

Building a Dutch National Research Infrastructure

IRODS UGM 2017



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SURF

SURF: who are we?

Not-for-profit cooperative for ICT in Dutch education and research



- ✓ Knowledge sharing
- ✓ Shared digital infrastructures and services
- ✓ ICT marketplace for acquiring software, cloud services and digital content

SURF: members

Members include

- 14 Research universities
- 8 Academic Medical Centers
- 34 Universities of applied sciences
- 6 Research institutions
- Many other research and education institutes



KNAW



UMC Utrecht



Universiteit Utrecht



Maastricht University



Radboud Universiteit Nijmegen

SURF: operating companies

SURFmarket

- negotiates with ICT providers on behalf of institutes connected to SURF

SURFnet

- supports, develops and operates advanced, reliable and interconnected ICT infrastructure networks

SURFsara

- Netherlands' national supercomputing centre, supplies high-performance computing services, data storage, network research and visualizations
- Hub to EU infrastructures

Expertise | Consultancy | Training | Visualisation | Optimisation



High Performance Computing

- Supercomputing
- Cluster computing
- HPC Cloud



Data processing

- Data analytics
- HPC Cloud
- Grid services
- Visualisation



Data services

- Mass Online Storage
- PID service
- Data management
- Preservation



Innovation & Collaboration

Research Data Management

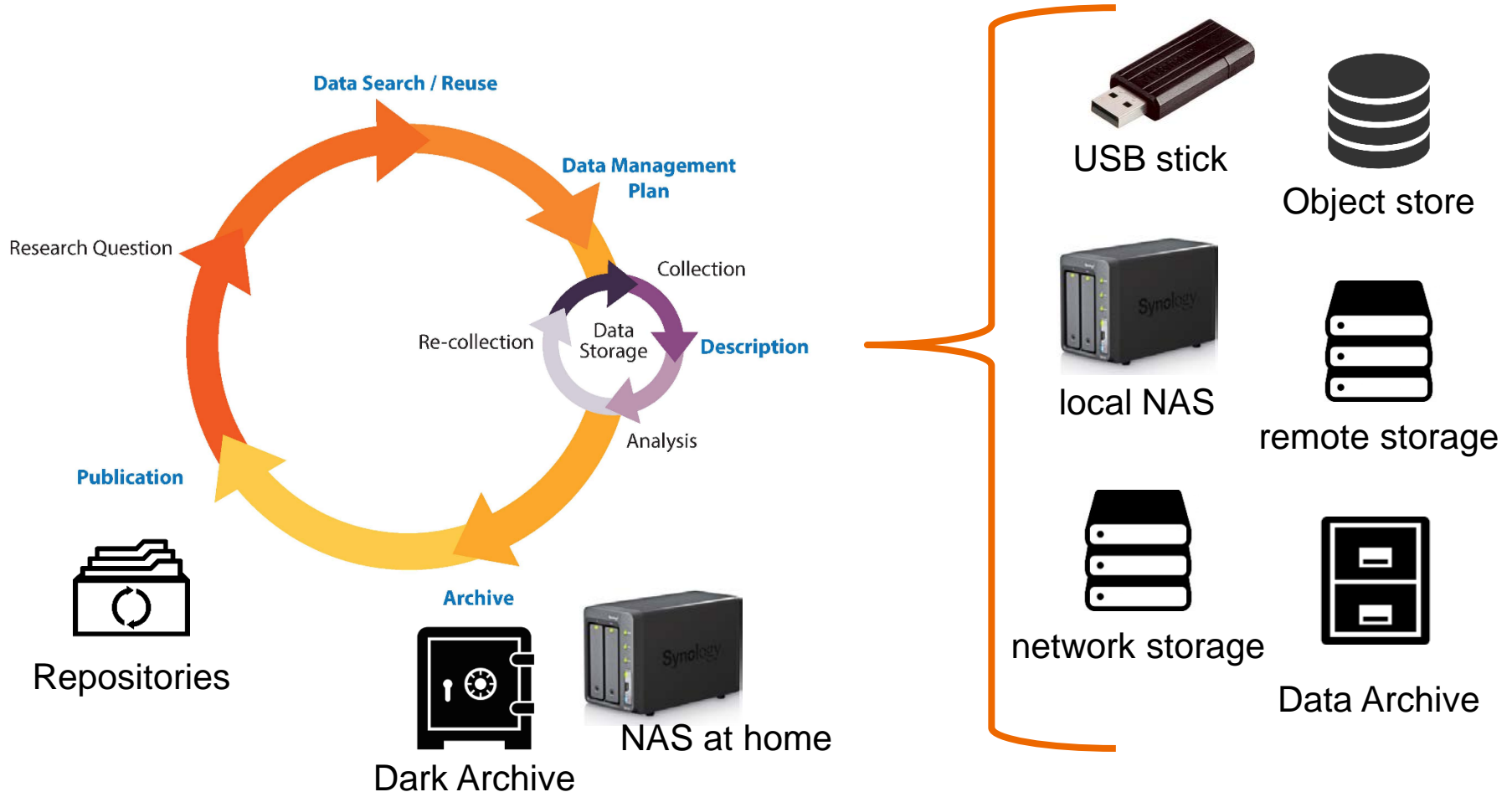
RDM is in top 3 priorities of Dutch universities and Academic Medical Centers

- ✓ Drivers: reproducible research, and reuse of data
- ✓ A Data Management Plan is mandatory in funding proposals in the Netherlands
 - Including obligation of 10 year research data retention period
- ✓ EU requires FAIR Open Data
- ✓ EU General Data Protection Regulation (privacy sensitive data)
 - In force by May 2018
 - Traceability of data

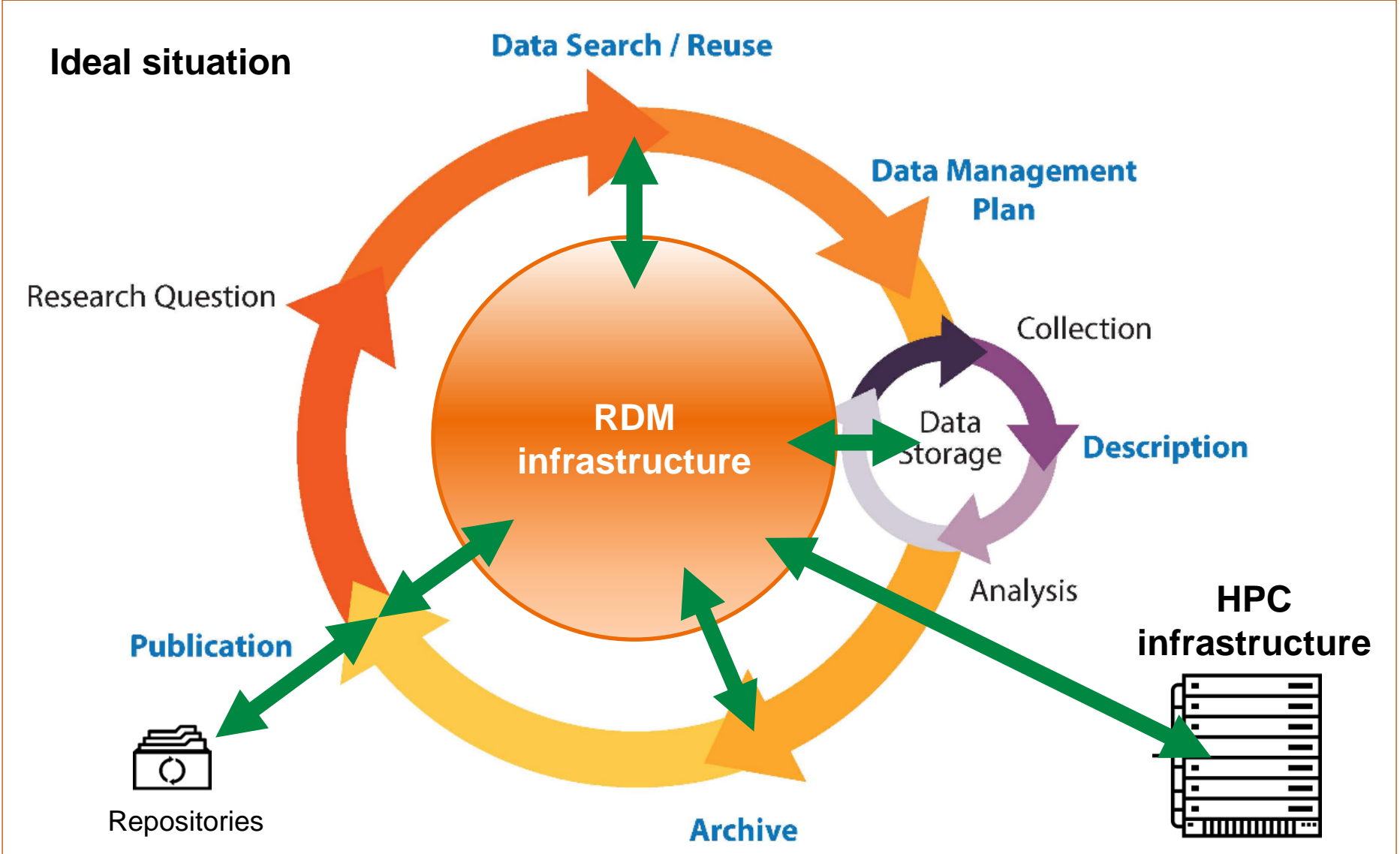
Life Cycle Research Data Management

Typical situation

- Research Data stored on many different storage systems + USB sticks/harddisks



Life Cycle Research Data Management



Dutch National Research Data Infrastructure

Advantages for SURF members

- ✓ Lower / shared development and service costs
- ✓ Share knowledge, increase community
- ✓ Develop generic tooling & functionalities that can be used by all institutes
- ✓ Easier data sharing between universities
- ✓ Enlarge storage infrastructures, reduce cost per TB
 - Only invest once
- ✓ Store data close to HPC infrastructure of SURFsara
 - Faster data analysis

National approach on Research Data Infrastructure

Strategy

- ✓ National Coordination Point Research Data Management
 - Facilitates a national strategy for research data management in the Netherlands

Facilities and
data
infrastructure

Legal aspects
and ownership

Financial
aspects

Researcher
support
and advice

Awareness /
Engagement

Infrastructure Community

- ✓ U2CONNECT
 - Netherlands based community advancing and promoting interoperability and connectivity between research data infrastructure services

Infrastructure

- ✓ Dutch National Research Data Infrastructure
 - To set-up a sustainable infrastructure for the coming 5 to 10 years

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iRODS

Why iRODS?

- ✓ RDM is a must for universities, they have to act now, and iRODS seems most viable solution
 - 3 Dutch universities have already developed a solutions based on iRODS
 - Several other universities, medical hospitals and large research projects explore iRODS technology
- ✓ Automated workflow implementation for researchers
- ✓ iRODS covers GDPR aspects
 - Traceability
 - Transparency
 - Privacy by design
- ✓ Obligation of 10 year data retention period

iRODS

Why NOT iRODS?

- ✓ Empty framework
 - Implementation requires huge effort
- ✓ No presentation, basic UI layer
 - Customized solution needs to be developed and maintained
- ✓ No broad community with iRODS knowledge
 - Risk on continuity
 - Active community building required
- ✓ Risk on global support and development iRODS
 - Will it fit the needs of Dutch institutes?



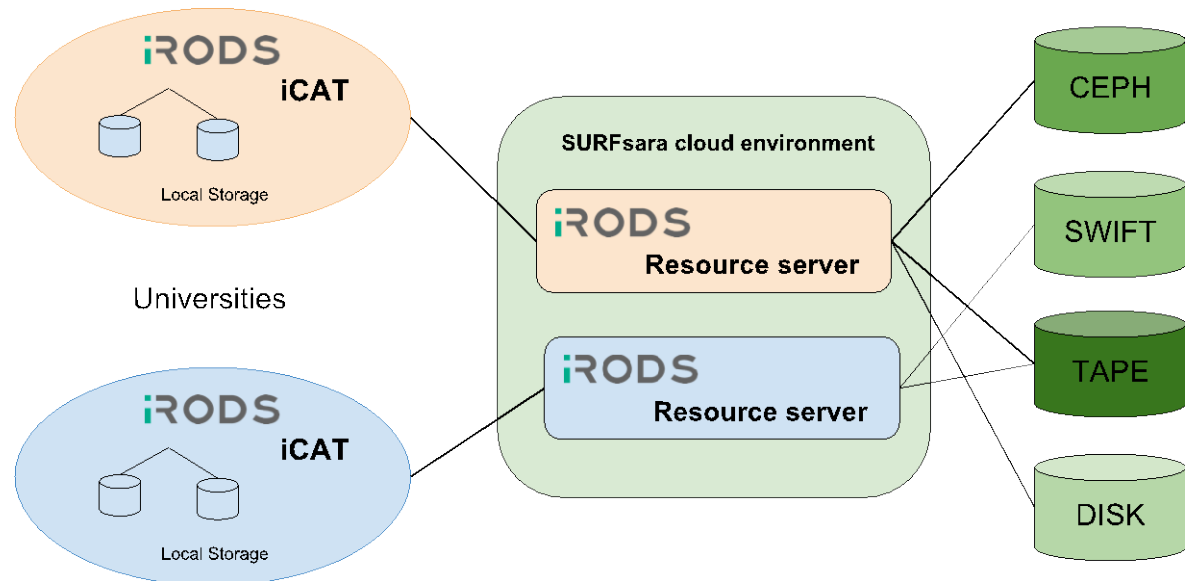
National iRODS expertise center

- ✓ SURF intends to establish a National iRODS expertise center
 - Sustained availability of knowledge
 - Offer Consultancy, Development & Support
 - Develop a library with standard(ized) tooling, functionalities
 - Develop a presentation layer/UI template
 - Support future iRODS developments
 - Provide iRODS as a Service
 - Middleware layer (both iCAT and resource servers)
 - Flexible storage solutions
- ✓ Use iRODS to seamlessly connect to the Dutch National & EU Research Infrastructures

iRODS as a Service: Proof of Concept

Proof of Concept architecture

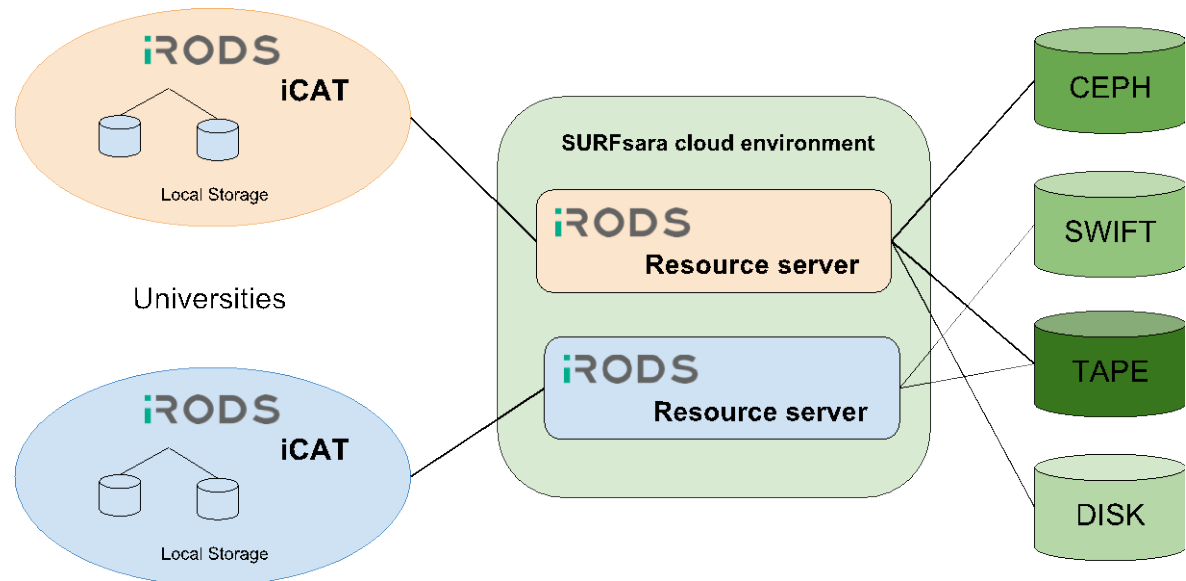
- ✓ Data replication
 - Copy of data at SURFsara
 - Permanent copy: disaster recovery
 - Temporary copy: Bring data closer to compute facilities
- ✓ Storage scale-out
 - Data is only located at SURFsara



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Proof of Concept architecture

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Conclusions & next steps

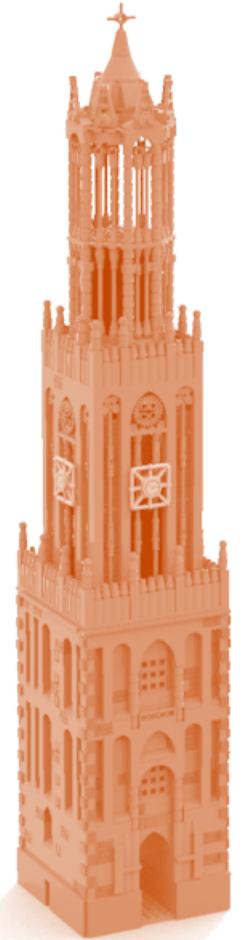
- ✓ Establish National iRODS expertise center
 - ✓ Provide expertise and infrastructure
 - ✓ Increase expertise resource pool
 - SURF already hired additional 2 fte for iRODS
 - ✓ Infrastructure technical feasibility study is done
 - ✓ Continue with pilots and PoC's to support further development
 - ✓ your invited...!
 - ✓ Building service plan
 - ✓ Establish sustained funding model



Thank you!



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