

# SURFsara e-infrastructures

Large scale computing & Big Data

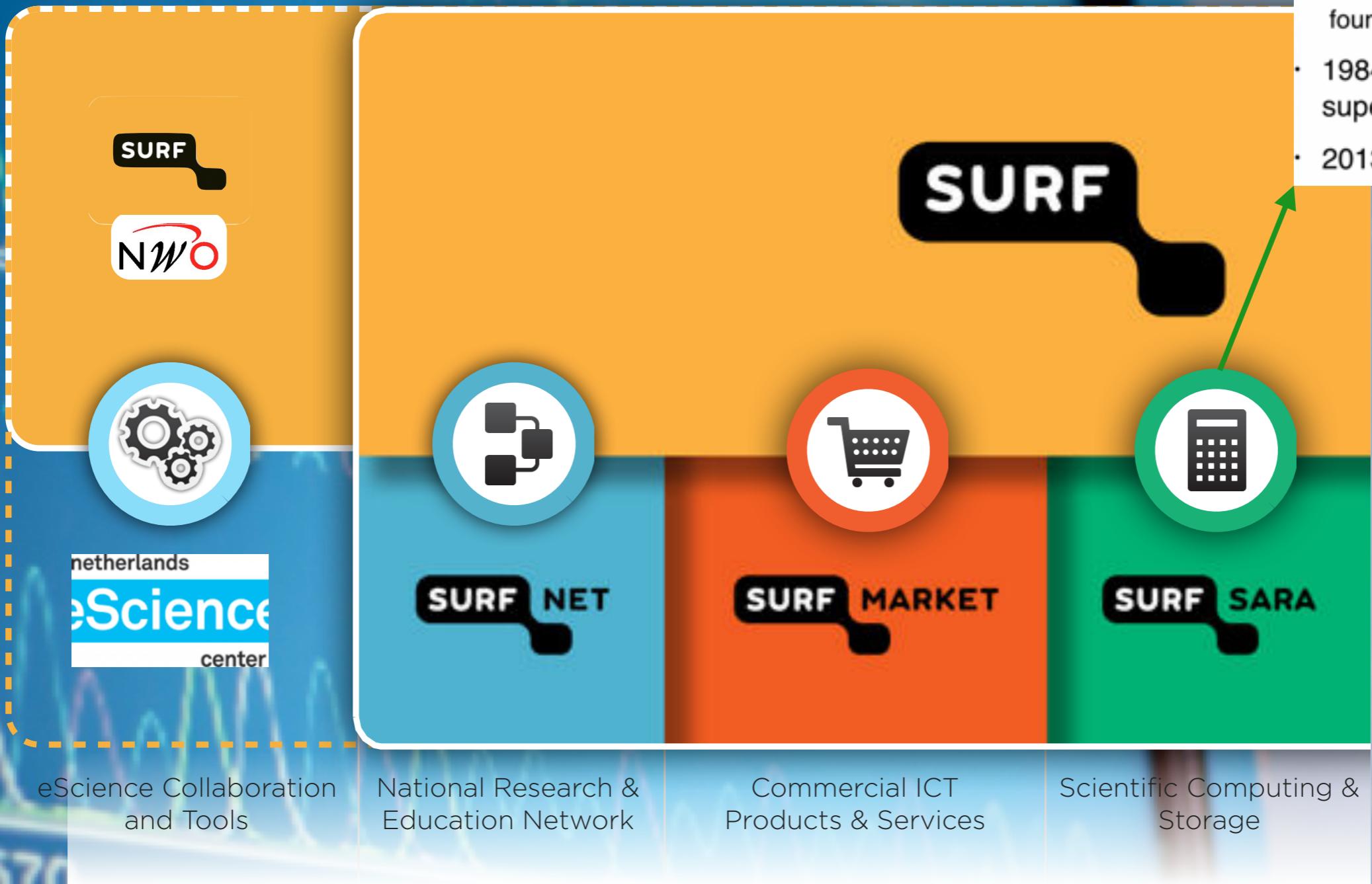


Swammerdam Institute for Life Sciences Workshop, 17 Oct 2016



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# SURF family



**SURF** *sara*

- 1971: SARA  
Stichting Academisch Rekencentrum Amsterdam, founded by UvA, VU, CWI
- 1984: National supercomputing center
- 2013: SURFsara



# High Performance Computing (HPC) in research

# Does my research fit in HPC?

- Faster results
- Task repetition
- Higher accuracy
- Larger computational domains
- Larger volume of data

<http://www.advancedgwt.com/groundwater-software/data-management-and-visualization/groundwater-desktop.html>

# The HPC Infrastructure



# More users, more resources

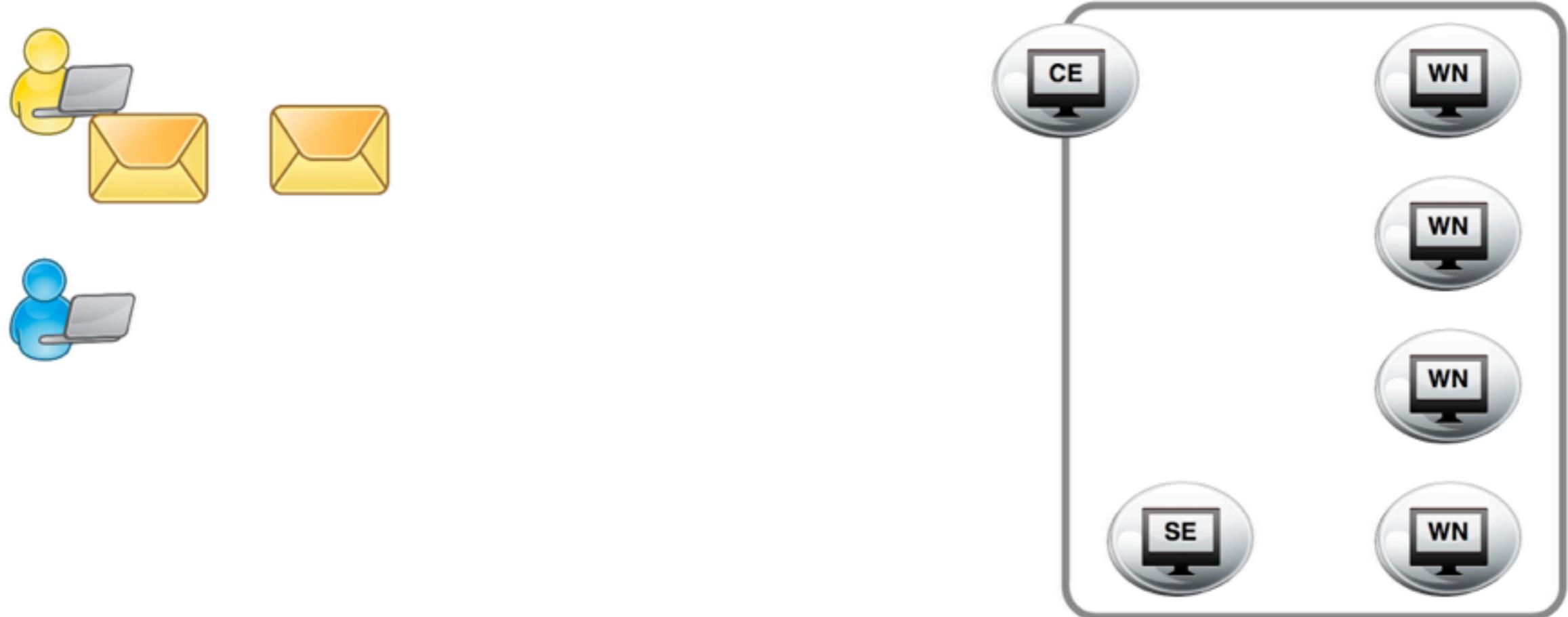
[http://web.grid.sara.nl/mooc/animations/single\\_user.html](http://web.grid.sara.nl/mooc/animations/single_user.html)



*Animation: EGI - SURFsara MOOC 2014*

# Lisa cluster: batch processing

<http://web.grid.sara.nl/mooc/animations/cluster.html>

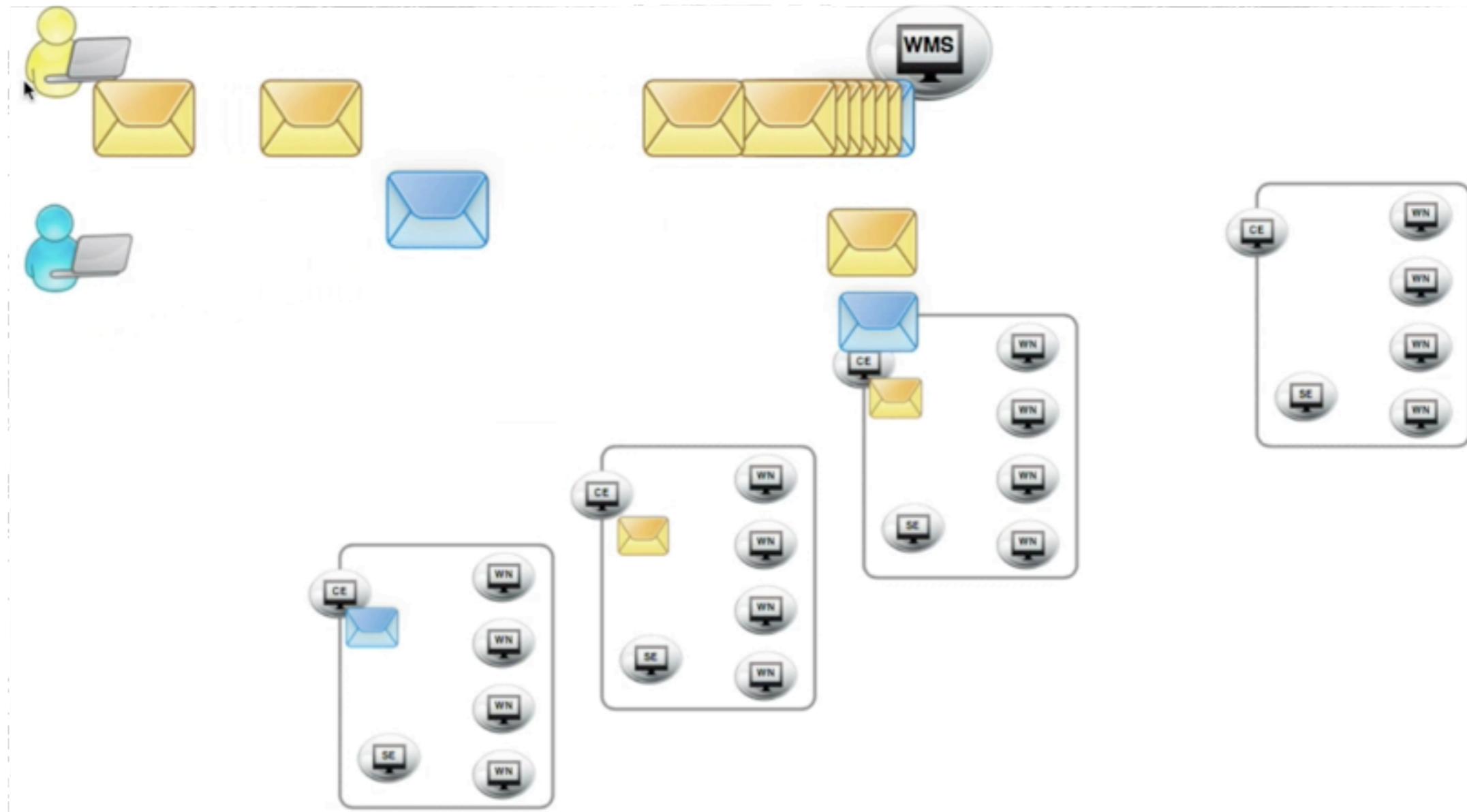


Animation: EGI - SURFsara MOOC 2014

# Lisa cluster: batch processing

- Calculation intensive applications
- Not data intensive applications
- Well supported software stack
- Relatively easy to start

# Life Science Grid: cluster of clusters



<http://web.grid.sara.nl/mooc/animations/wms.html>

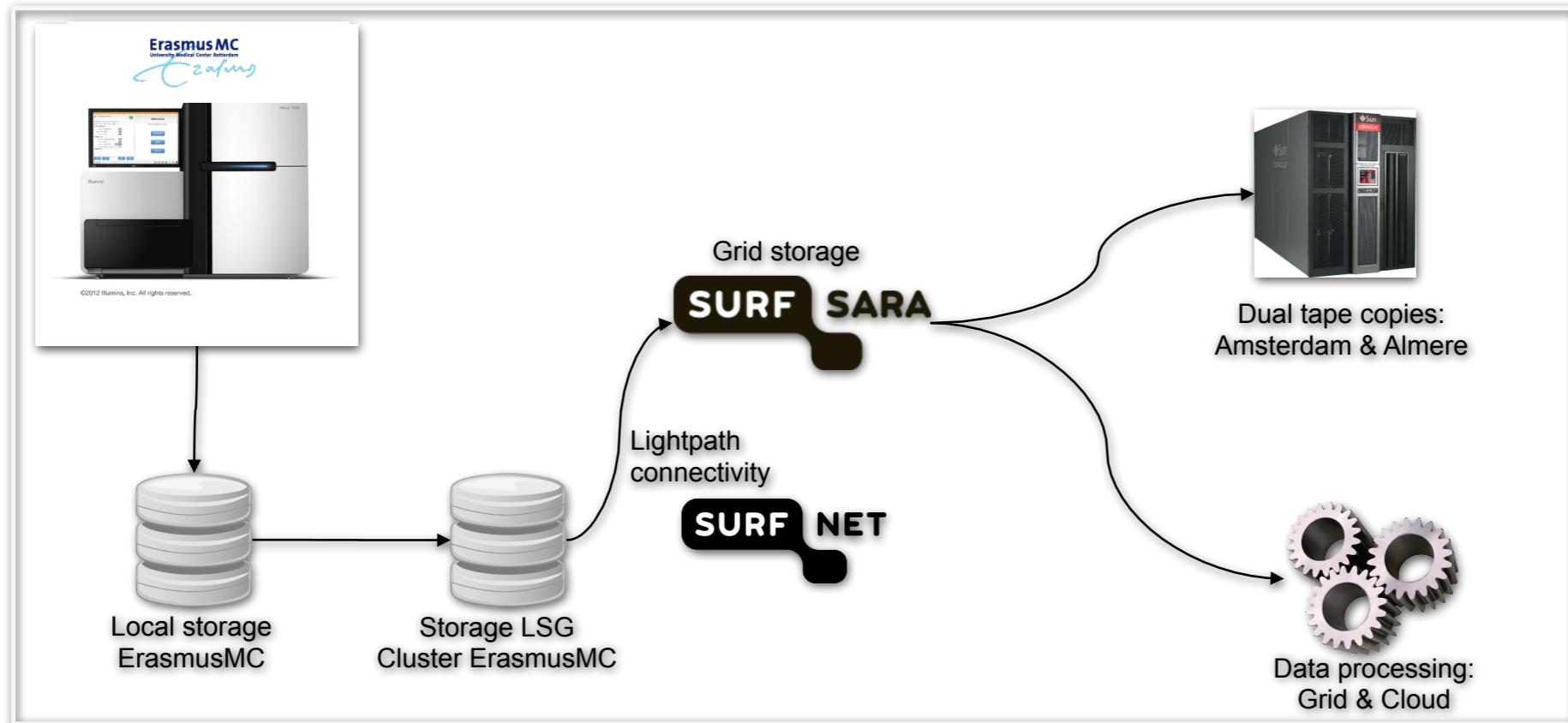
Animation: EGI - SURFsara MOOC 2014

# Life Science Grid: cluster of clusters

- Resources meant for life science researchers
- 11 local clusters (AMC, LUMC, WUR, TUD, RUG, ..)
- Capacity: +/- 12 000 cpu cores, peta bytes of storage
- Independent tasks: Parameter sweeps, Monte-Carlo, ..
- Linux experience required



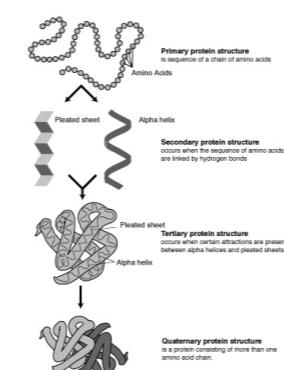
# Life Science Grid examples



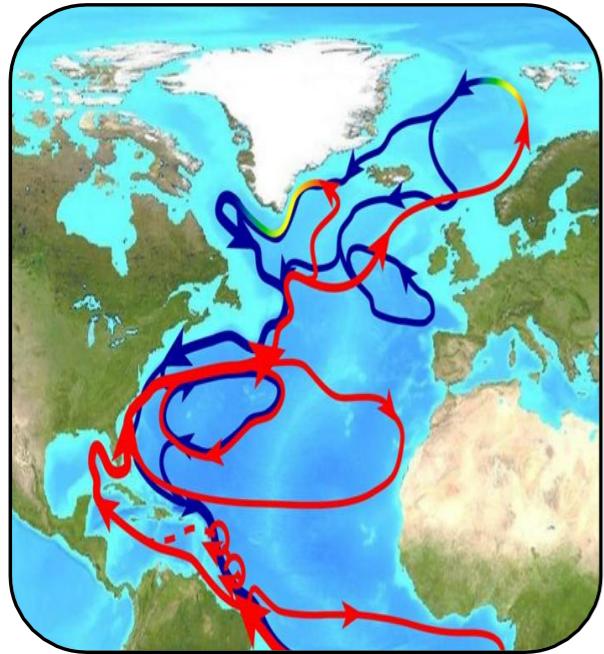
GoNL



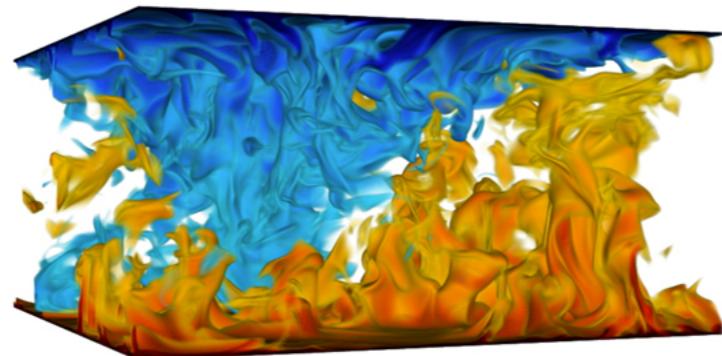
BBMRI.nl



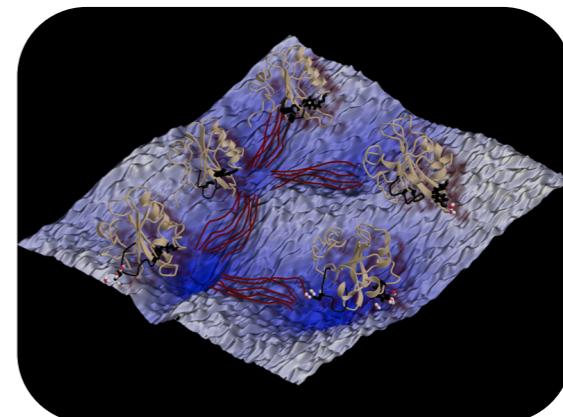
# Cartesius Supercomputer



eSALSA



Turbulence  
modelling



Protein  
structure

- Large memory, fast interconnect, fast and large I/O
- European collaborations: PRACE, HPC-Europa
- Climate models, cell simulations
- Programming experience required

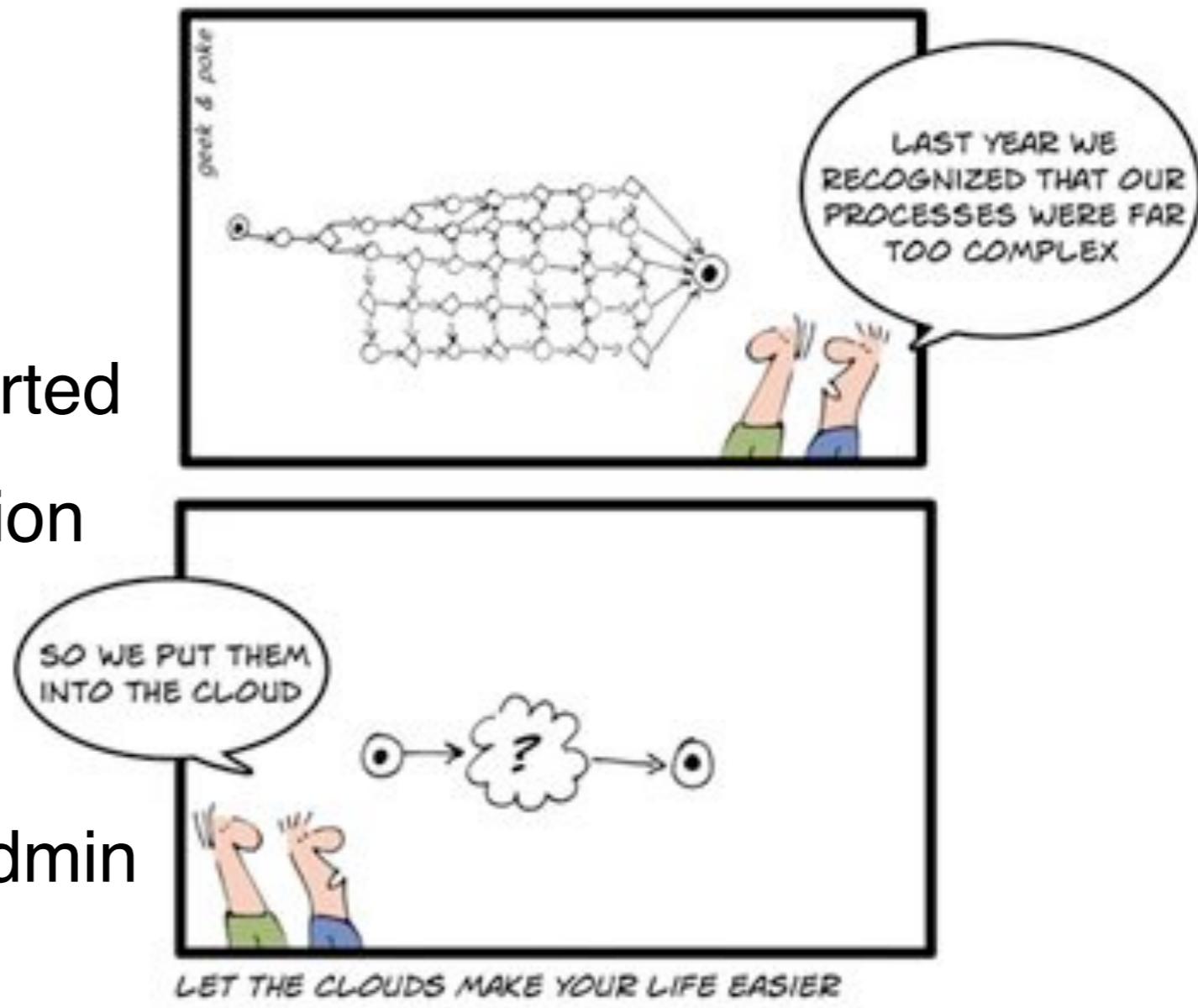
# Hadoop

## How to index the web

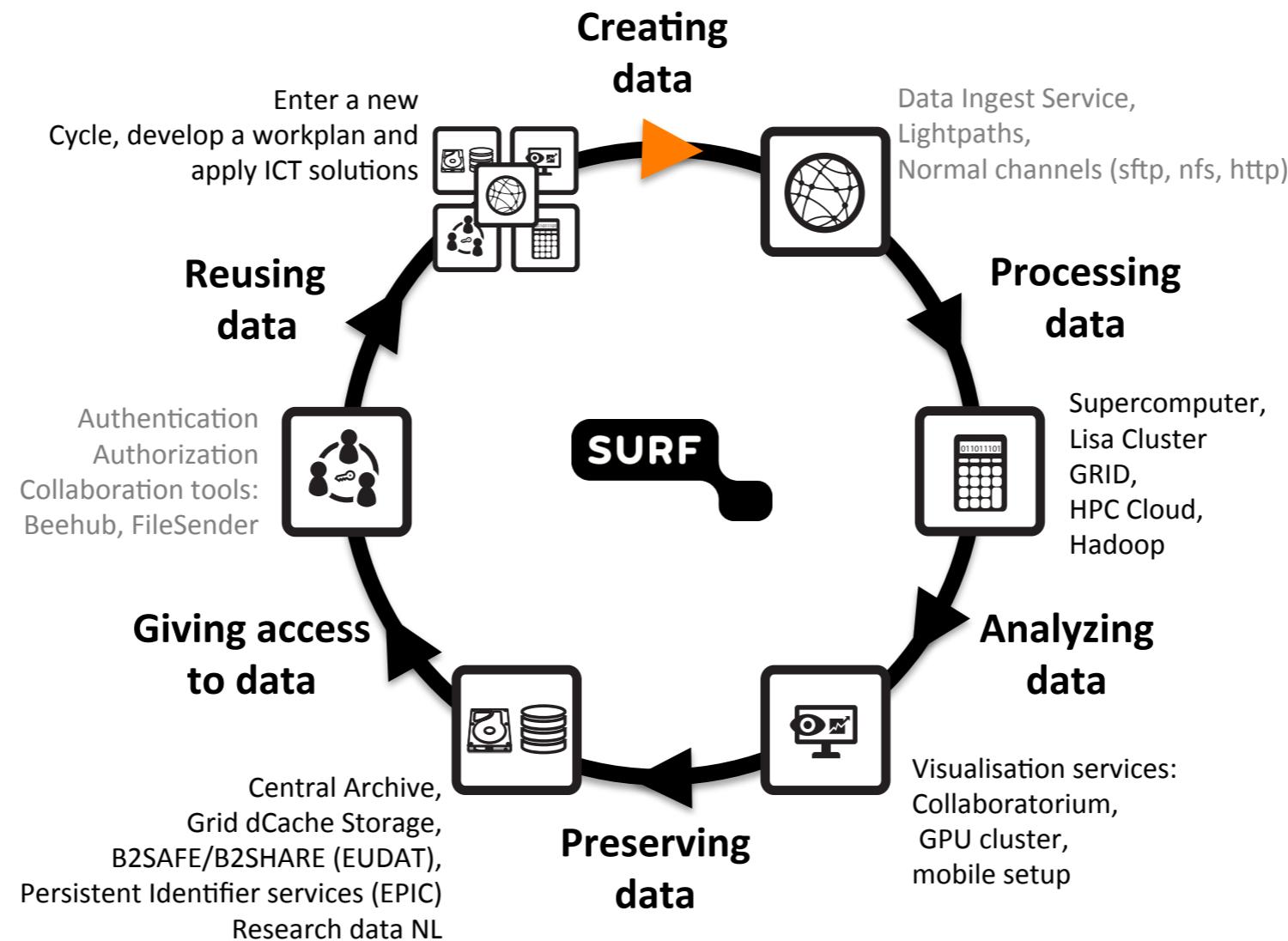
- Big Data
- Exploration/mining of data
- Map / Reduce
- Programming experience required

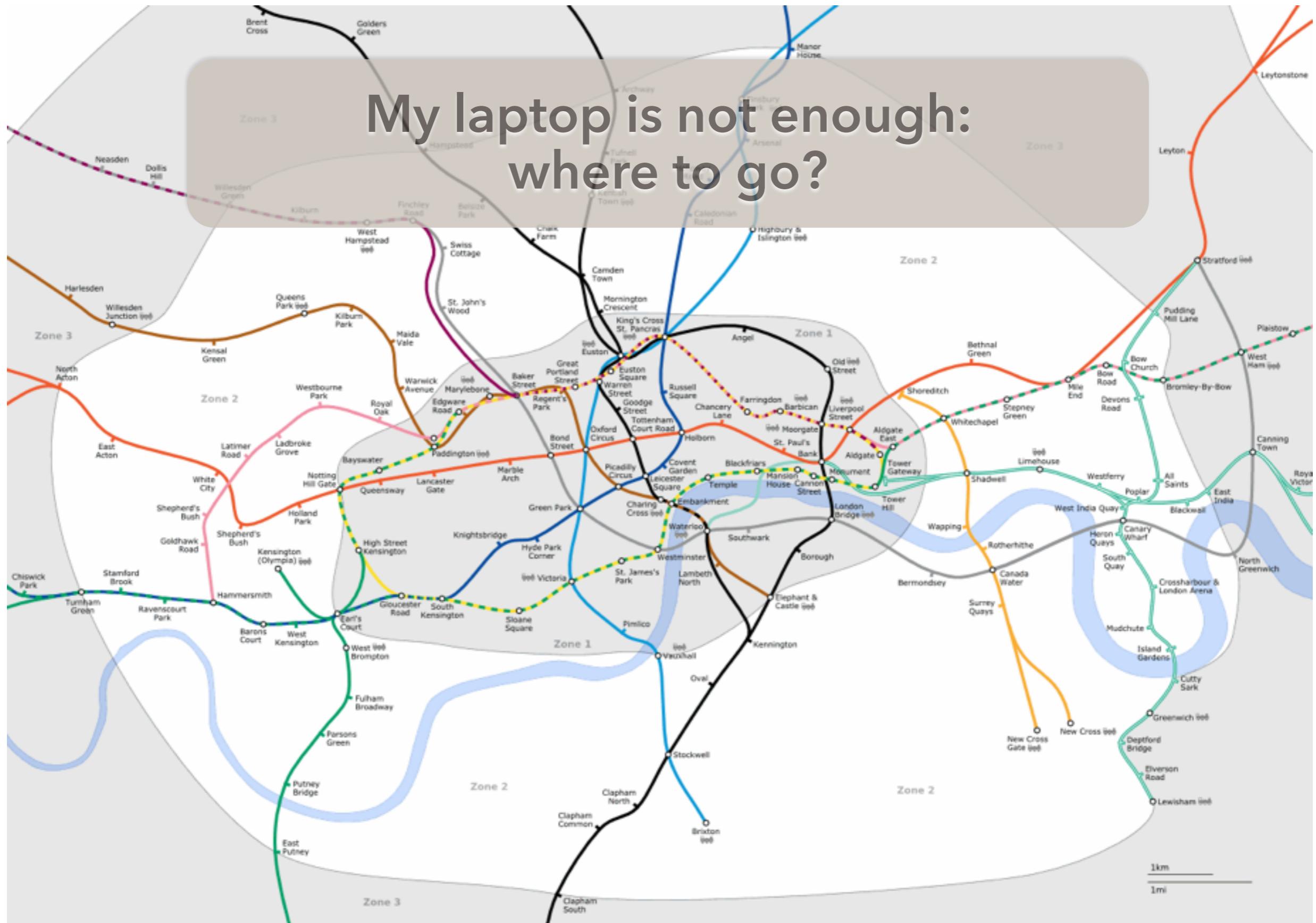
# HPC Cloud

- Flexible & controllable
- Microsoft Windows supported
- Ideal for 3<sup>rd</sup> party application providers
- Graphical user interface
- User is also the system admin



# Data services





# SURFsara services

- **Lisa** national compute cluster
- **Life Science Grid**: interconnected clusters across the Netherlands
- **Cartesius** national Supercomputer
- **Hanthi** Hadoop cluster
- **Oort** HPC Cloud cluster
- **Central Archive, Beehub, SURFdrive** for Data Services
- ..., Visualisation, Networking, Consultancy, Innovation

# Getting access

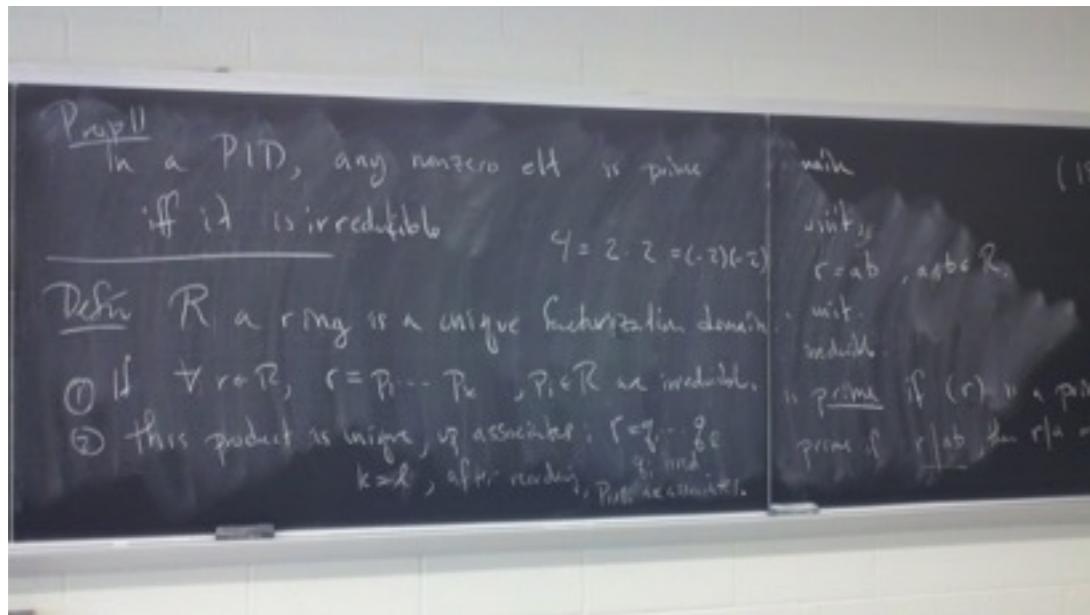


- For:
  - **Lisa National Cluster, Cartesius Supercomputer**
- Apply via:
  - **IRIS**  
(NWO grant)

A screenshot of the SURF SARA Resource request form. The title "SURF SARA Resource request form" is at the top, followed by tabs for "Personal", "Resources", and "Project". The "Personal" tab is selected. Below it, there's a section titled "Applicant / Contact person" with the sub-instruction "The principal researcher must have a permanent position at the organisation.". It contains fields for First name, Last name, Initials, Gender, Date of birth, Title(s), Function, and Institute, each with a corresponding input field.

- For:
  - **Grid, Hadoop, HPC Cloud, Data Services, Visualisation**
  - **Or, not sure what suits you best?**
- Apply via:
  - **<https://e-infra.surfsara.nl/>**  
(SURF grant)

# Standard support



Bring your scientific problem

- We provide advice and support:
  - Getting access
  - Best practices
  - Design & optimisation
  - Integration to large scale



# Trainings, online tutorials

SURFsara and UNESCO-IHE workshop: How water research benefits from HPC Cloud



UNESCO-IHE hosted a RESEARCH workshop last month for research on water engineering and management using HPC systems. SURFsara, as the leading national e-infrastructure provider, delivered a hands-on course on their HPC Cloud and presented its benefits to the water sector.

**SURF Research BootCamp**

Utrecht, April 21st 2016 During this one-day event researchers are guided through the world of research ICT facilities and provided with the necessary skills to start using them. Participants compose their own mix of workshops to support their research work.

by gera\_p 6 months ago 66 Views



# Questions?



[https://www.surf.nl/en/about-surf/subsidiaries/  
surfsara/](https://www.surf.nl/en/about-surf/subsidiaries/surfsara/)



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