

# Netherlands eScience Center

-  
National centre for innovative software  
solutions in academic research

**Niels Drost**

netherlands  
eScience center

# In a nutshell

- Founded in 2011 by NWO and SURF
- Bridge: scientific research & ICT
  - Stimulate new ways of research
  - Enable scientific breakthroughs
  - Promote technology re-use
  - Collaborate & communities
- For all Dutch universities and research institutes, all disciplines
- National centre for research software
- 90+ employees, mainly:
  - *eScience Research Software Engineers*



Science Park, Amsterdam





# VISION

a robust research community, in which all investigators in all domains are able to exploit advanced digital technologies to answer curiosity-driven questions, keeping the Netherlands at the forefront of cutting-edge international research.

## MISSION

empowering researchers across all disciplines through innovative research software.

**AMBITION 1**  
collaboratively  
designing software  
for research

**AMBITION 2**  
building digital  
expertise

## STRATEGIC PRIORITIES

- ✓ institutional alignment
- ✓ software sustainability

open calls  
for eScience  
domain research

collaborations in  
advanced eScience  
technologies

workshops  
& training

community  
building &  
networking



# Ambition 1: Calls & Projects

- Annual large calls for proposals:
  - 1. “Open eScience Call”, for all disciplines
  - 2. “Collaborations in Innovative eScience Technologies”
- Annual small calls for proposals:
  - “Open Calls for Small Scale eScience Initiatives”
  - e.g. 4 months consultancy projects in Machine Learning / Software Performance Optimization / ...
- More information: [esciencecenter.nl/calls-for-proposals](https://esciencecenter.nl/calls-for-proposals)



# Ambition 2: Workshops & Training

- Digital Skills Programme
- Technology Weeks
- Local Capacity Building
- Online Materials
- Fellowship Programme



Mateusz Kuzak  
@matkuzak

It's great to see so many happy faces of participants of @eScienceCenter @swcarpentry Workshop, learning #Python and #Jupyter today. We are joined by amazing helpers from @tudelft and training coordinators from @elixir\_it learning together how to run effective online workshops 😊



Docs » Tutorials

## Tutorials

- **First Steps**
- **Real World Tutorial 1: Translating Poetry**
  - First example
  - Making loops
  - Noodlify!
  - Dealing with repetition
  - Versioning

### The Turing Way

1. Introduction
2. Reproducibility
3. Open Research
4. Version Control
5. Collaborating on GitHub/GitLab
6. Credit for reproducible research
7. Research Data Management
8. Reproducible Environments
9. Testing
10. Reviewing
11. Continuous Integration
12. Reproducible Research with Make

**Welcome to the Turing Way**

The *Turing Way* is a lightly opinionated guide to reproducible data science.

Our goal is to provide all the information that researchers need at the start of their projects to ensure that they are easy to reproduce at the end.

This also means making sure PhD students, postdocs, PIs, and funding teams know which parts of the "responsibility of reproducibility" they can affect, and what they should do to nudge data science to being more efficient, effective, and understandable.

## fair-software.nl

What can you do to be more FAIR?

- #1 USE A PUBLICLY ACCESSIBLE REPOSITORY WITH VERSION CONTROL  
GitHub, Bitbucket, GitLab
- #2 ADD A LICENSE  
tidriegal.com, choosealicense.com
- #3 REGISTER YOUR CODE IN A COMMUNITY REGISTRY  
bit.ly/awesome-registries
- #4 ENABLE CITATION OF THE SOFTWARE  
CodeMeta, The Citation File Format
- #5 USE SOFTWARE QUALITY CHECKLIST  
Basically, any checklist will do.



# Digital Skills Programme

## Open & Reproducible Research Software

Unix Shell

Version Control with Git & Collaboration on GitHub

Introduction to R

Introduction to Python

R Packages and Publishing

Software Carpentry

## Domain specific courses

Genomics

Ecology

Geospatial

Social Sciences

Introduction to R

Introduction to Python

FAIR Data for Climate Science

Data Carpentry

## Skills – advanced level

Collaboration in Teams with Git & GitHub or GitLab

Documentation

Testing

Modular Code Development

Reproducible Computational Environments Using Containers

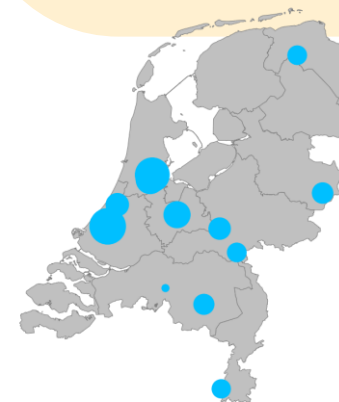
CodeRefinery

## Technologies - advanced level

Introduction to Deep Learning

Parallel Programming in Python

GPU Programming



## Deelnemers

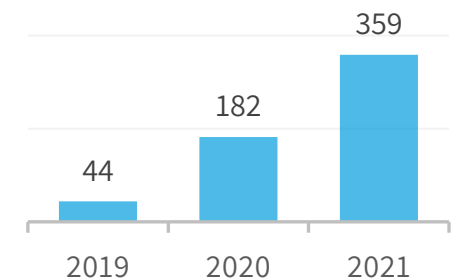




Photo: Elodie Burrillon / HUCOPIX

# eScience Research Software Engineers (eRSEs)

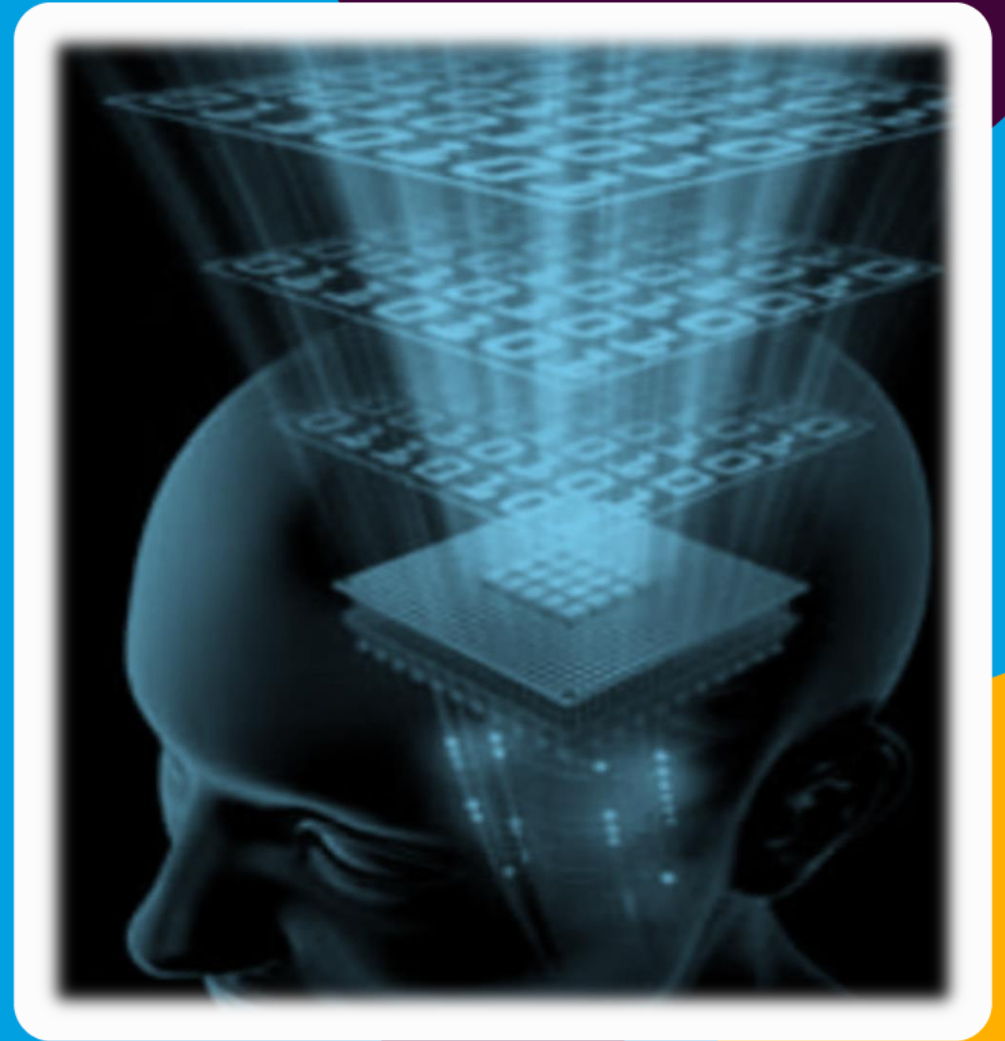
- Translate modern ICT into research solution
- Collaborate closely with domain experts
- Make knowledge and software publicly available
- => Not 'code monkeys'



# eRSE expertise:

- AI
  - a.o. Machine Learning, Computer Vision, ...
- Computing
  - a.o. HPC, accelerators, cloud, complex systems, ...
- Analytics
  - a.o. Big Data, tekst analysis, visualization, ...
- Data Processing
  - a.o. databases, realtime analysis, linked data, ...
- Software Quality
  - a.o. software best practices, reproducible workflows, ...
- Open Science / FAIR / Software Sustainability

<https://www.esciencecenter.nl/where-we-focus/>





# eScience sections & first contact



**Natural Sciences & Engineering (NSE)**

Section Head

Programme Manager



**Environment & Sustainability (ENV)**

Section Head

Programme Manager



**Life Sciences (LS)**

Section Head

Programme Manager



**Social Sciences & Humanities (SSH)**

Section Head

Programme Manager

Technology Leads

see also: <https://www.esciencecenter.nl/meet-our-team/>



# Project Lifecycle

- Kickoff meeting
- After 4-months from the start, submission of the Software Management Plan (SMP) and Data Management Plan (DMP).
- Project Review meeting every 12 months:
  - Monitoring of the scientific progress.
  - Optimize purpose, improve performance of the project.
  - Reinforce visibility.
  - Project output so far is listed in RSD and Zotero (with DOIs)
- 3-months after the end of the project, submission of the Final Report:
  - Project objectives are justified.
  - Software, poster, presentations and scientific papers are published with the corresponding DOIs.

## People

- Jesus Garcia Gonzalez
- Maarten van Meersbergen
- Peter Kok
- Pushpanjali Pawar
- Thijs van Lankveld



## Projects

- Inside the Filter Bubble
- Via Appia Revisited
- RECEIPT
  
- PoTree



- Key Skills

- Web Applications
- Visual Design
- UX Research

- Related Work

- Via Appia Revisited
- LeapLearn
- RECEIPT



## Key Skills

- Scientific Visualization
- 3D Graphics

## Related Work

- Via Appia Revisited
- PoTree
- RECEIPT



## Key Skills

- Data Visualization
- 3D Visualization
- Web Applications
- Dimension Reduction

## Related Work

- Vector Field Visualization
- RECEIPT

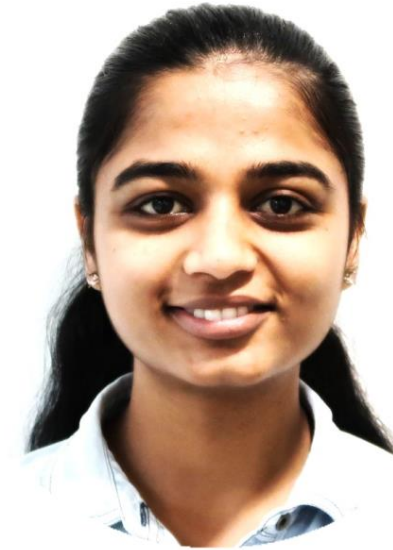


## Key Skills

- Web Applications
- Geographical Visualization

## Related Work

- RECEIPT



## Key Skills

- Computational Geometry
- Point Cloud Processing
- 3D Graphics

## Related Work

- Urban Reconstruction (aerial LiDAR)
- Cultural Heritage Reconstruction (LiDAR)
- 3D Reconstruction (Panoramic Images)





# Let's get in touch

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