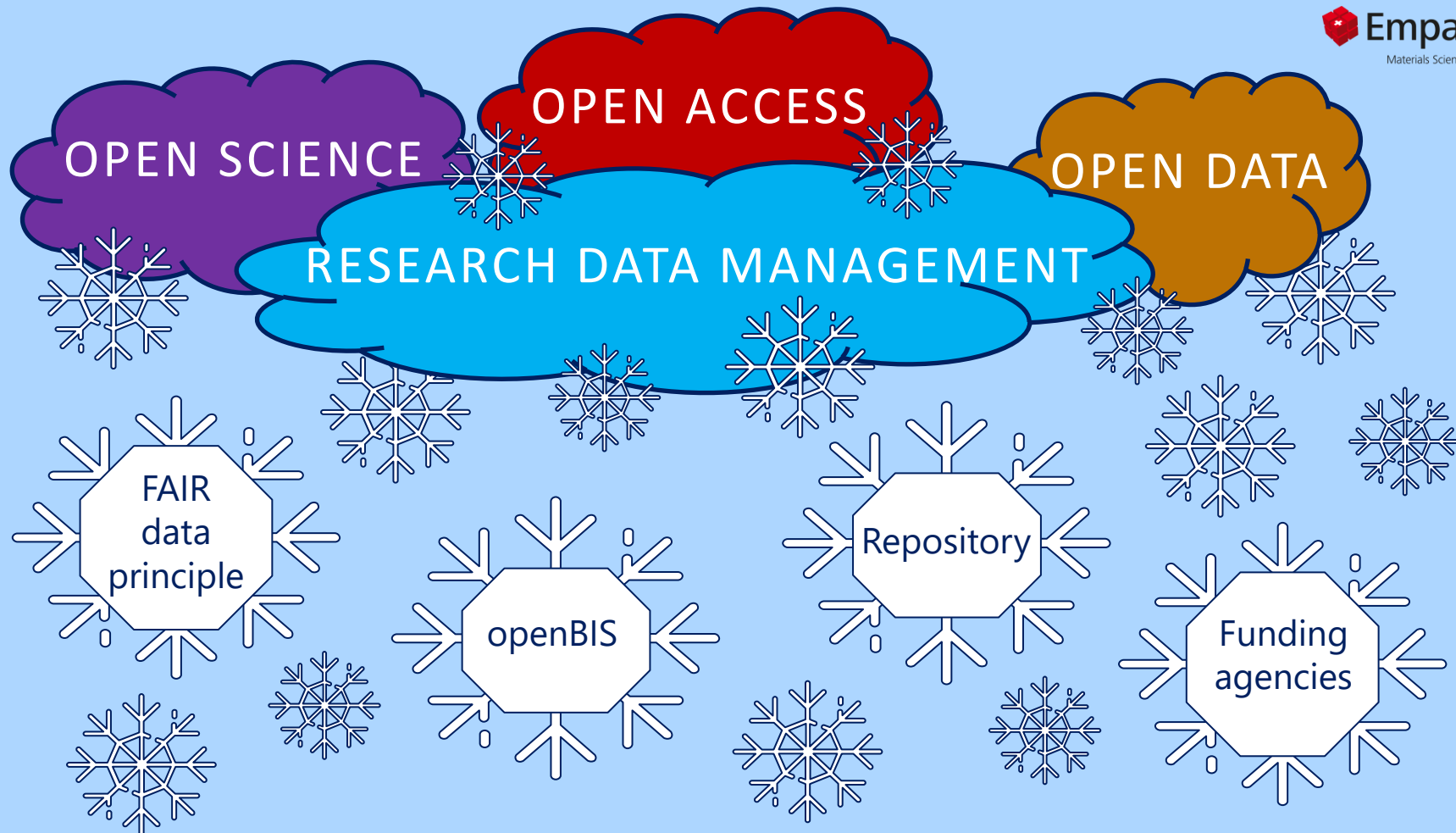
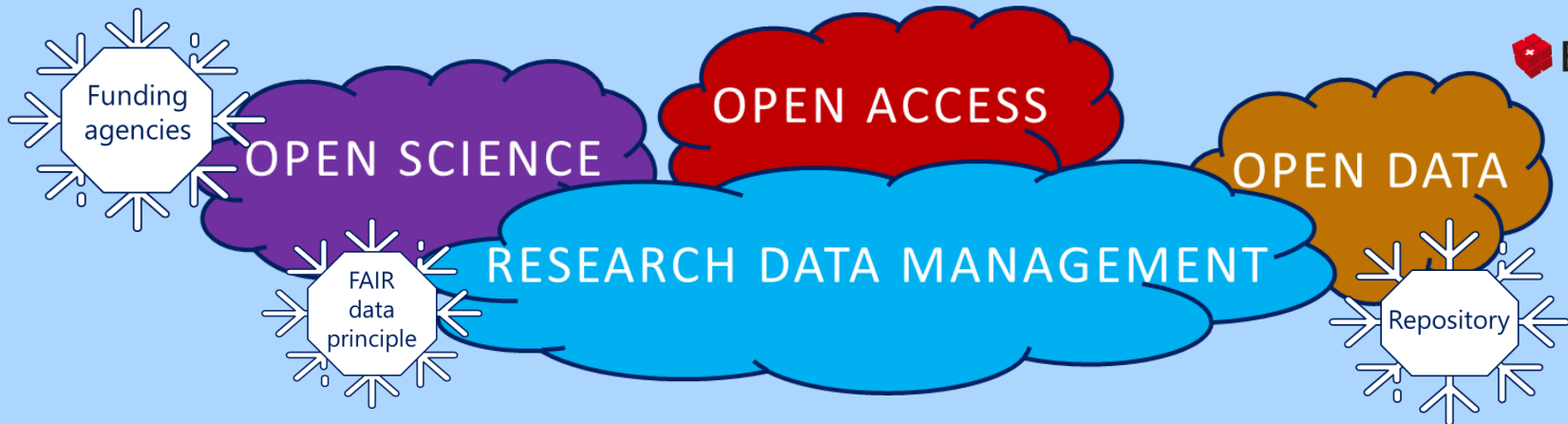






I see this is important,
is there any help at
Empa?



Scientific IT @
Empa offers
support & tools



Scientific IT @Empa

Intranet & Internet

On Intranet main page

RESEARCH INFOS

Find [here](#) a list of Research Calls

Find [here](#) a list of Research Awards

DigitalScience@Empa - find [here](#):

Tools and Platforms, Data Science, Modeling & Simulation, Open Science, Events & Trainings, Community

Where can I
find
Information
& support

Empa Scientific IT

About →

Support →

Documentation →

Scientific IT's goal is to support Empa's research activities with modern computational tools, data engineering expertise, and trainings.



Compute

We help you with the right compute infrastructure for your research IT needs.



Research Data Management

We provide good data management practices and provide support in data organization.

Research Data management



openBIS

Learn about the data management system at Empa: Getting Started, How-to and Use Cases



Data Management Plan

Learn about DMP requirements for funding agencies, access templates, and get support for SNF and other funding applications.



Training

Join our regular RDM and openBIS training sessions to enhance your data management skills and learn best practices.



Benefits and Guidelines

Discover the benefits of effective data management and access comprehensive guidelines for organizing and preserving your research data.



Open Access

Understand open access publishing strategies, Empa's OA policy, and learn how to access funding for publication fees.



Open Data Licenses

Navigate copyright and licensing for your data and software, including Creative Commons licenses and Empa software distribution.



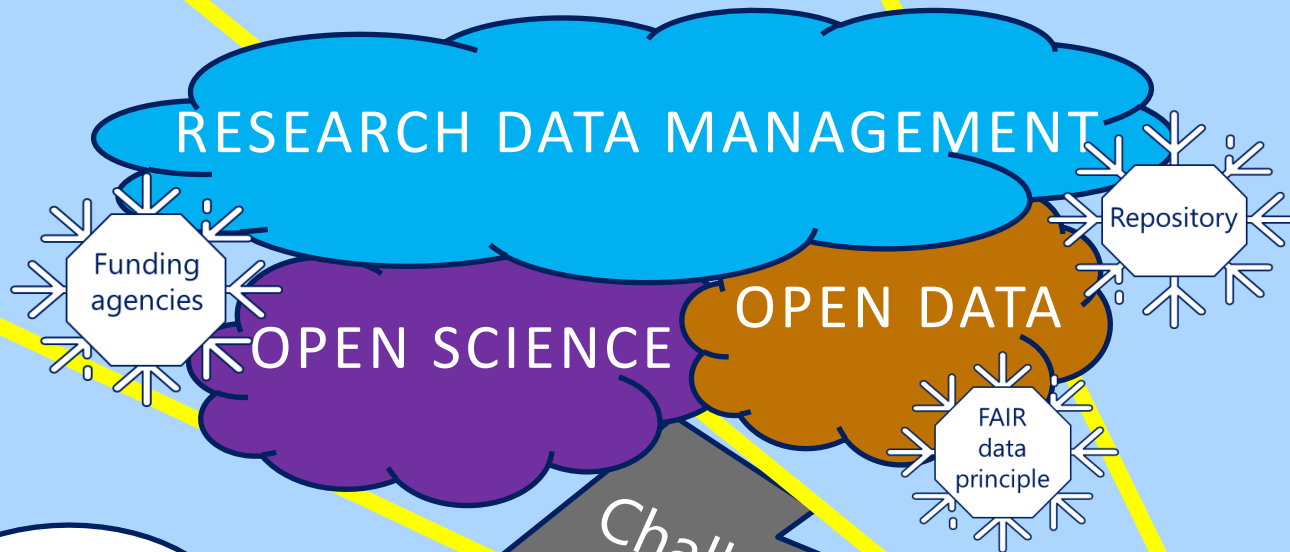
Data Science

We promote the use of advanced data analytics and AI to get the most out of your data.



Software Engineering

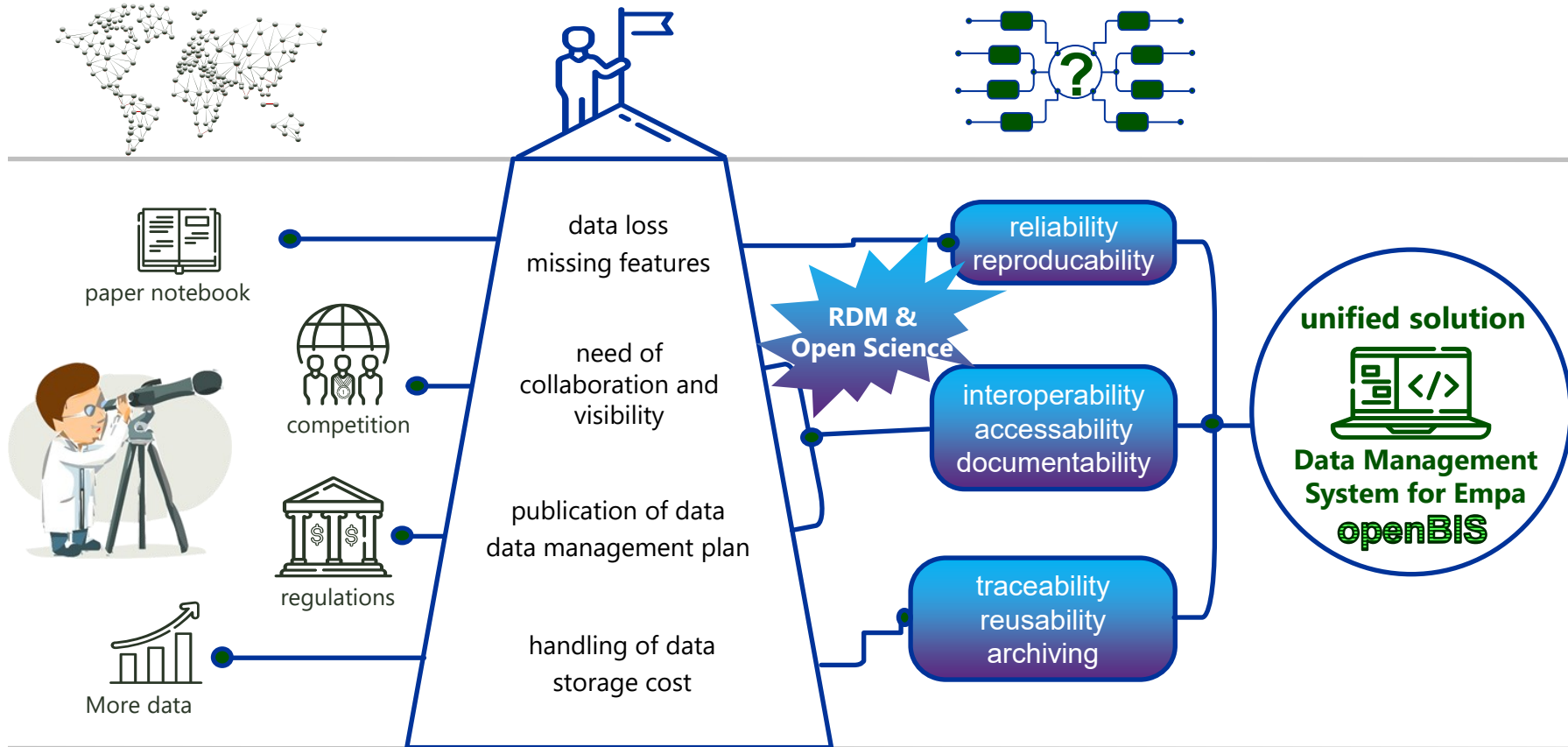
We promote good software development practices, offer support in code optimization, management, and deployment.

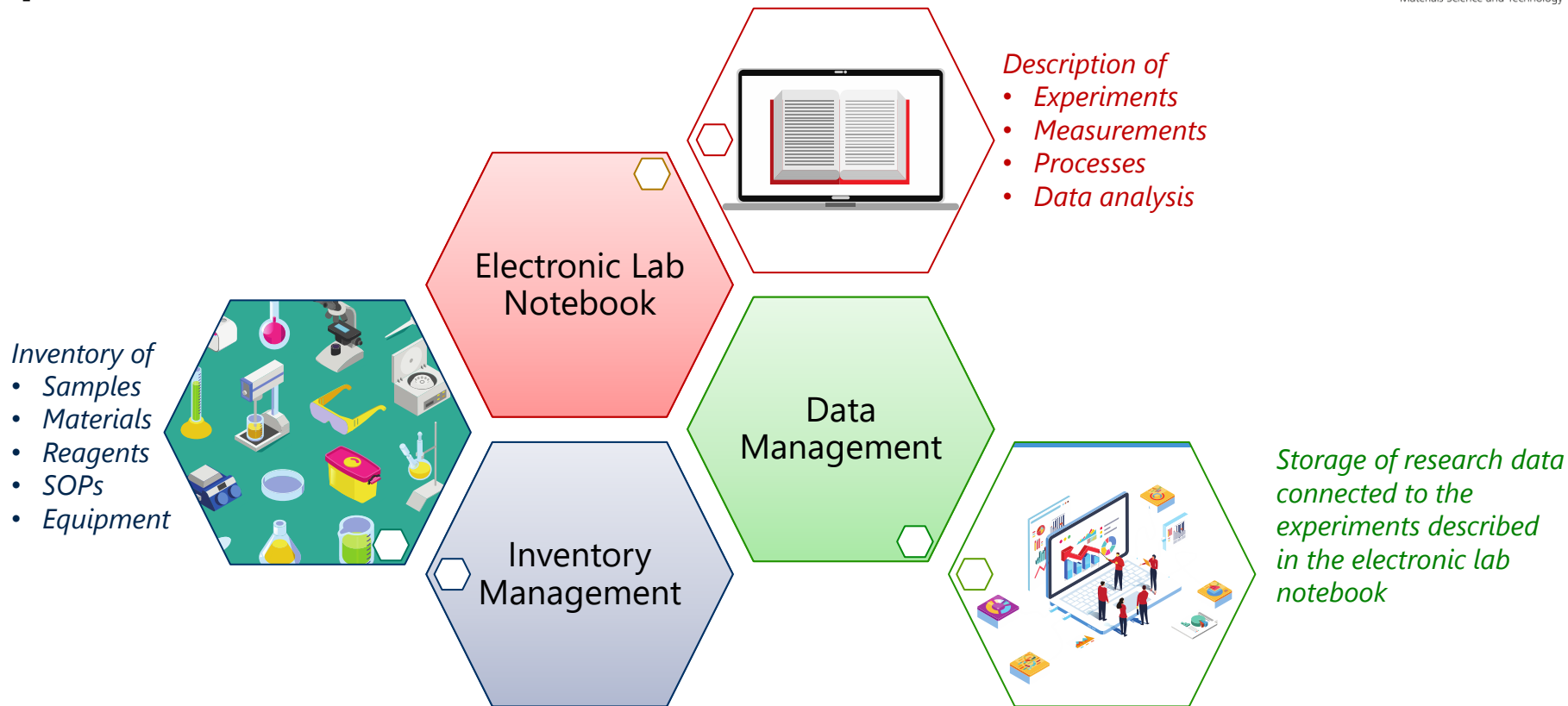


openBIS
helps to
solve the
challenges

openBIS

Landscape – Challenges – Solution





A data management system – Connecting lab inventory, research data & lab notebook in 1 tool

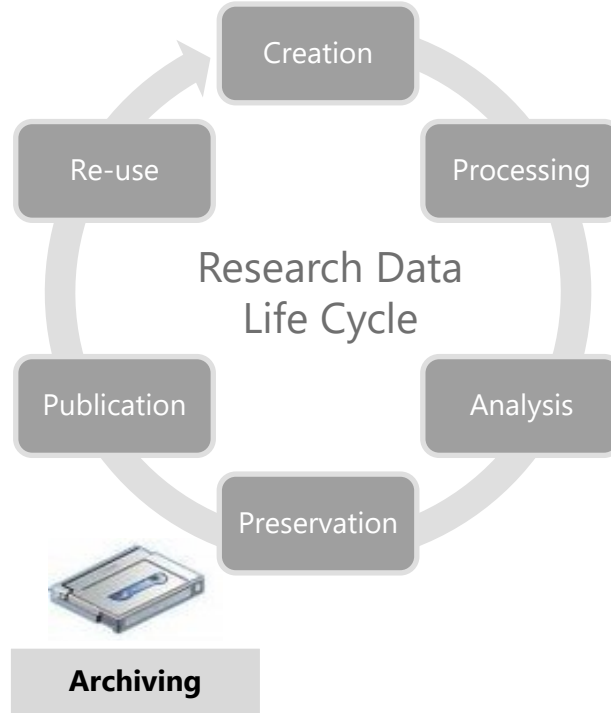
openBIS - What is it?

openBIS



zenodo

Integration with
Data Repositories



Experiment description in
electronic lab notebook

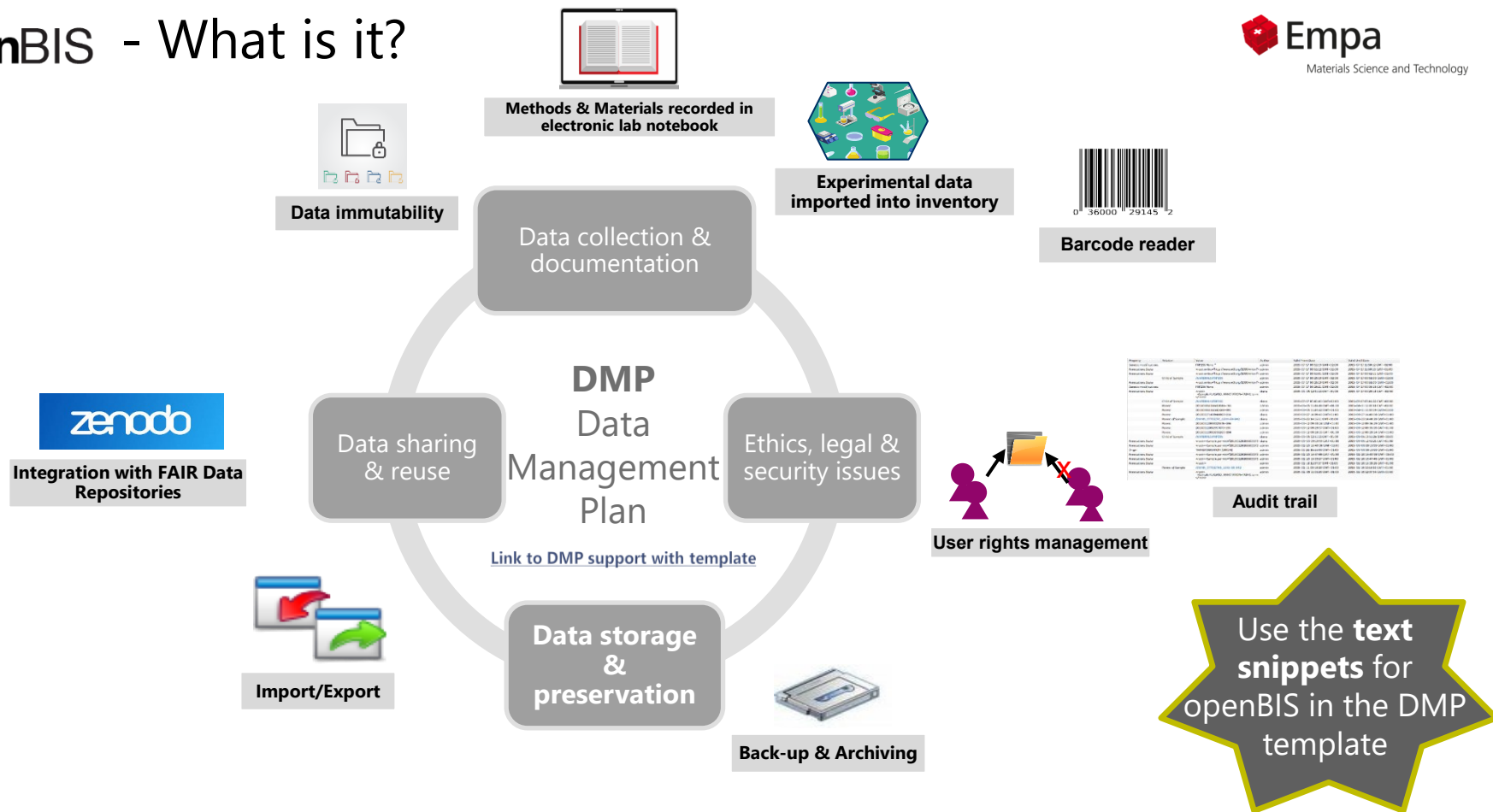


Inventory of
Protocols/SOP's



MATLAB
Integration with
analysis tools

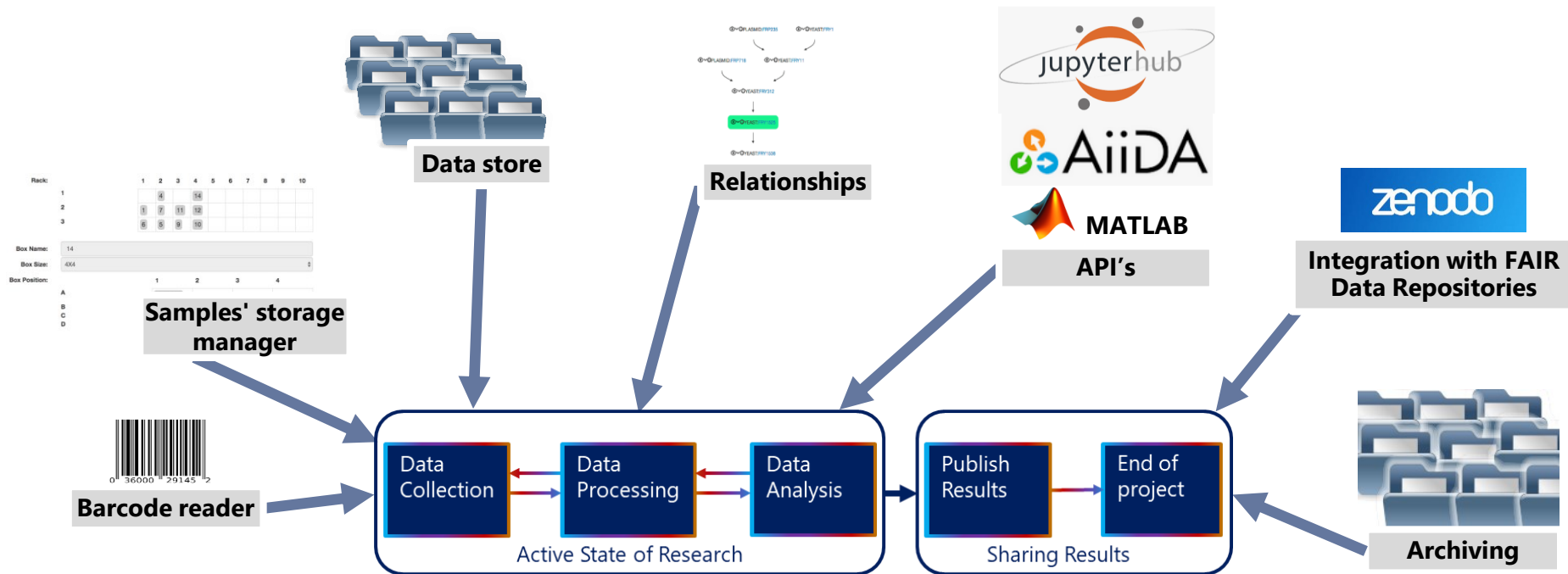
A data management system – Covering most of the data life cycle in 1 tool

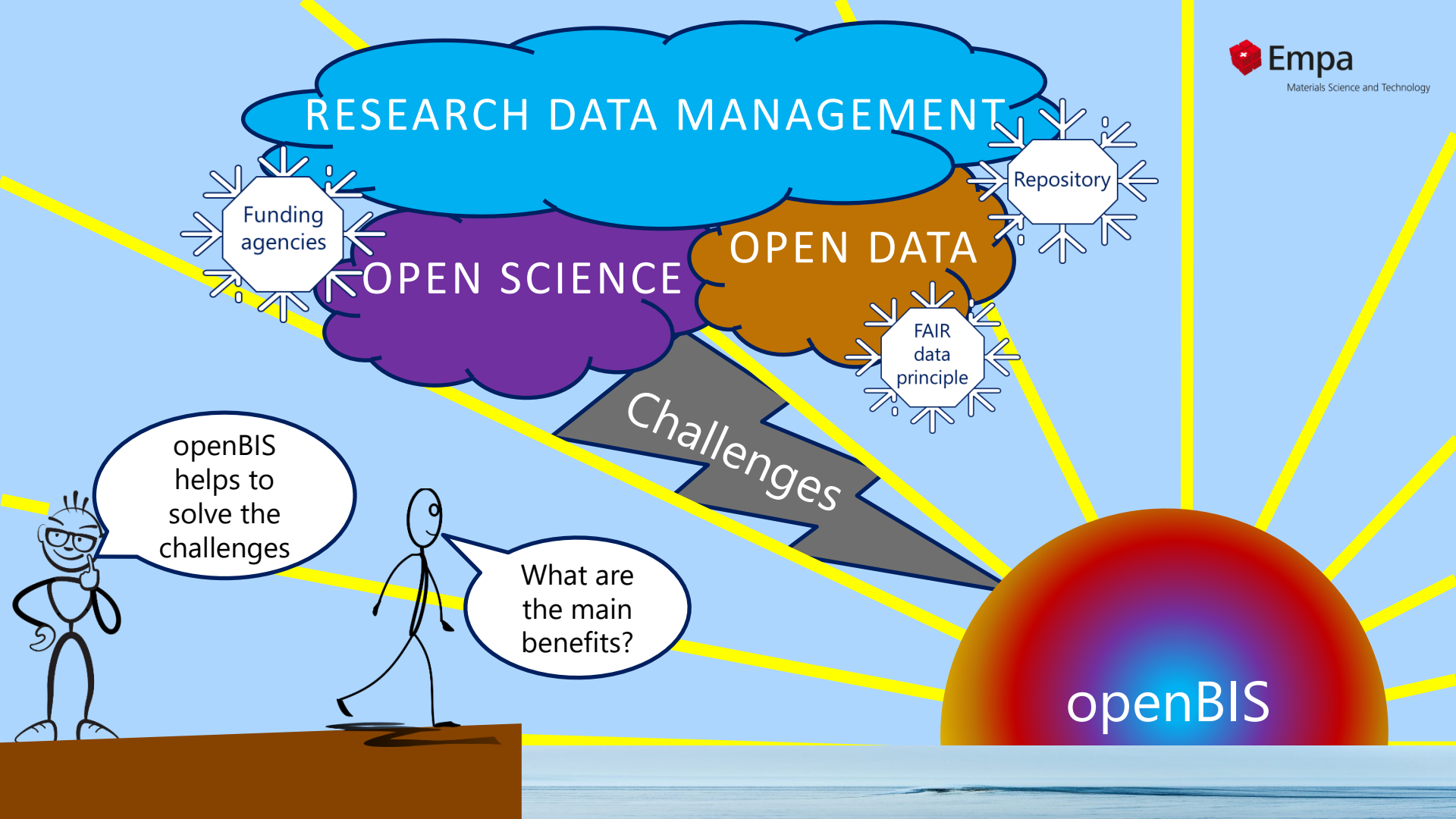


A data management system – Solving DMPlan requirements of funding agencies with 1 tool

- Open source software developed by ETH since 2007
 - ELN/LIMS system
- Electronic Lab Notebook & Laboratory Information Management System**

For managing research data from “bench” to publication in a central storage





RESEARCH DATA MANAGEMENT

Funding
agencies

OPEN SCIENCE

OPEN DATA

Repository

FAIR
data
principle

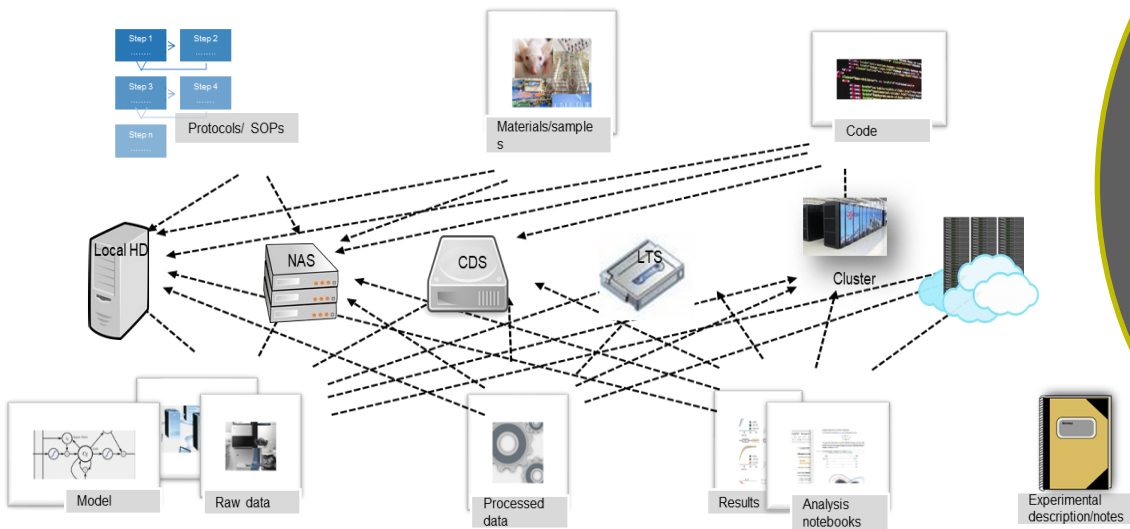
Challenges

openBIS
helps to
solve the
challenges

What are
the main
benefits?

openBIS

A common scenario
The "data spread"



The ideal solution
Having everything connected in 1 place



openBIS - Hierarchy graph

Shrinkage Measurement: Shrinkage measurement 1

General info

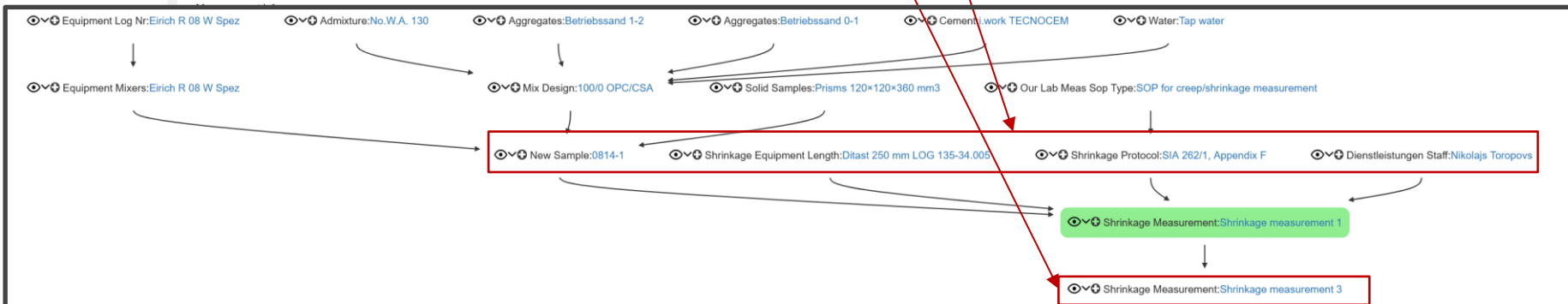
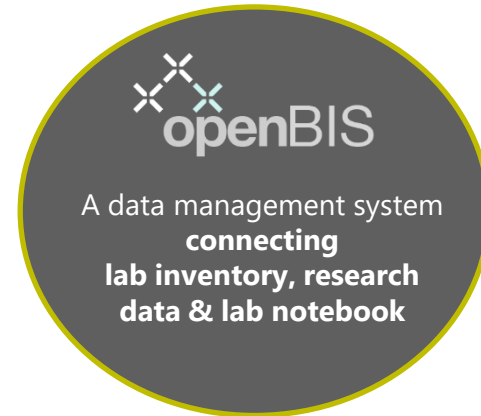
Name: Shrinkage measurement 1

Parents

Code	Name	Last calibration	Measurement accuracy (in mm)	Gauge reference length (in mm)	Shrinkage dimensionality	SOP ID	Short name of staff	Type
SAMPLE_1	0814-1							New Sample
SHRINKAGE_EQUIPMENT_LENGTH1	Dilat 250 mm LOG 135-34.005	2019-08-07 00:00:00 +0200	0.001	250				Shrinkage Equipment Length
SHRINKAGE_PROTOCOL_1	SIA 262/1, Appendix F				Linear shrinkage	4003		Shrinkage Protocol
STAFF_8	Nikolajs Toropovs						ton	Dienstleistungen Staff

Children

Code	Name	Identifier	Shrinkage type	Sample's age at the measurement time point (days)	Shrinkage side A (in microns)	Shrinkage side B (in microns)	Notes
SHRINKAGE_MEASUREMENT_3	Shrinkage measurement 3	/GROUPB_MICHELE.GRIFFA_AT_EMPA.CH /PROJECT_1/SHRINKAGE_MEASUREMENT_3		3	164.0	148.0	





1

Prevention of loss of research data & knowhow
via structured documentation & storage

2

Easy & automatic data archiving over a
long period

3

Easy & fast connection to
repository Zenodo

Challenges at Empa

1. **Data loss** due to change of personnel & no proper documentation of data
2. **No archiving solution** easy accessible & reliable
3. **No repository** available

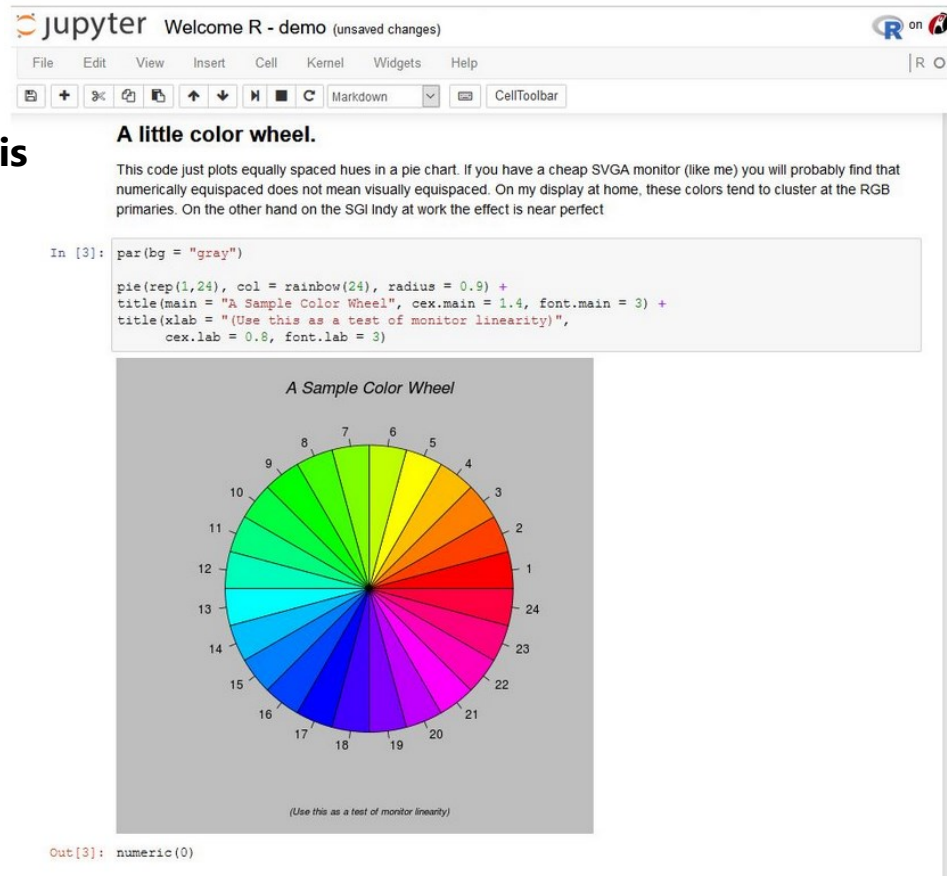
- 
- ❖ **Without openBIS** you need to solve these challenges on your own
 - ❖ **Without proper data management** you risk losing funding money

Data Science with openBIS

- ❖ **Jupyter notebooks combine code, documentation & outputs** like plots, images, videos etc.
- ❖ Useful for **interactive/exploratory data analysis** and **reproducibility**
- ❖ **Easy sharing** of code with documentation and results
- ❖ Like a **modern lab notebook** for reproducible coding

openBIS comes with Jupyter Hubs for data analysis via **Jupyter Notebooks that support R, Python, Octave**

openBIS API available for Matlab and Python (Pybis)



OPEN ACCESS

OA POLICY OF EMPA

Lib4RI
Library for the Research Institutes within
the ETH Domain: Eawag, Empa, PSI & WSL

Golden way

Green way

RESEARCH DATA MANAGEMENT



OPEN SCIENCE

openBIS

OPEN DATA

Empa
Materials Science and Technology

Repository

FAIR
data
principle

DMP
support

Scientific IT
scientificit@empa.ch

DATA MANAGEMENT PLAN
(DMP)



RELIABLE



REPRODUCIBLE

openBIS



STORING
BACK UP
SECURING



COLLECTING
ORGANIZING
DOCUMENTING

openBIS



ARCHIVING
SHARING

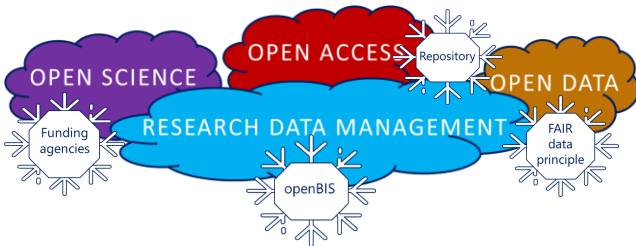
F.A.I.R.

Repository Zenodo
Reproducible Data Analysis



REUSABLE

**Solutions @ Empa for
RDM & Open Science**



Support

scientificit@empa.ch

<https://scientificit.empa.ch/>



SCIENTIFIC IT

Materials Science and Technology

OUR MISSION

We are at the interface between research and IT. We want to support Empa's research to be at the forefront of materials science by driving Empa's digital transformation and modernising its data management structure.

OUR SERVICES

- Trainings for Python, openBIS, Research Data Management
- Office hours, Support and ICT interaction
- Connection to expert groups in the ETH domain and Swiss scientific institutions (e.g. SDSC, CSCS, etc.)

HOW TO CONTACT US

We can be reached via email and through the ticketing system ky2help. For more information on our activities and services please check <https://scientificit.empa.ch>

AREAS OF EXPERTISE	ACTIVITY	SAMPLE QUESTIONS
RESEARCH DATA MANAGEMENT	Good data management and processing practices, promote Open Research Data (ORD), Organisation, transfer, retrieval, handling of sensitive data.	scientificit@empa.ch I would like to have a workflow add-on for openBIS, so it is easier to create all the entries with the correct parent-child connections. Can we design something?
SOFTWARE ENGINEERING	Assist with development and deployment of acquired software. Promotion of good software development practises (docs, git, code optimization).	scientificit@empa.ch I wrote a script in python and would like to make it available for my coworkers to use after I leave. Can you show me how?
DATA SCIENCE	Tools and methods for materials science research, data driven modeling, collaboration to SDSC.	scientificit@empa.ch I would like to try out machine learning on my datasets, but I am not sure if it is too complicated, or how to tackle that. Can you help me here?
HIGH PERFORMANCE COMPUTING	Promote usage of national supercomputing resources. Porting and optimizing software.	hpc@empa.ch I'm running an algorithm on my machine, but it always takes so much time. Is there anything you can do about that?

Scan here for our website
Login with Empa credentials

Denis Pretorius
 Annette Buehler
 Eduardo Badi
 Martin Roser
 Simone Raffalli
 Stefano Huser
 Desirée Adamopoulos
 Alexander Vukobratovic
 Fabio Lopez
 Pascal Du

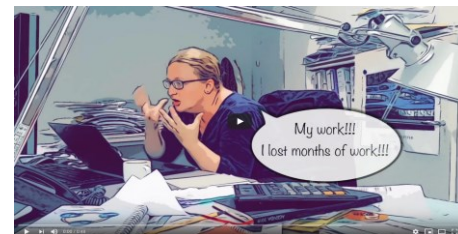
Videos

From Open Data to Open Knowledge
SIB - Swiss Institute of Bioinformatics • 507 views • 11 months ago

Discover SIB's vision on Open Data, one of the many facets of Open Science - the movement to make scientific research and its dissemination accessible to the society. Harmonizing licenses of datab...

CC

1:34



https://youtu.be/t_rEXpfCTrg
<https://youtu.be/tFwd2M2OXwQ>
<https://youtu.be/6kHGbbdFuDE>
<https://youtu.be/LCZijZP916o>
<https://youtu.be/NdkiWkRi-ZQ>