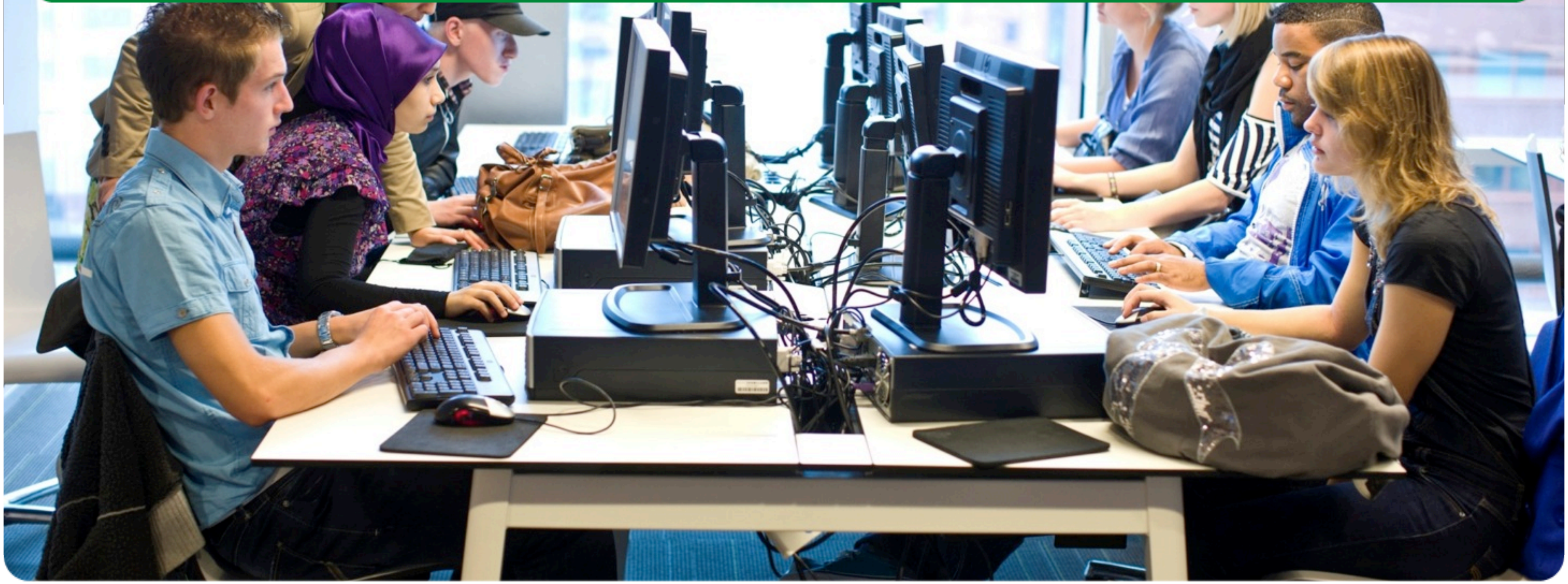
Data Management Services

NARGES ZARRABI



UvA HPC Course – 29th January 2018

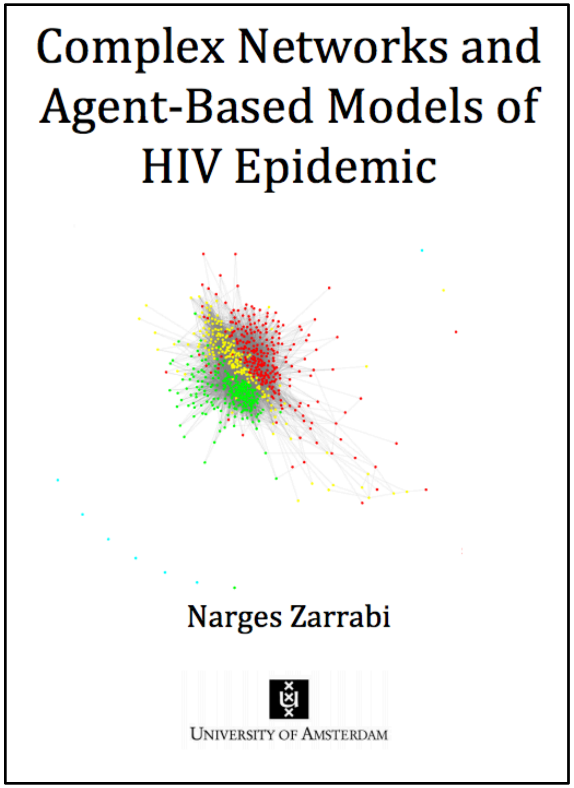
SURF SARA

Course Outline

- **Data Management Services at SURFsara (50 min)**
  - Demo FileSender
- Break (10 min)
- **Data Archive Infrastructure and Access (50 min)**
  - Access Archive via GUI (Demo)
  - Access Archive via command line (hands-on)
- Break (10 min)
- **Data Management with iRODS (30 min)**
- **iRODS icommands (hands-on) (30 min)**
- Break (10 min)
- **iRODS icommands continued (hands-on) (20 min)**
- **iRODS GUI Demo (30 min)**

My Background

- Masters in Computational Science at UvA (2008-2009)
- PhD in Computational Science at UvA (2010-2013)

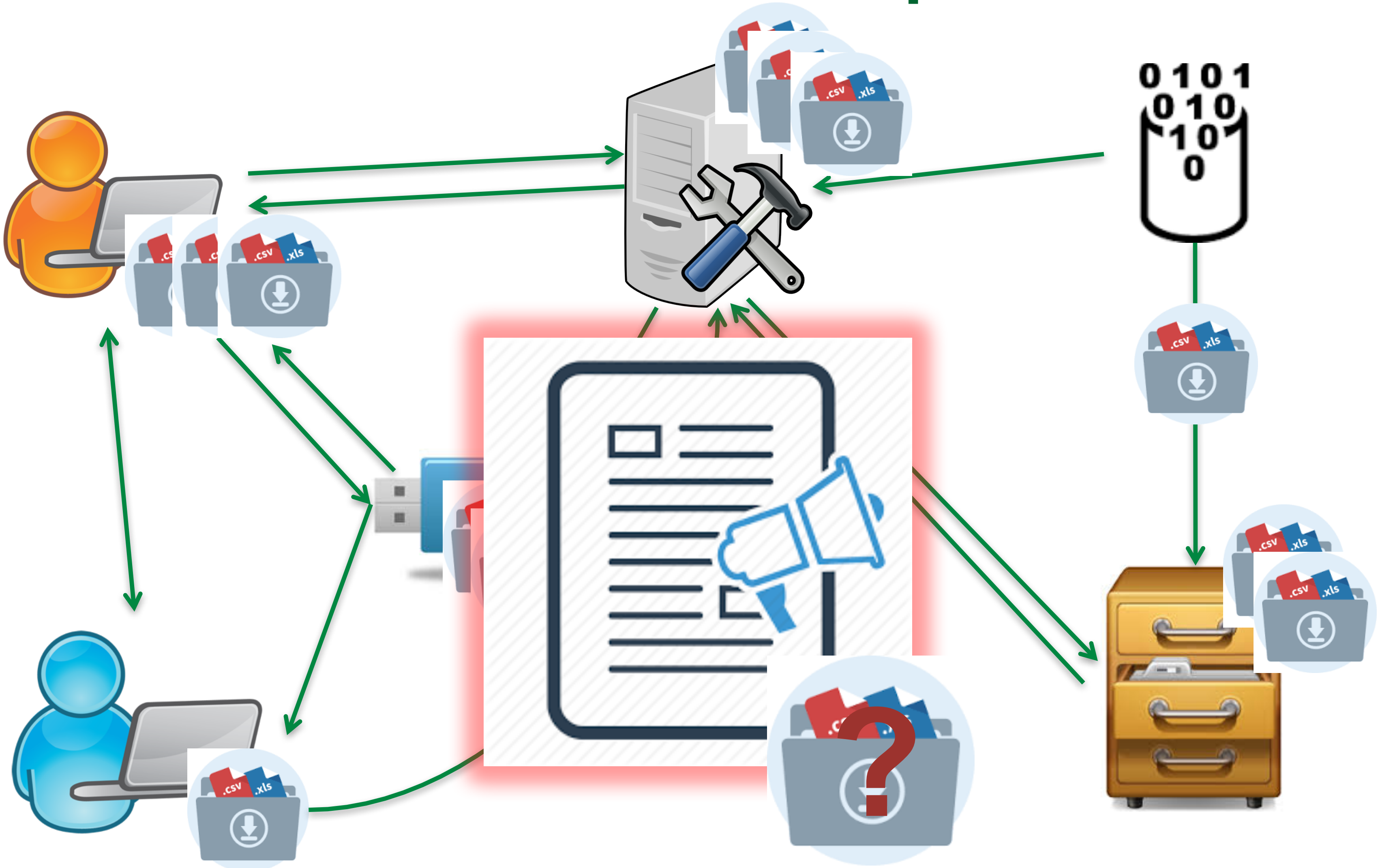


Complex Networks and Agent-Based Models of HIV Epidemic

Narges Zarrabi

University of Amsterdam

Data – where is the problem?



The researchers' needs

- **Store** data during research
- **Share** data during and after research
- **Synchronise** data across different locations

- **Backup** data
- **Archive** data
- **Publish** data
- **Link** publication to processed and raw data
- **Find** data and **make data findable** by others

- Data **transfers**
- Data **provenance**: what happened with the data

- …

Data Management

- Actions that contribute to effective **storage**, **preservation** and **reuse of data** and **documentation** throughout the **research lifecycle**.

- **Data Management Plan (DMP):** A document that outlines how data are to be handled both during and after a research project

□ research funders mandate writing a DMP

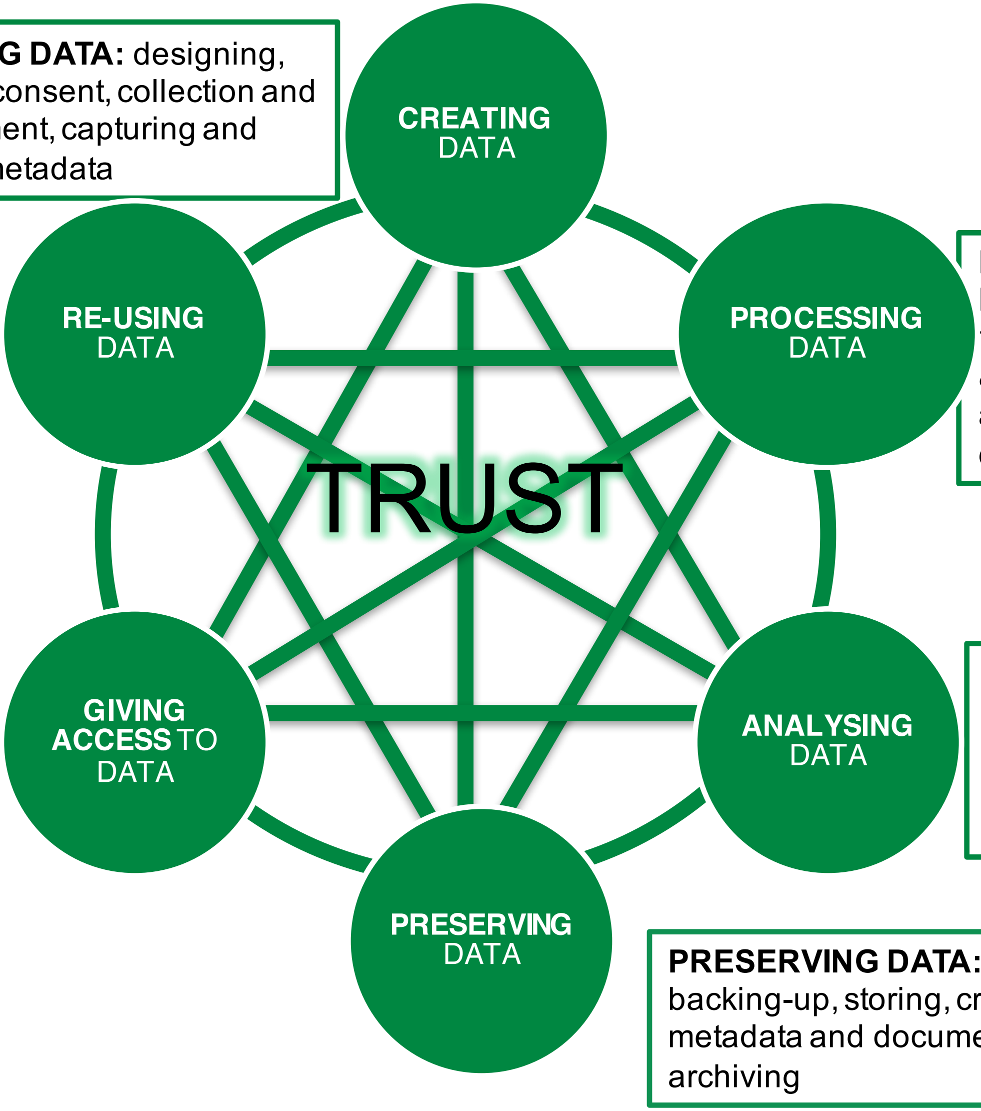
□ Type of data

□ Data & metadata standards

□ Sharing

□ Transition from collection to reuse

The data Life cycle



CREATING DATA

PROCESSING DATA

ANALYSING DATA

PRESERVING DATA

GIVING ACCESS TO DATA

RE-USING DATA

TRUST

CREATING DATA: designing, planning consent, collection and management, capturing and creating metadata

PROCESSING DATA: entering, transcribing, checking & validating, anonymizing and describing

ANALYSING DATA: interpreting, deriving, producing outputs & publishing, preparing for sharing

PRESERVING DATA: migrating, backing-up, storing, creating metadata and documentation, archiving

ACCESS TO DATA: distributing, sharing, controlling access, promoting

RE-USING DATA: for follow-ups, new research, research reviews, scrutinising, teaching & learning

Data services in the Netherlands – there are a lot of solutions

ePIC
Persistent Identifiers for eResearch

Data Archiving and Networked Services
DANS
EASY

SURF DRIVE

4TU.Centre for Research Data

FILESENDER

iRODS

doi

YODA

B2SAFE

The Dataverse Project

Handle.Net®

SWIFT storage service

swift

Archive
SURF SARA

Data Archiving and Networked Services
DANS
NARCIS

Data ingest service

Data services in the Netherlands – there are a lot of solutions

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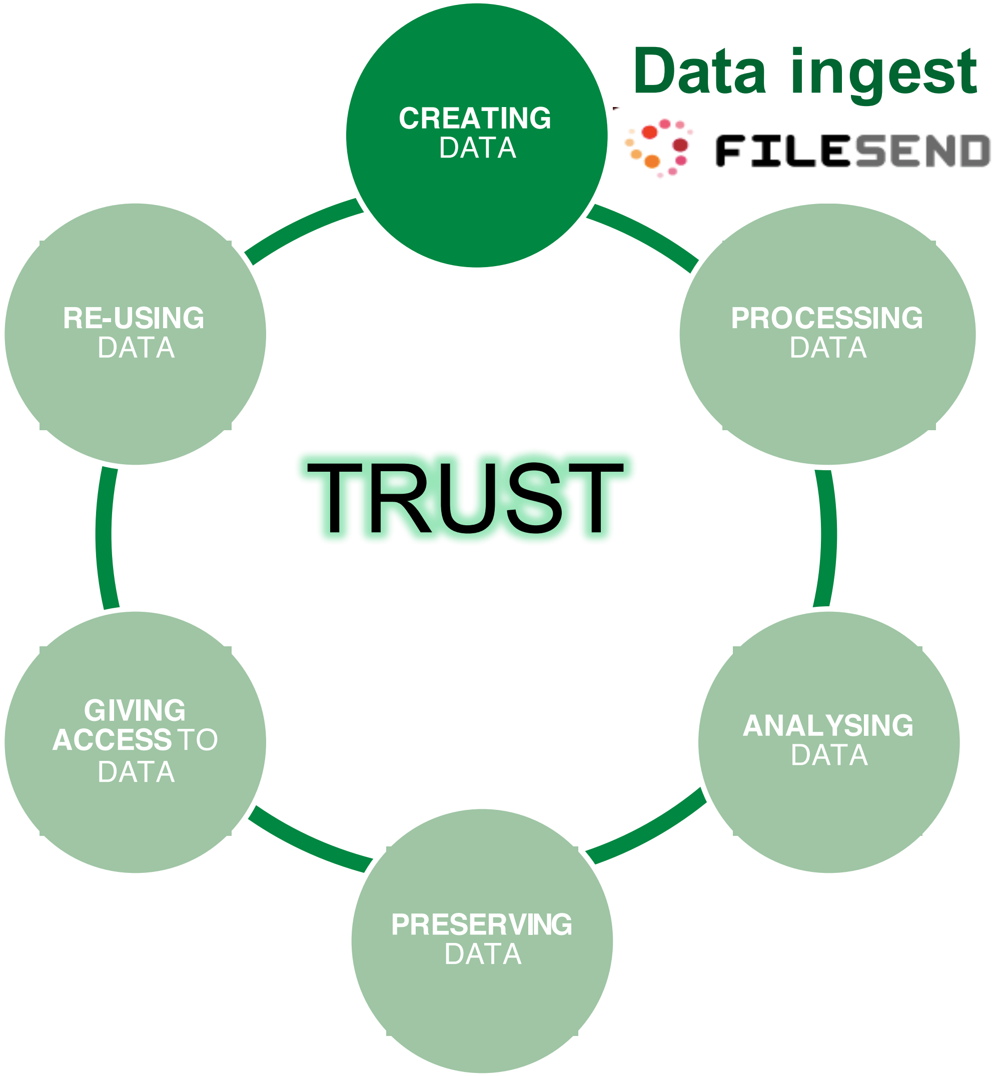
SURF SARA

Data ingest service

The data life cycle

Data ingest service

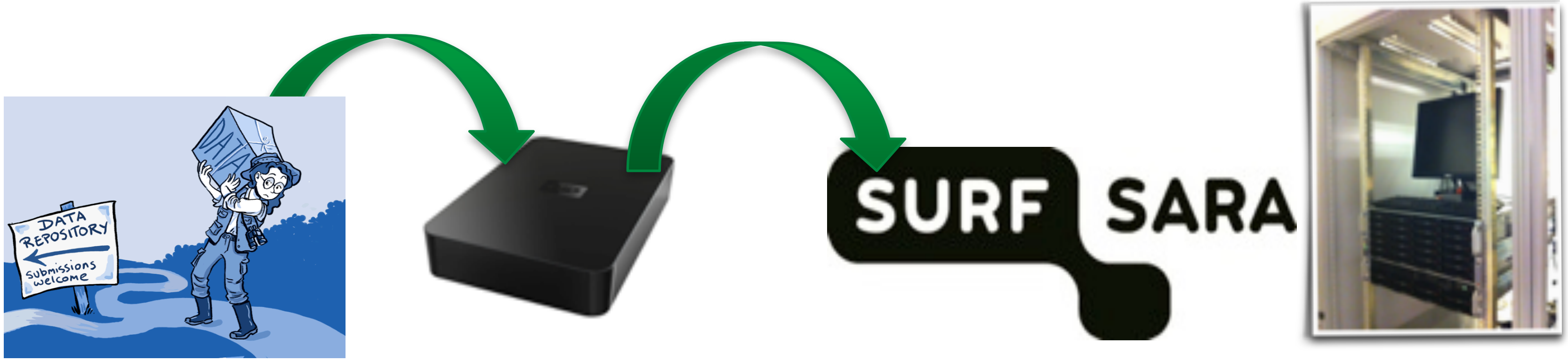
FILESENDER



Data ingest service

- Data often resides on external storage media, USB sticks, external hard drives
- Slow or no internet connection

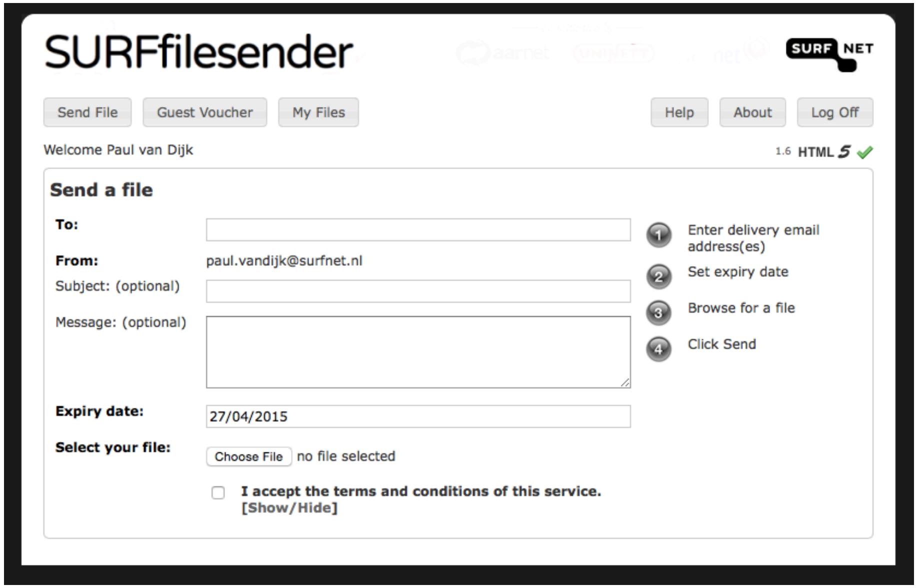
- Easy way to upload large data from disk to SURFsara facilities
- Upload data from 45 disks in parallel



FILESENDER

DEMO

- Trusted community service
- Transferring BIG files from person to person
- File Transport service not File Storage (!)
- Simple interface
- Option to apply end-to-end encryption (250MB browser limit)
- Vouchers for guest usage
- https://filesender.surfnet.nl/



SURFfilesender

Welcome Paul van Dijk

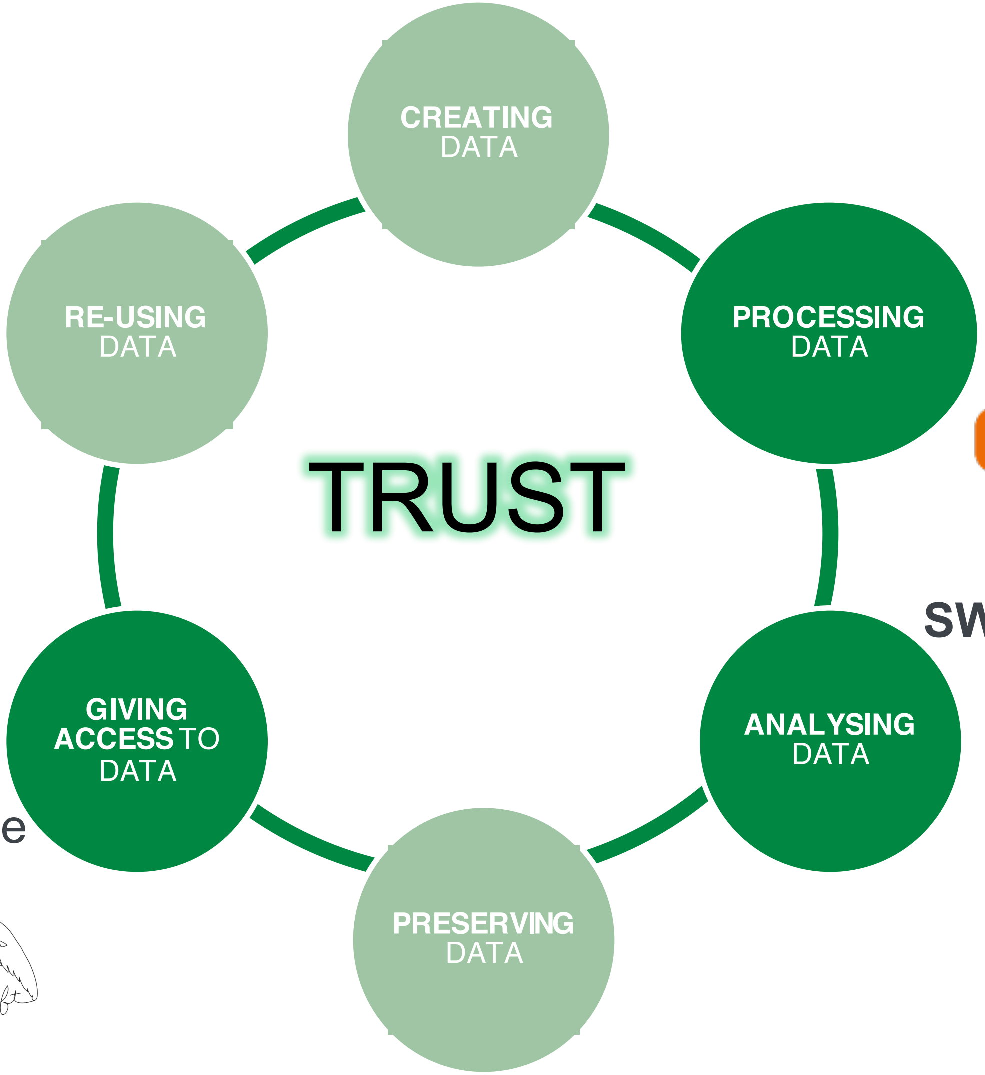
Send a file

To:	
From:	paul.vandijk@surfnet.nl
Subject: (optional)	
Message: (optional)	
Expiry date:	27/04/2015
Select your file:	Choose File no file selected

□ **I accept the terms and conditions of this service. [Show/Hide]**

1. Enter delivery email address(es)
2. Set expiry date
3. Browse for a file
4. Click Send

The data Life cycle



FILESENDER

SURF DRIVE

SWIFT storage service

SURF DRIVE

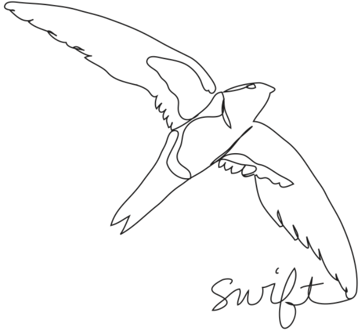
SWIFT storage service

SURFdrive

- Trusted community cloud for personal storage
- Sharing smaller data files

- Collaboration between SURFsara, SURFnet and Dutch universities
- Specifications and service determined by end-users (universities)
- 250 GB storage capacity per user
- Based on ownCloud, synchronises with local storage
- Access through: surfdrive.nl

SWIFT storage service



- Online cloud storage service
- SWIFT is an object storage system
- Ideal for storing various kinds of data that can grow without bound

Access Methods

- SWIFT command line client
- Next Cloud
- CURL
- S3 clients
- Cyberduck
- Python library
- API
- ….

Current Status

- Pre-production phase
- Open for pilot projects. Contact: helpdesk@surfsara.nl
- Documentation: https://doc.swift.surfsara.nl/en/latest/

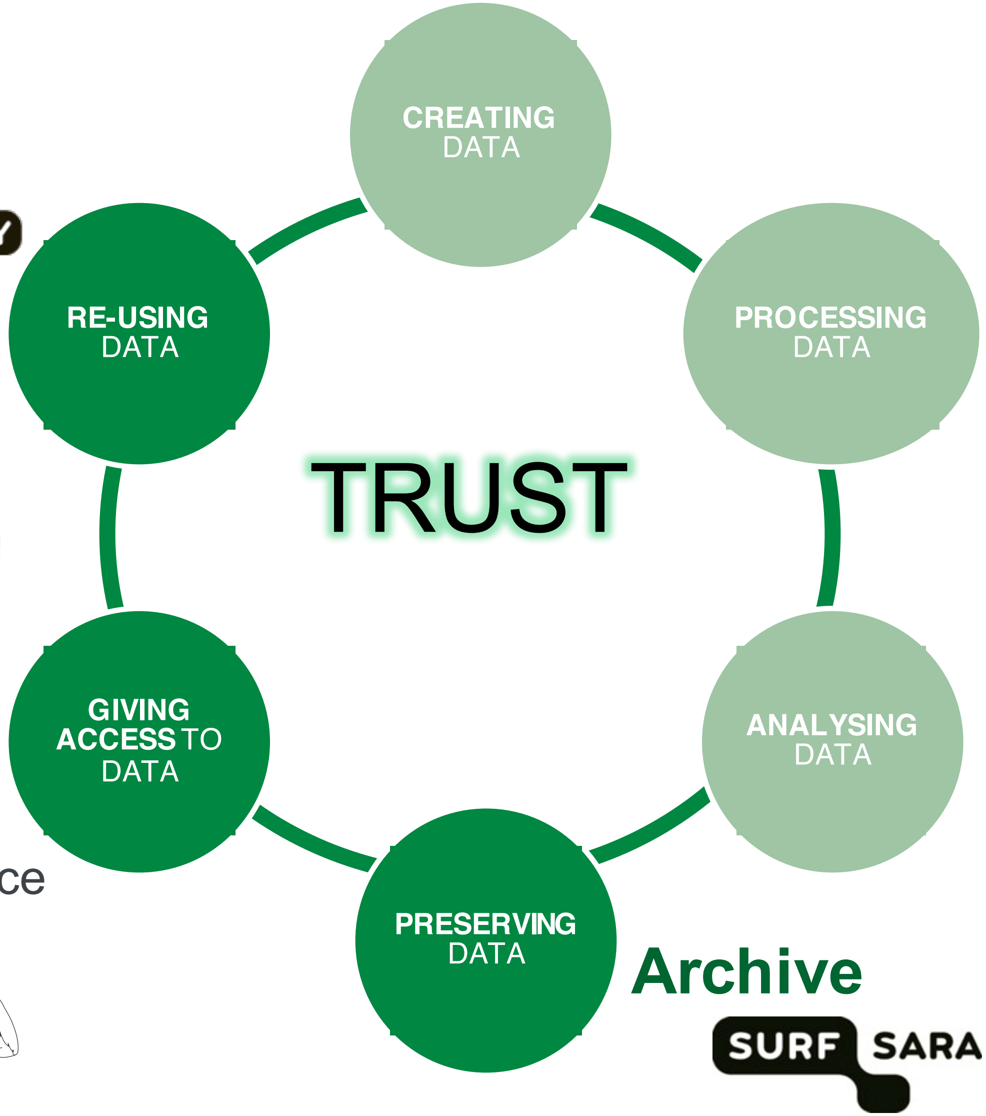
The data Life cycle

SURF SARA REPOSITORY

FILESENDER

SURF DRIVE

SWIFT storage service



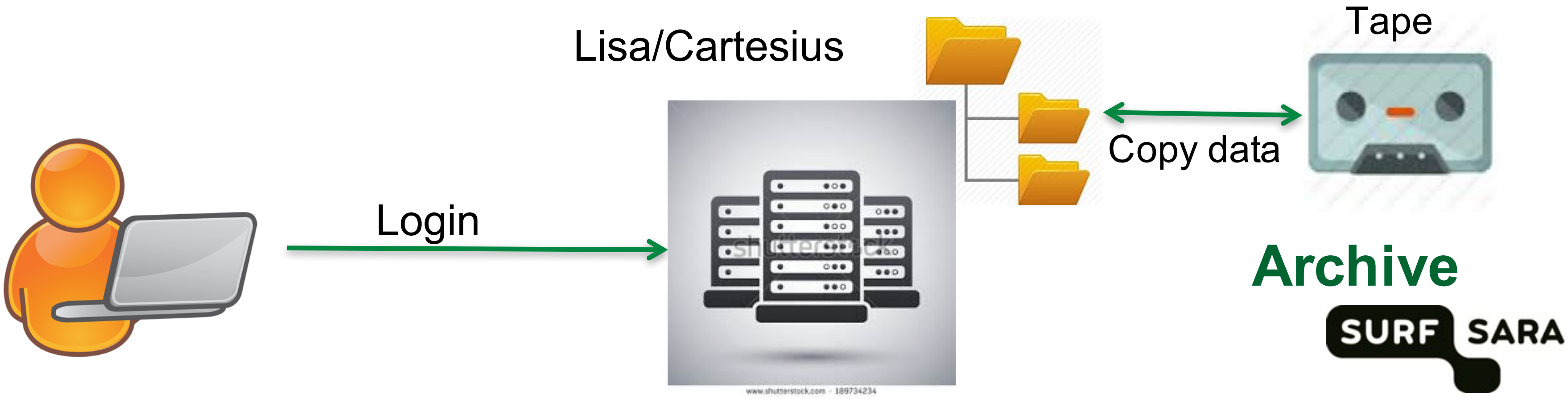
Archive

SURF SARA

SURFsara Data Archive

- Long-term storage of big data
- Storage medium: Tape
  → high latency

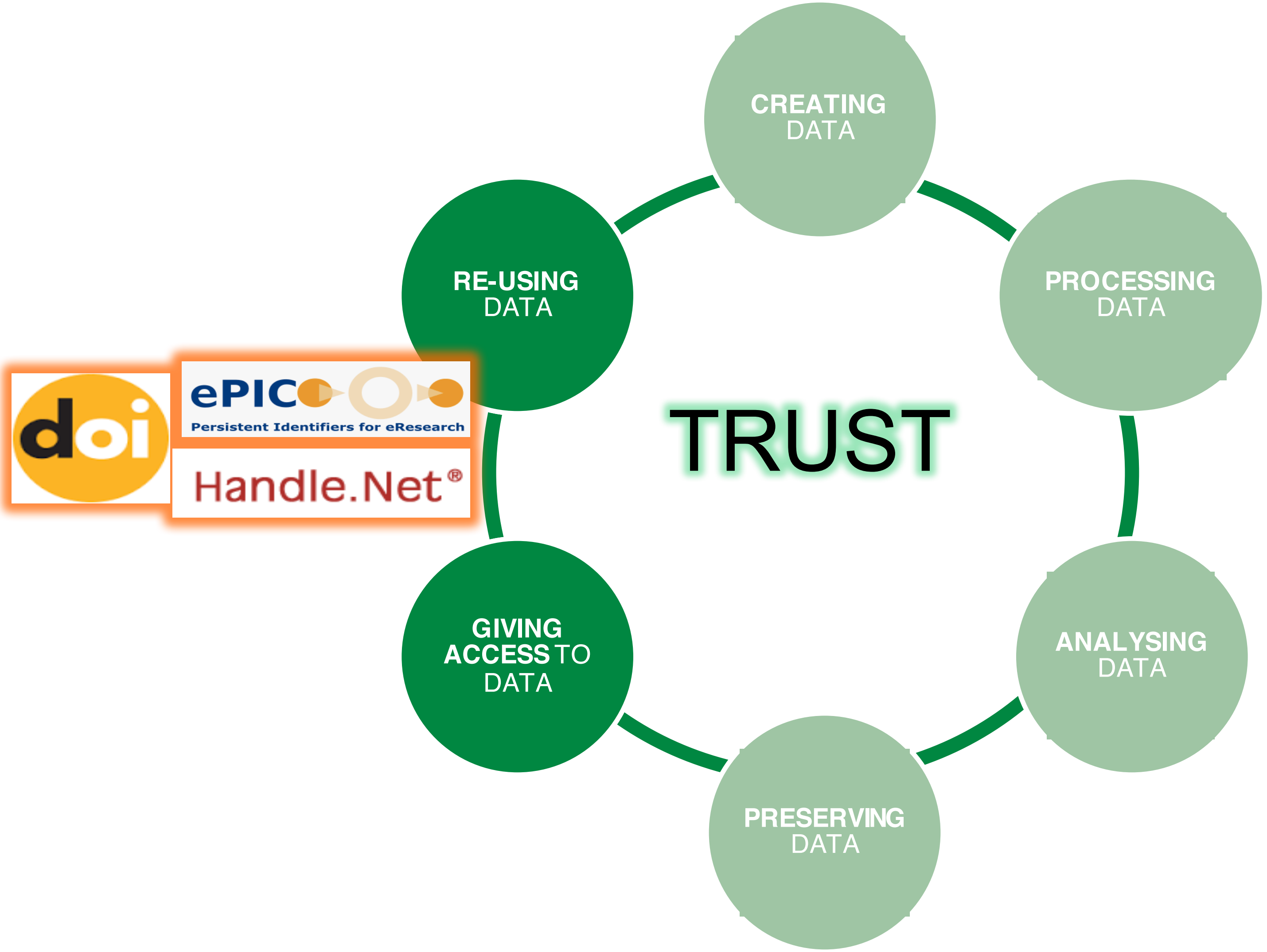
- Powerful transfer protocols:
  - gridfTP
  - rsync
  - scp



- Easy access from HPC services lisa and cartesius via NFS mounts → use archive as yet another directory

- Access: NWO grant, SURF e-infrastructure grant, or contract

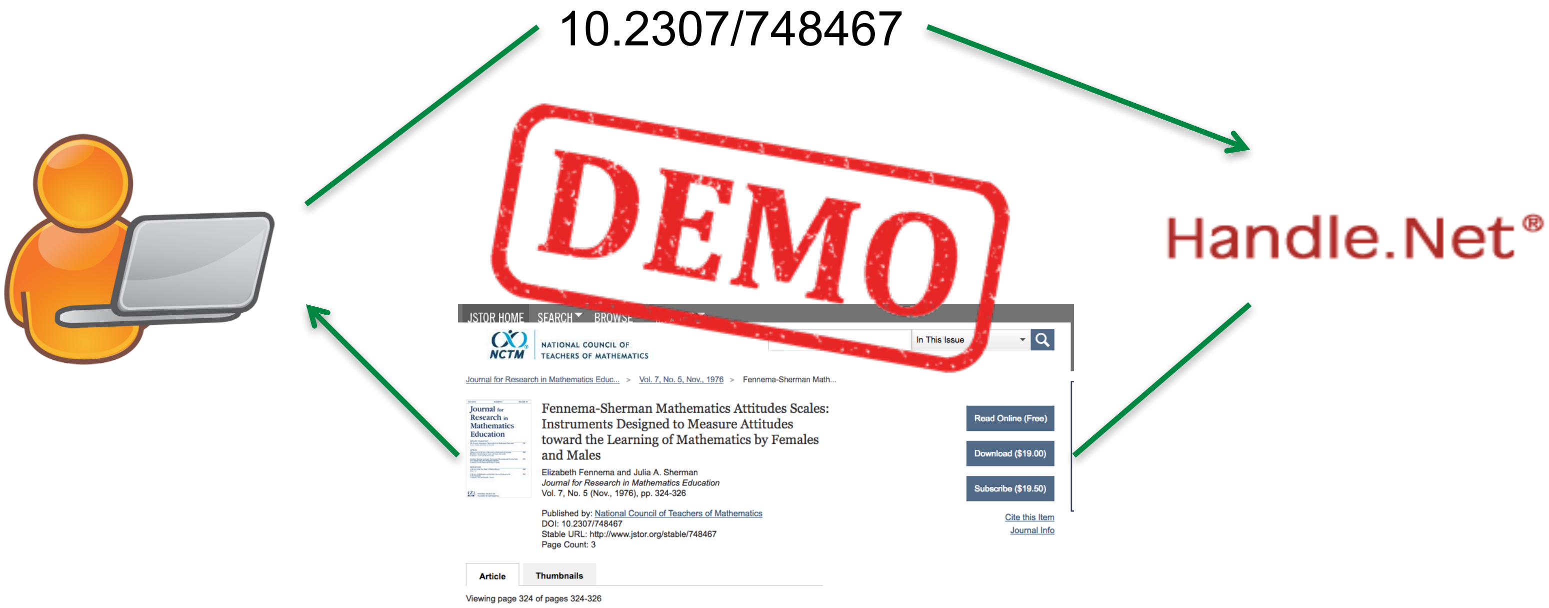
The data Life cycle



PID Service

- PIDs (Persistent Identifiers) ensures the findability of your data
  - Pointers to resources like files, folders, webpages, real world objects
  - Globally unique
  - Resolvable via http
  - Comparable to ISBN numbers assigned to books

- Example resolvers: https://dx.doi.org/ and http://hdl.handle.net/
- A PID consists of a prefix and a postfix (11304/2e873bd8-b988-11e3-8cd7-14feb57d12b9)



Journal for Research in Mathematics Educ... > Vol. 7, No. 5, Nov., 1976 > Fennema-Sherman Math...

Fennema-Sherman Mathematics Attitudes Scales: Instruments Designed to Measure Attitudes toward the Learning of Mathematics by Females and Males

Elizabeth Fennema and Julia A. Sherman
Journal for Research in Mathematics Education
Vol. 7, No. 5 (Nov., 1976), pp. 324-326

Published by: National Council of Teachers of Mathematics
DOI: 10.2307/748467
Stable URL: http://www.jstor.org/stable/748467
Page Count: 3

Viewing page 324 of pages 324-326

PIDs – Handle, EPIC and DOIs

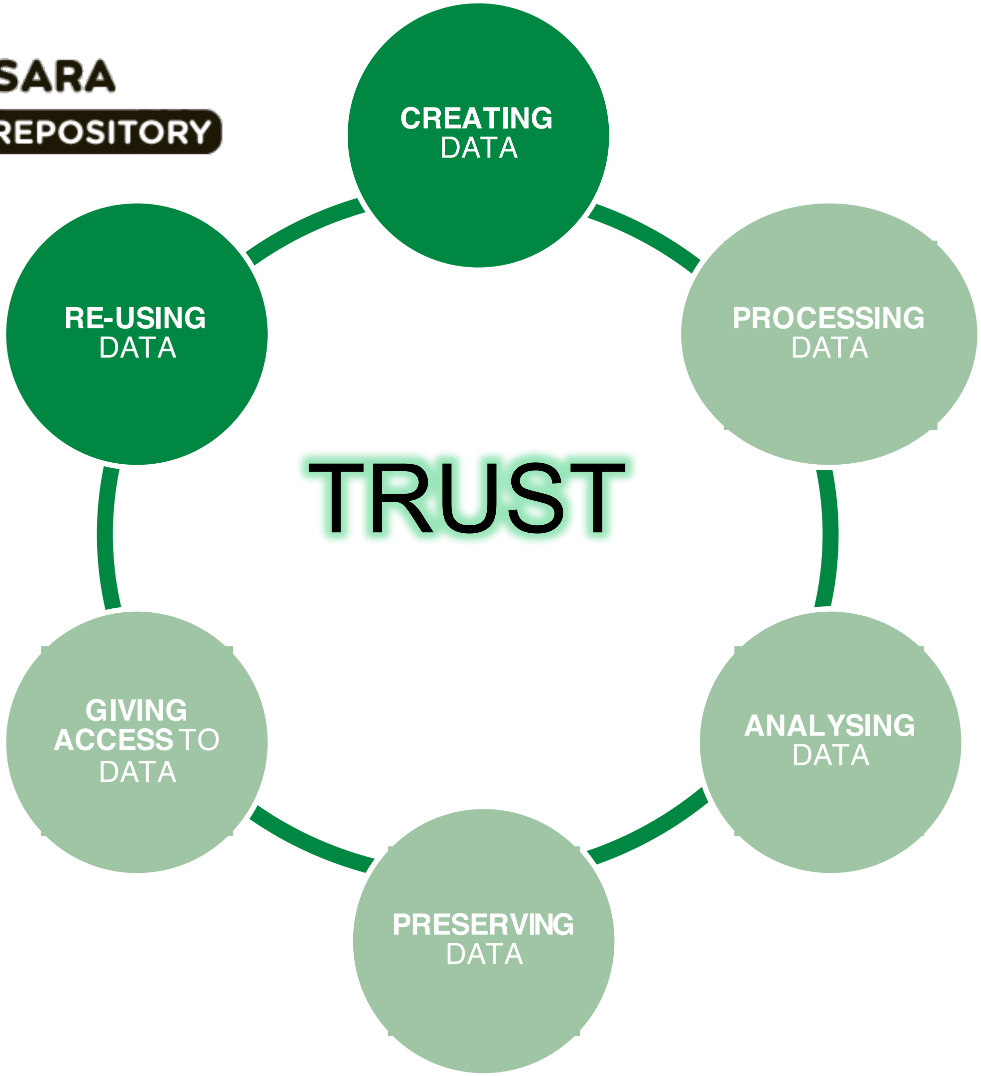
- Handle
  - Technology to create, store and update PIDs
  - Run by corporation of National Research Institutes (CNRI)
  - Infrastructure and technology to resolve PIDs

- EPIC (European Persistent Identifier Consortium)
  - Maintaining reliable PID service for storing data
  - Employing Handle technology

- DOI (Digital Object Identifier)
  - Based on Handle system
  - Well established in the pulisher's world

- **http://www.ncdd.nl/pid-wijzer/**

The data Life cycle



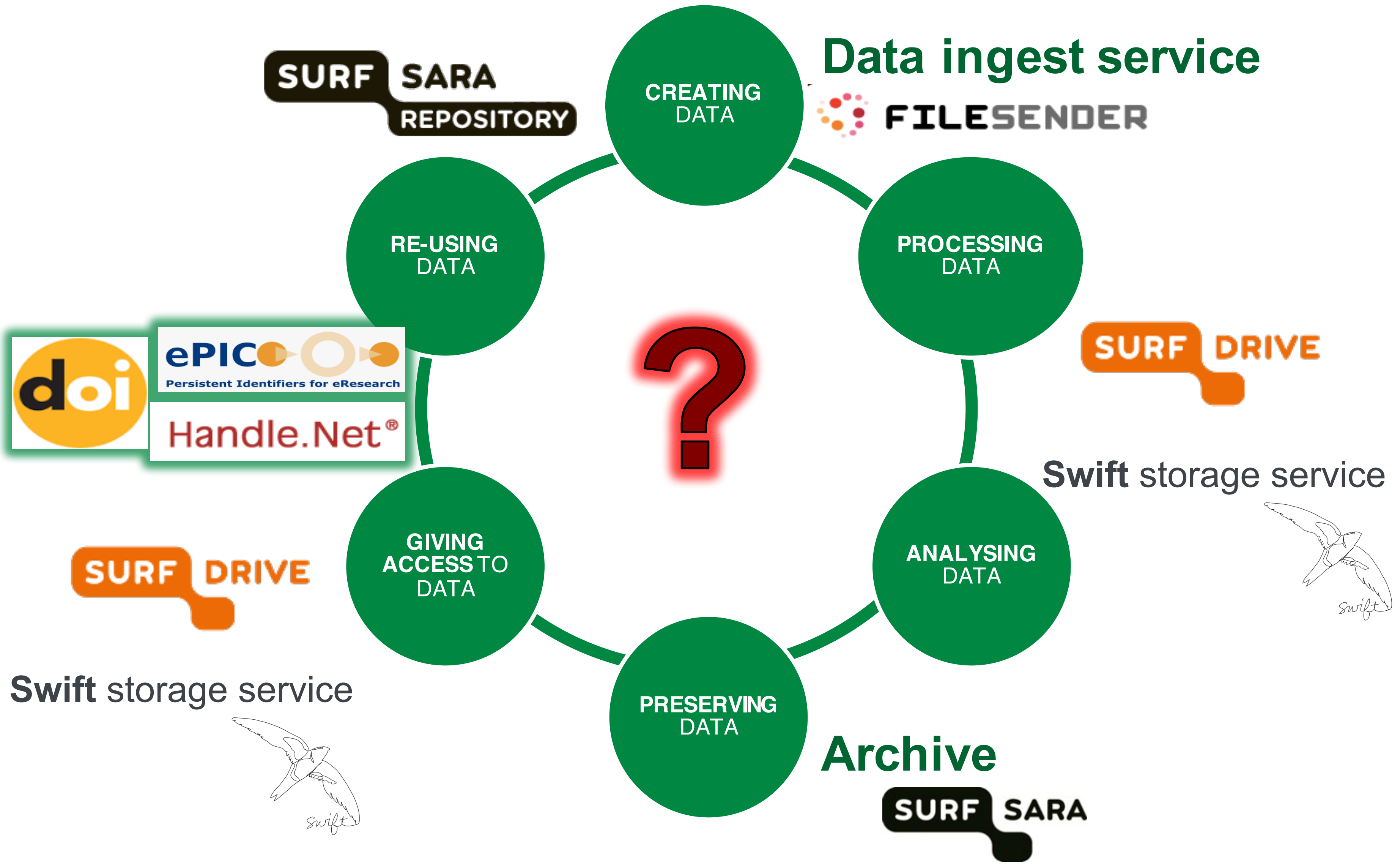
SURFsara Data Repository

- Data repository service to deposit and publish data
- Long-term preservation of research data
- Provides quality to data sets and objects via metadata descriptions
- Makes data citable and findable via Persistent Identifiers
- Status: Under development

dataseal ofapproval 2010

SURF SARA REPOSITORY

The data Life cycle



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Thank You!

Thanks to:
Christine Staiger (SURFsara)