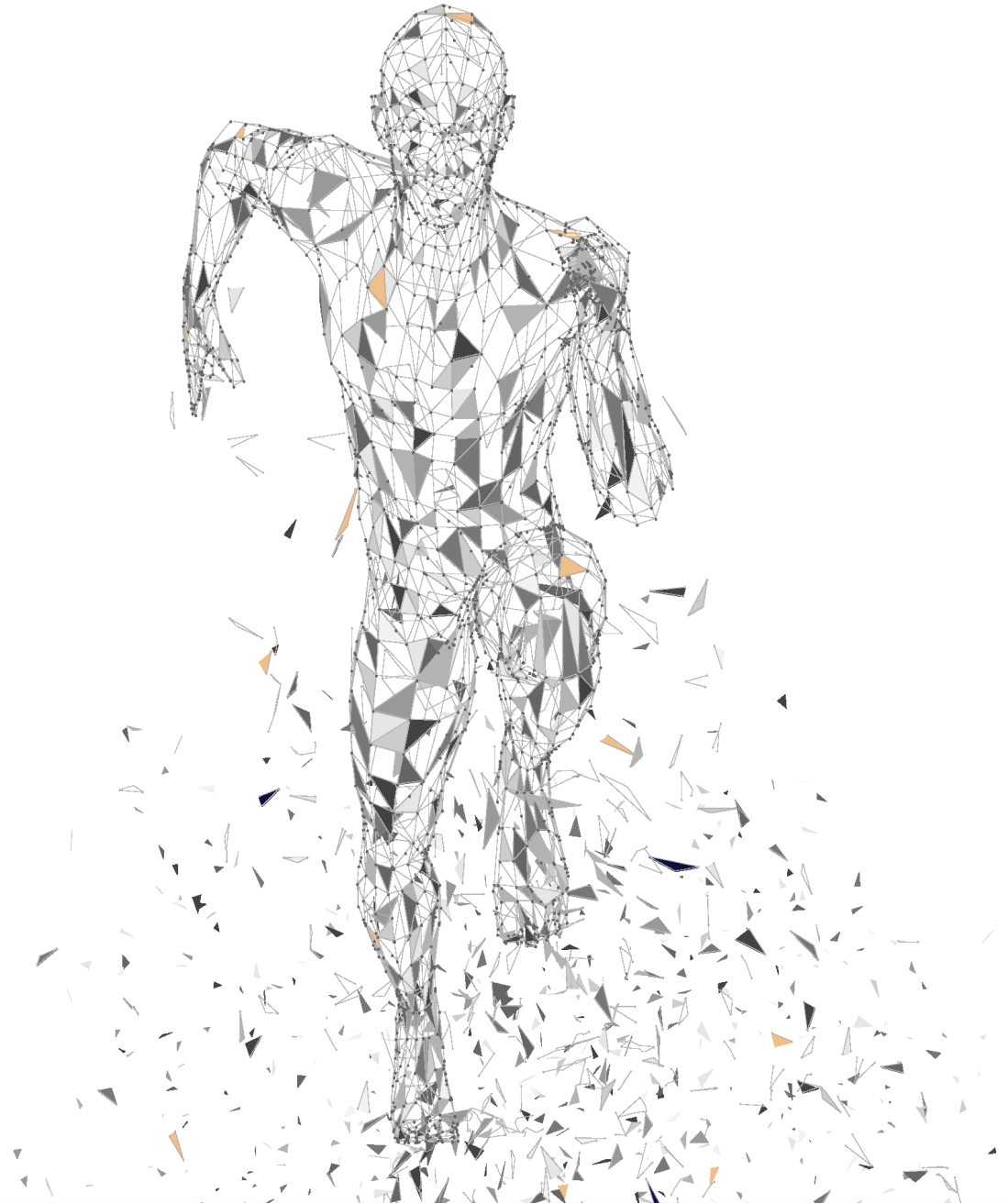


LET'S GET UP TO SPEED

Dr. ir. Peter Michielse
SURF RESEARCH



SURF

2.5
quintillion

bytes of data are being produced daily

Looking at:

FAIR

"ALL RESEARCH SHOULD AIM
TO BE F.A.I.R."

#FIGSHAREFEST

	GOOD	BAD
F INDABLE	ONLINE DATABASE	FILING CABINET IN A BATH IN THE BASEMENT UNDER A LEAKING PIPE
A CCESSABLE	OPEN ACCESS FOR EVERYONE (NO LOGIN)	THE FILING CABINET ALSO IS HOME TO A NEST OF WILD BADGERS
I NTEROPERABLE	ALL DATA IS IN OPEN FORMATS	ALL DOCUMENTS ARE PRINTED IN COMIC SANS AND WRITTEN IN ESPERANTO
R EUSEABLE	GOOD META DATA AND SECURELY STORED FOR 10 YEARS	THE PAPER EXPLODES IF IT'S READ

ERRANTSCIENCE.COM

Looking at:

MACHINE LEARNING

AI COPERNICUS 'DISCOVERS' THAT EARTH ORBITS THE SUN

Neural network that teaches itself the laws of physics
could help to solve quantum-mechanics mysteries.

By Davide Castelvecchi

they can use to discover new laws of physics,

Looking at: EXASCALE



**How do we deal
with that?**

**WHAT ARE WE
WORKING ON?**

Radio sky survey using LOFAR

Data processing

Natalie Danezi
Raymond Oonk
Coen Schrijvers

Forbes

**New Night Sky Map Reveals
'Hundreds Of Thousands'
Unknown Galaxies With 15
Million More Forecast**

NOS

**Onderzoekers brengen 300.000
sterrenstelsels in kaart**

CNN

**New sky survey reveals hundreds of
thousands of galaxies**

620M potential readers ...

A cosmic background image featuring a dark space filled with numerous stars of varying colors (yellow, orange, blue, purple) and a prominent purple and orange nebula on the right side. The text is overlaid in white.

100K

ANTENNAS (NL)

200

ASTRONOMERS

18

COUNTRIES

26

RESEARCH
PAPERS

PB-SIZED LOFAR DATA

Research on auto-immune diseases

Data sharing

Barbera van Schaik
Antoine H. C. van Kampen
Amsterdam UMC

Nuno Ferreira
SURF



The ODISSEI Secure Supercomputer (OSSC)
a “CBS enclave” within the SURF domain

Annette Langedijk
Michel Scheerman
Narges Zarabi



Collaborating without direct data sharing

Axel Berg
Freek Dijkstra
Hylke Koers

A visualization of particle physics event generation, showing a central red point from which numerous colored lines (representing particle tracks) radiate outwards, forming a complex, star-like pattern. The tracks are primarily green and blue, with some orange and yellow. The background is black with a faint grid of white lines.

Particle physics: event generation

Radboud University:
Sydney Otten
Sascha Caron (PI)
et al

SURF:
Damian Podareanu
Caspar van Leeuwen

1 exascale (10^{18} flop/s, 10^{17} bytes memory) system will have around 10 million of CPU/GPU cores

So there is no programming “as usual” anymore

**AND MANY OTHER
PROJECTS**

**How we will do this
together**

Ease of access: both administrative and technical

National approach to the data challenges in science (e.g. through Digital Competence Centers)

Build and extend expertise and support

Align with and collaborate on what is needed with all stakeholders (researchers, communities, SURF institutions)

Knowledge building and innovation

Converge infrastructures where possible, for efficient and flexible service deployment

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**Driving innovation
together**

