

SURF

Computing at SURF

dr. Lodewijk Nauta

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Introduction



Lodewijk Nauta **Technical advisor**

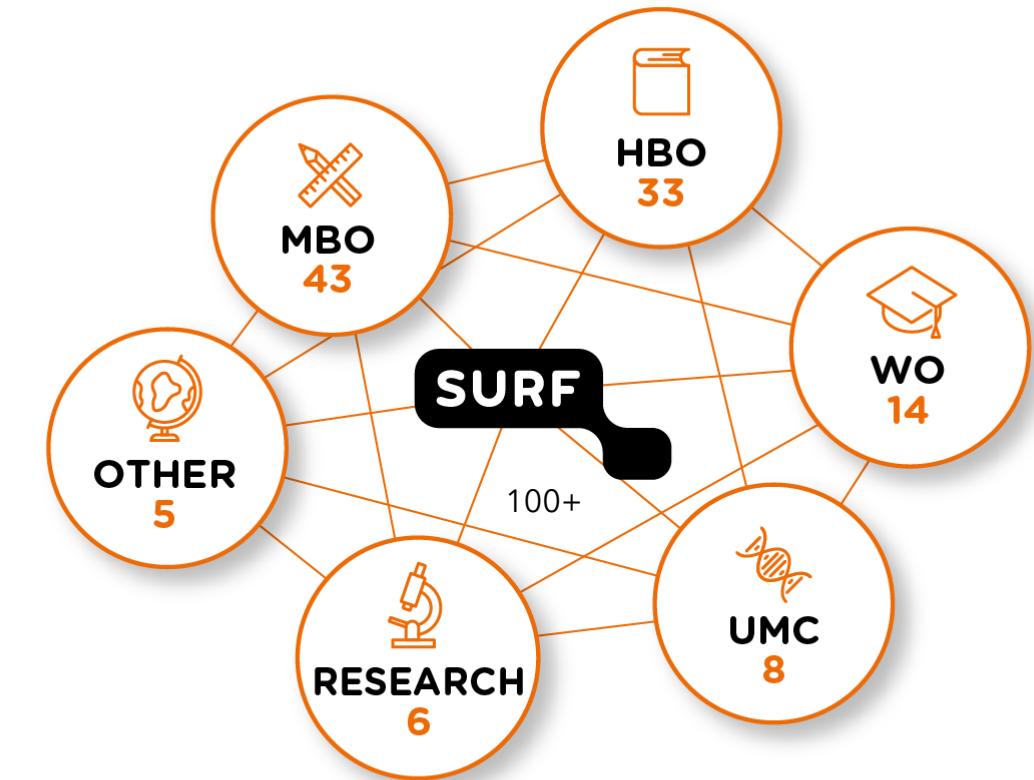
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Lodewijk attained his **PhD** in high energy physics **in 2022** at Nikhef. During this time he analysed **large data sets** taken with the new KM3NeT detector.

Now, at SURF, he **helps scientists** run their analyses on the High Throughput Compute (HTC) **clusters available** to the Dutch research community.



We are SURF



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

SURF is the collaborative organisation for IT in Dutch education and research

Academic Medical Centres



**SURF
Members**
**100+ and
growing**

Universities for applied sciences



Universities



& other research institutes



⁴ Sustainable, secure (ISO 27001) digital services for Research & Education : <https://www.surf.nl>

MISSION



SURF makes reliable and innovative IT facilities possible, with which Dutch education and research can excel.

VISION



SURF stimulates the formation of ecosystems in which members and their stakeholders collaborate, innovate and share knowledge on the basis of shared values and agreements.



Service Provider

ICT infrastructure
& services
(ISO 27001)



Innovator

Push digital
innovation &
transformation



Association

Knowledge sharing:
Expertise, training,
meeting & support



Goals

Acceleration of
member goals by
collaboration

SURF Services

SURF develops IT services for education and research. Members and non-members can make use of these (50+) services: <https://www.surf.nl/en/services>

- Compute services
- Data services
- Network connectivity
- IaaS (Cloud / VRE)
- Security, Trust & Identity
- Digital Platforms
- Agreements with market parties
- Expertise, advice & training



(New tape library 2022)

SURF members have a special relationship (inbesteding) with the Cooperative for services

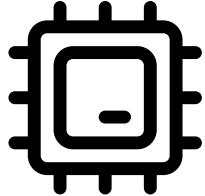


SURF Research (services & more)



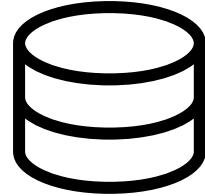
High bandwidth network
Dedicated light paths
Encrypted transfers
Cyber Security
AAI / SSO

 $> 400 \text{ Gbps}$



Snellius
Lisa
Data Processing
Custom Cloud Solutions
SURF Research Cloud
Public Cloud
Experimental zone

 $> 100.000 \text{ cores}$



Ceph
dCache
Storage DPU
Object Store
Preservation
EPIC PID
iRODs

 $> 150 \text{ PB}$



Support
Training
Visualisation
Optimisation
Expertise
Collaboration



Data center: 100% renewable energy
High information security: ISO 27001



EUROPEAN OPEN
SCIENCE CLOUD



Today: *Spider* platform for Distributed Data Processing

Data intensive projects processing instrument data from sensors, sequencers, telescopes, and satellites during the entire mission lifetime

Data volumes:

parallel processing of large amounts of data, from many Terabytes to Petabytes

Processing pipelines:

steady production workflows with semi-continuous data flows

Project organisation:

international collaborations working on a shared set of data and software

Ecosystem:

modern cloud-based solutions with automated deployment, optimized for data processing



Data processing science examples and scale

Over 50PB of storage and over 100 million core hours are consumed together by various scientific domains

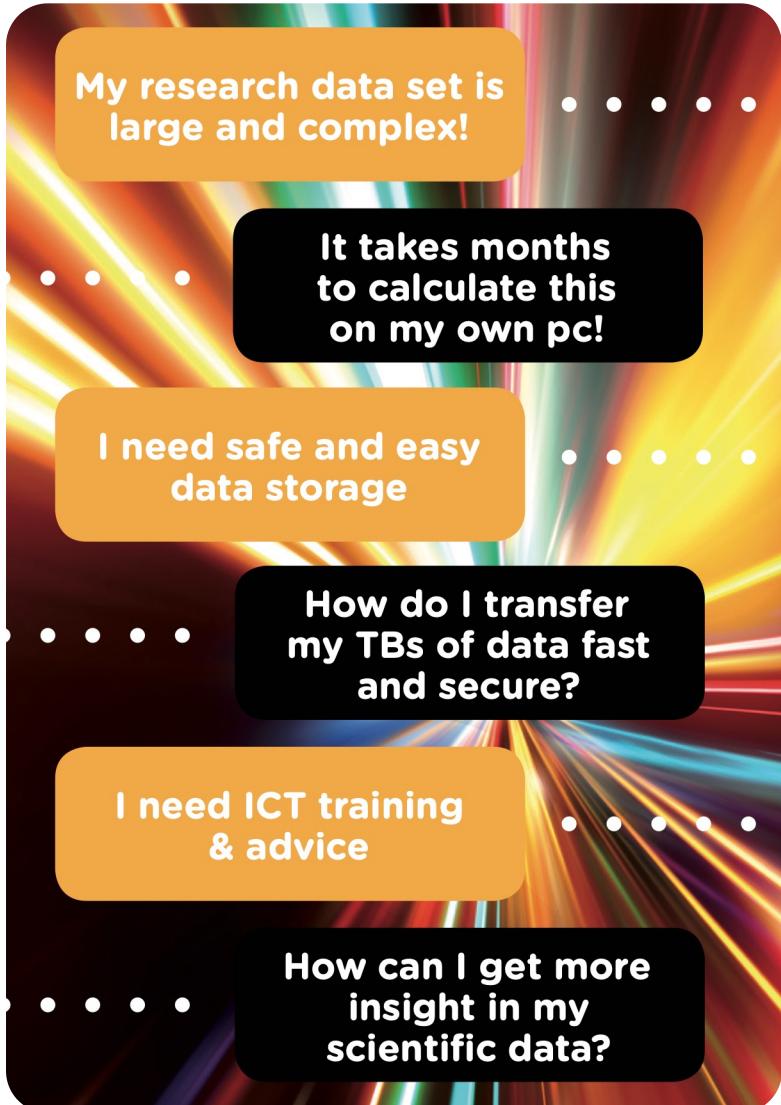
In production

				
Core hours/ year allocated	77 mil	12 mil	4.5 mil	5.8 mil
Domain	high-energy physics	earth observation	lifesciences	radio astronomy
Disk used	9 PB	400 TB	320 TB	900 TB
Tape used	37 PB	1.5 PB	2.5 PB	30 PB

In development



Providing resources



High-quality ICT services and state-of-the-art technologies to serve the scientific community

We work with and for the SURF members (you!)

For **Data Processing** in particular we provide **consulting**:

- Figure out requirements
- Develop services together for the broader scientific community
- Voice the needs towards SURF and NWO

Example:

- Clone of Spider
- Alzheimers Genomics Hub (AGHub)
- Clone with strict security requirements

SURF Research: NWO call

Call: <https://www.nwo.nl/en/calls/computing-time-national-computer-facilities>

Budget: 1656 million CPU/GPU core hours + 59 Petabyte Storage & Expertise

Small grants: <https://www.surf.nl/en/research-it/apply-for-access-to-compute-services>

Go to: *Request Portal*

The screenshot shows the SURF service desk portal. At the top, it says "Hi Lodewijk!" and "Welcome to the service desk portal". There are two main sections: "Service Desk" and "Apply for access". The "Service Desk" section includes "Create a ticket" (for requests, problems or questions) and "Useful resources" which lists "SURFcua portal" (Manage your Snellius/Data Archive/Spider login), "Status of our systems" (See which systems are up and running and which are down), and "Sign up for training" (Sign up for a training on our systems). The "Apply for access" section includes "Small NWO request (EINF)" (Apply here directly for an EINF grant), "On institute contract" (Only available for the UvA, VU, GCC and TUE), and "Additional information" which lists "Knowledge base" (Information about the systems and services) and "NWO requests" (How to request a NWO or EINF grant).



Tape robot(s)



Thank you for your attention!

 www.surf.nl

 lodewijk.nauta@surf.nl

 Contact us: [Service Desk](#)

[SURF services](#)

[E-Infra grants](#)

[NWO grants](#)