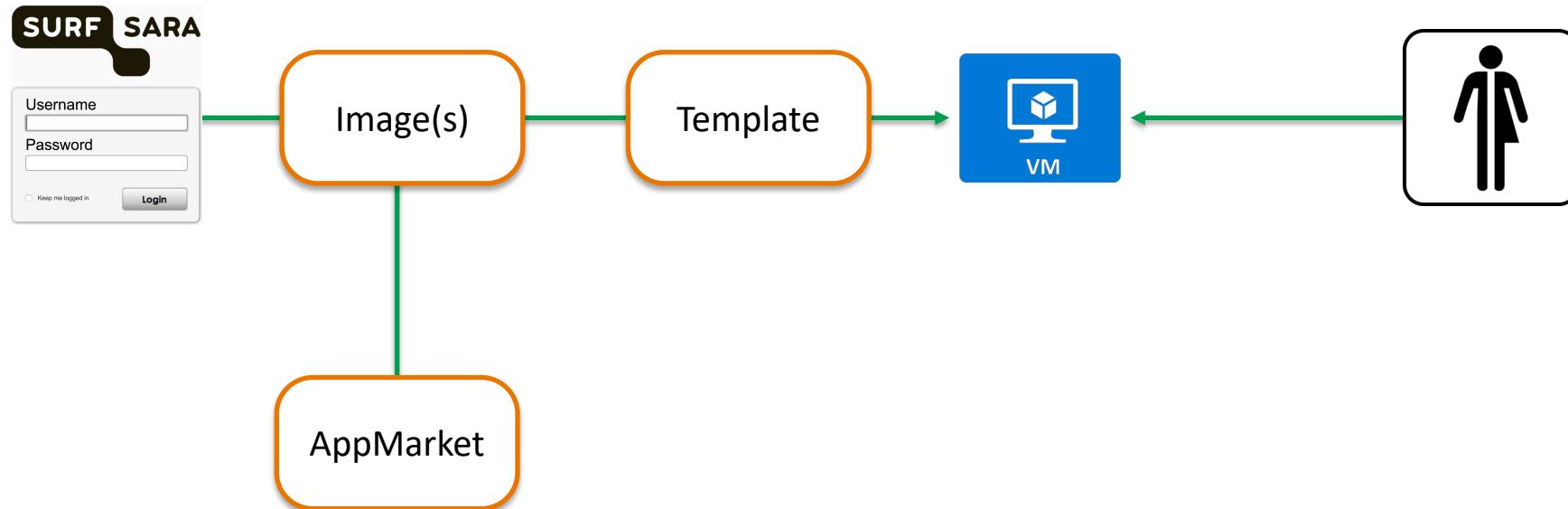
- 10 Gbit

What do you see?

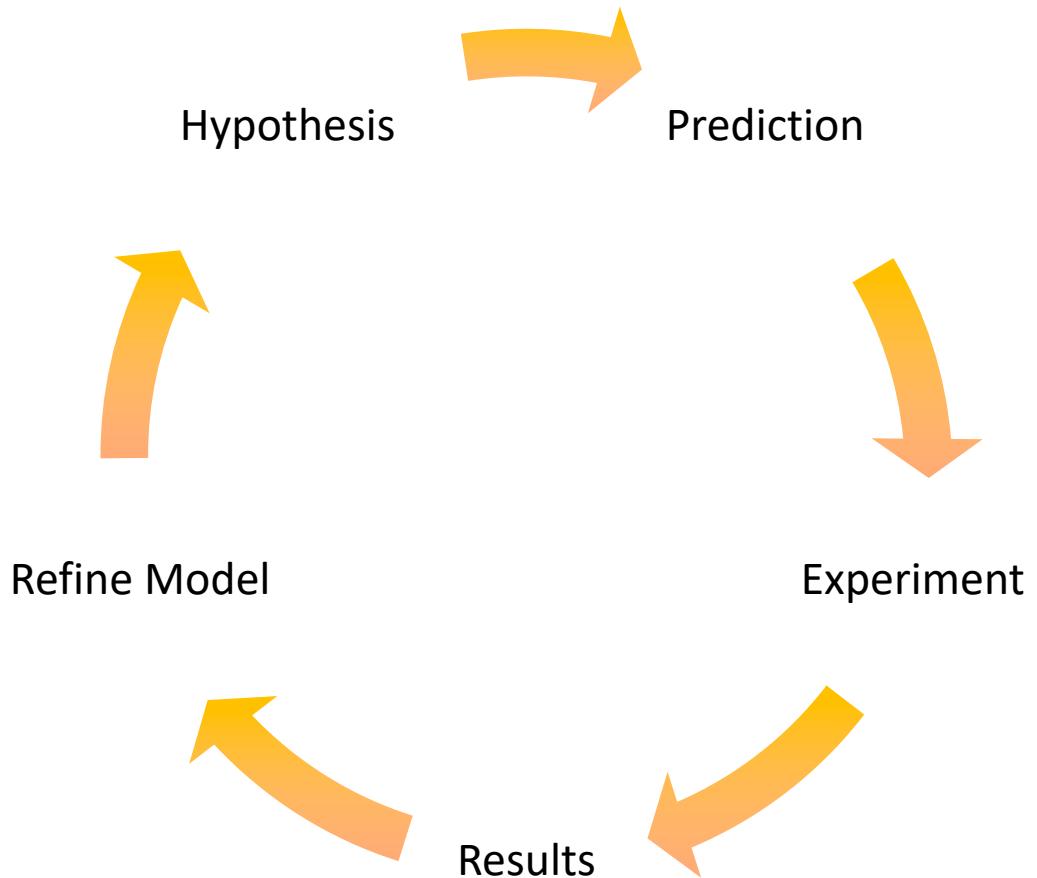


- Freedom: a place to build
- Share: a place to collaborate

Interact with HPC Cloud



The Scientific Method



“Failure is a data point!”
By Andy Jassy, CEO AWS



Use Case: Sky View Factor

- Project

- Computation of the SVF at high resolution for the entire Netherlands

- Why

- Heat stress, fog formation, road temperature

- Challenge(s)

- Privileges to install software
 - Not enough computation power
 - Test environment to evaluate new technologies

- Solution

- HPC Cloud



HPC Cloud: (some) expectations

- **Benefits**

- Data & Computing in Dutch soil
- Unrestricted internet access
- Flexibility: tailor made your VM
- ISO 27001 & GDPR compliancy

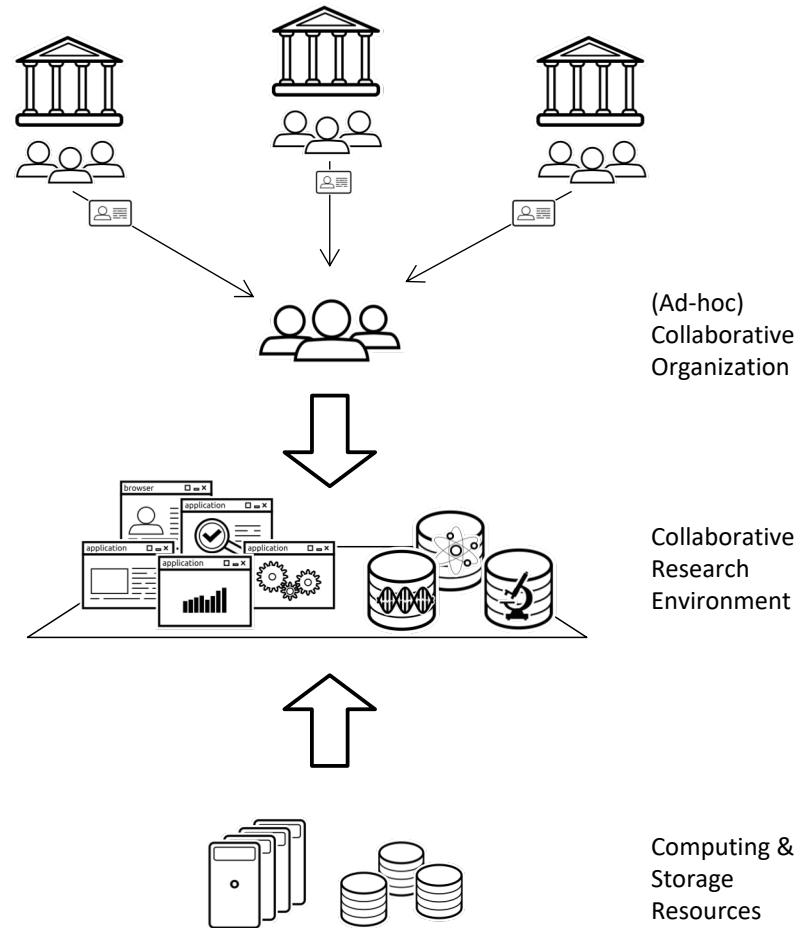
- **Shortcomings**

- No 24/7 Helpdesk
- You own your VM
- Accounting based on VM uptime



In the forge: SURF Research Cloud

- Provides a portal / platform for:
 - Creating workspaces
 - Working across institutes
 - Accessing a broad range of services
 - Accelerating your research
- *It's a SURF innovation project*



THANK YOU!



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Driving innovation together

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