



KU Leuven long-term archiving solution
Powered by iRODS

FOZ-RDM - ICTS (KU Leuven)
Speaker: Ingrid Barcena Roig

iRODS User Group Meeting – 18-19 June 2025

KU LEUVEN



WHAT?

HOW?

WHY?

**WHAT'S
NEXT?**



Why FriGO? A little bit of history

- KU Leuven 600th Anniversary
- RDM @ KU Leuven
- RDM working group established
- First RDM Guidelines published



1425

Foundation
university

Printing of Utopia

Rega

The Big Bang Theory

Vesalius

Mercator

First oral contraceptive

2014

First RDM guidelines



• RISE analysis

- Need for new infrastructure
 - Data publication/registration
 - Active data management system
- RDM steering group
 - Working Groups
 - RDM-CC

2014

First RDM guidelines

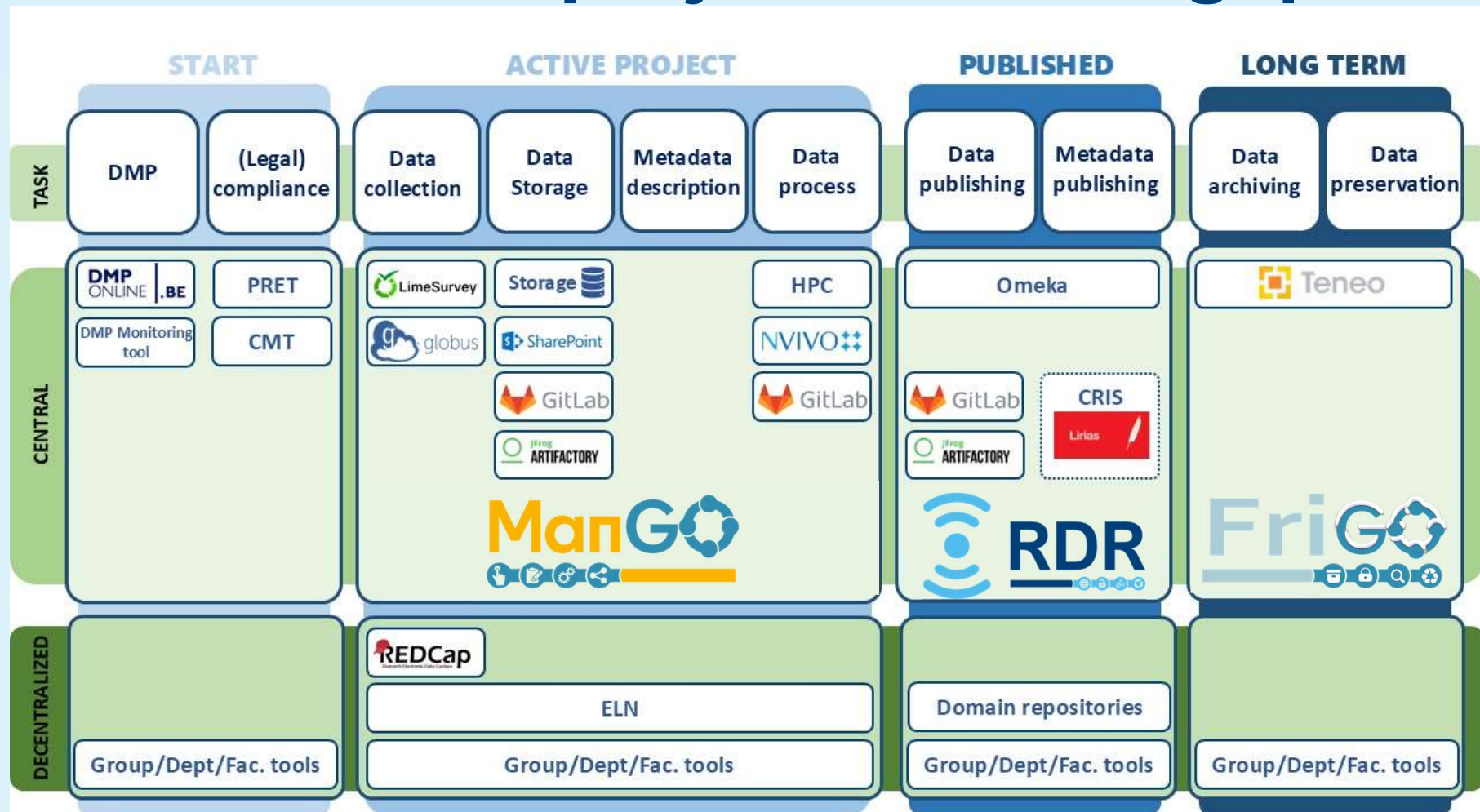
2018

RISE analysis

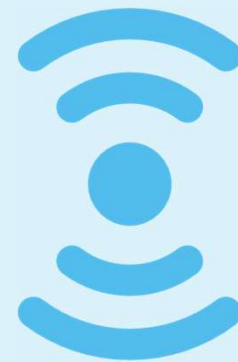
2019

Start
Infrastructure
projects

Infrastructure projects: fill the gaps



Integrated FAIR RDM lifecycle



WHAT?



FriGO in a nutshell

Long term archiving of research datasets

Research datasets kept for long term (min. 10y - KU Leuven policy)

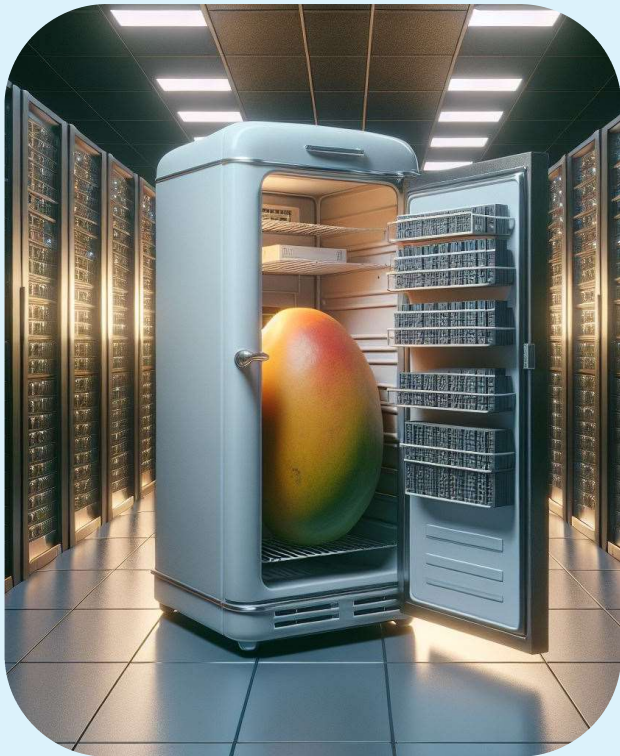
- Relevant for **reproducibility** and possible **re-use**
- Data stored as datasets (analog to data repositories (e.g: RDR))
- Datasets stored in its **current version** and **immutable**

Metadata mandatory to described datasets:

- **Make datasets findable** in the long-term
- Allow datasets to be **re-used** or **re-examined** in the future

Accessibility is clearly stated (e.g: license, ...)

Lifetime of datasets is defined (and re-evaluated at the end) to facilitate clean-up

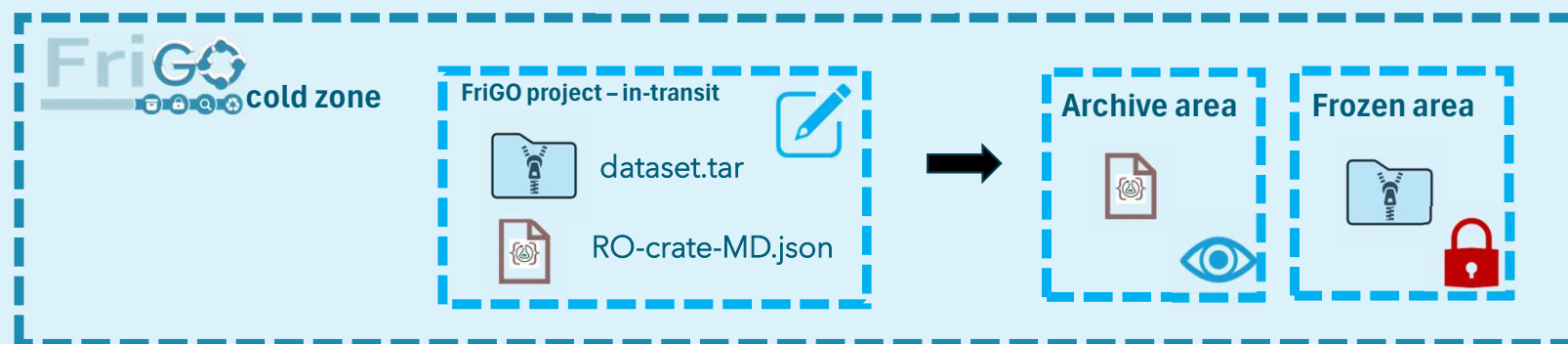




FriGO architecture



iCommands/PRC



iRODS®



ManGO Flow

Archive package creation

 Project manager

 Project member

In-transit/Archive
IBM Spectrum Scale



Frozen area
Ceph system (2.5PB)

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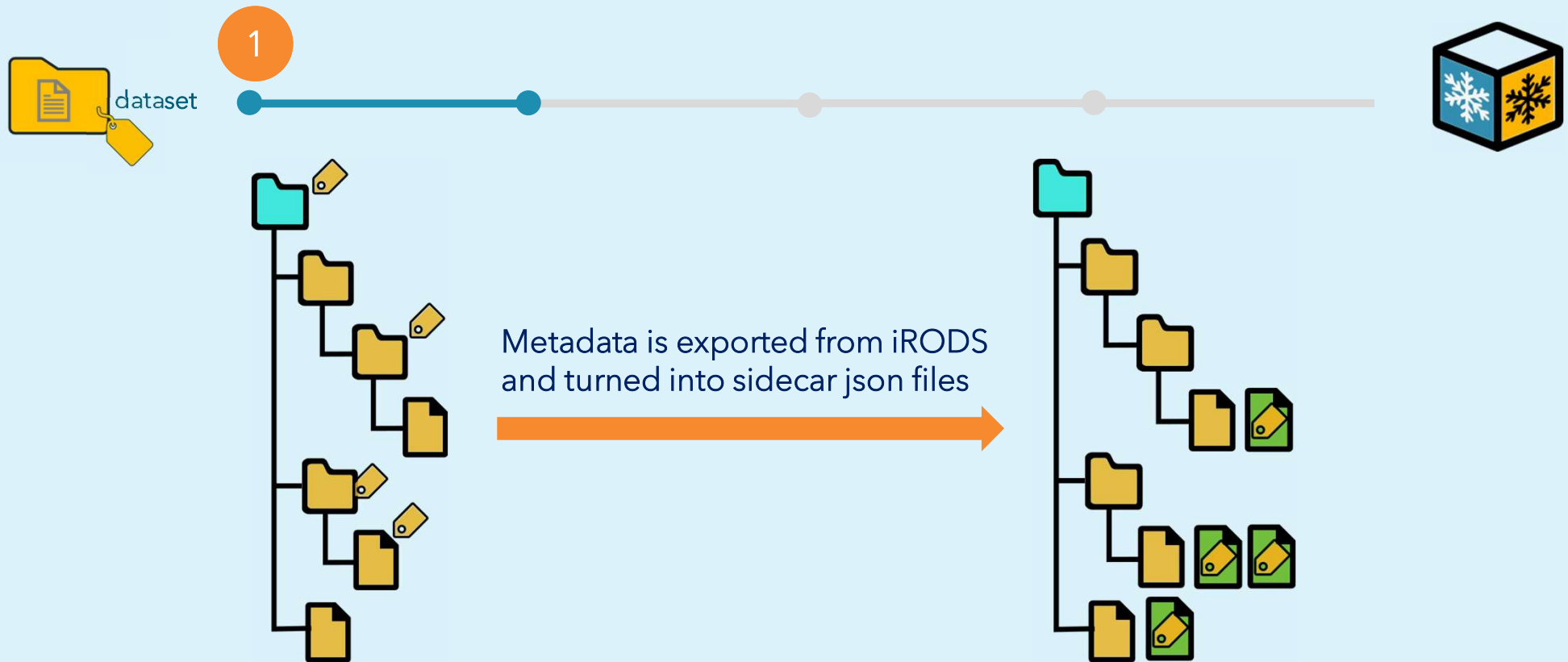


FriGO archive package

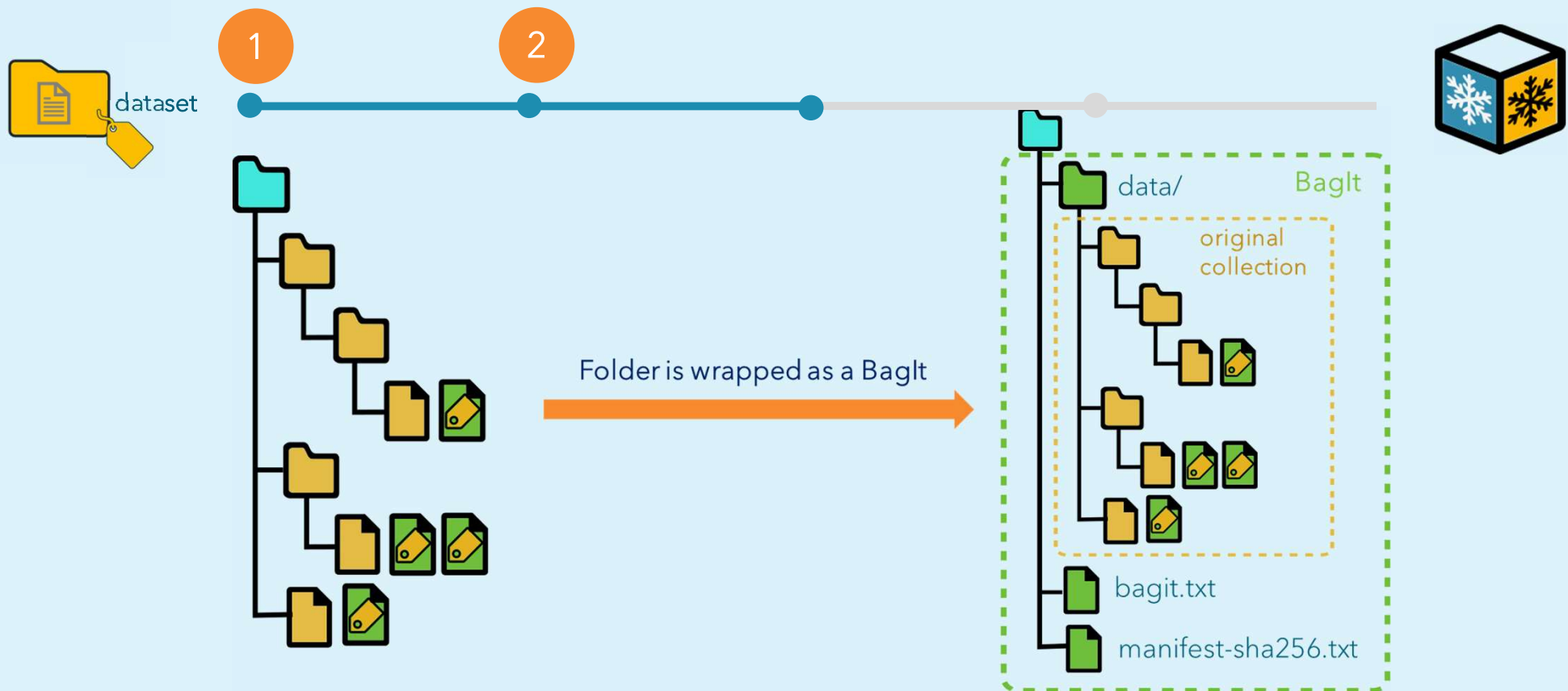


ManGO  Flow

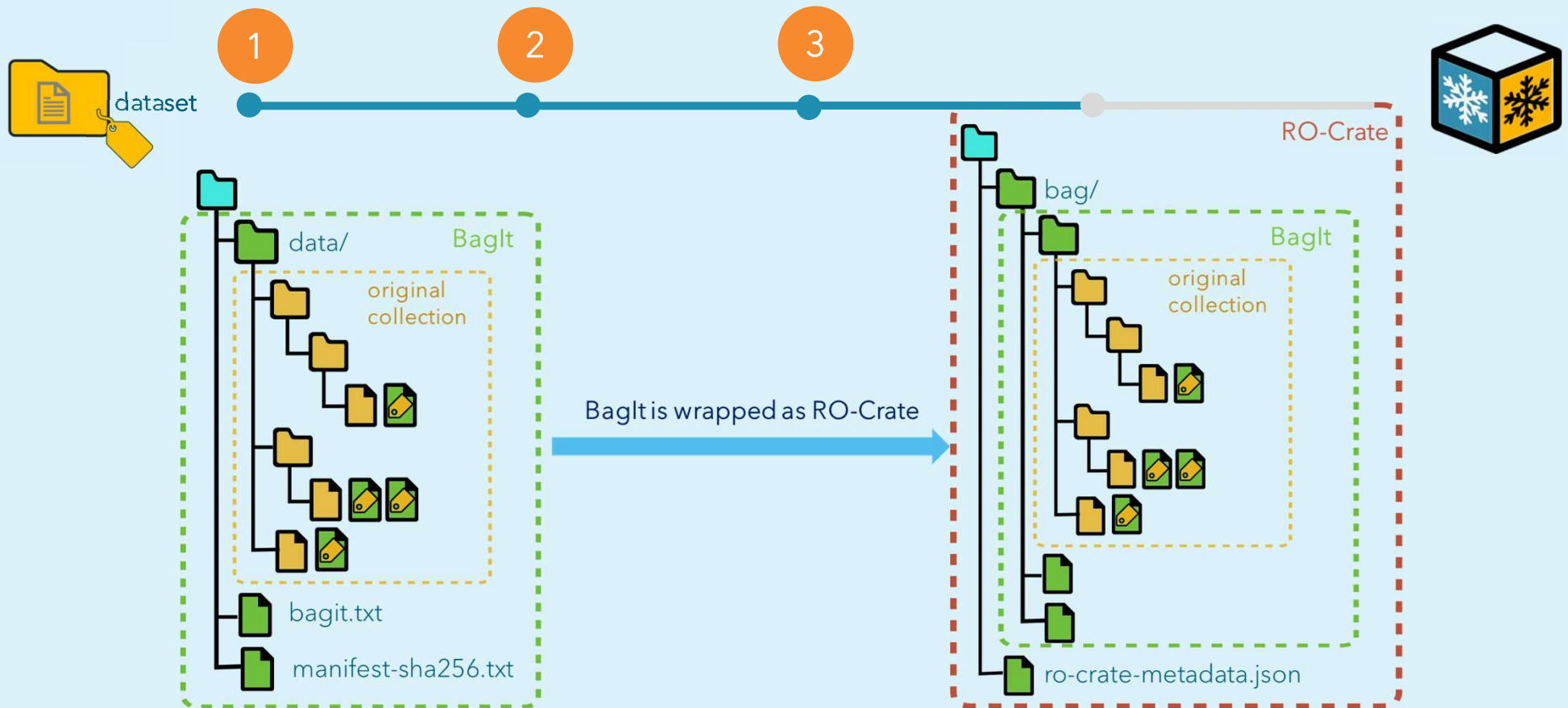
FriGO archive package



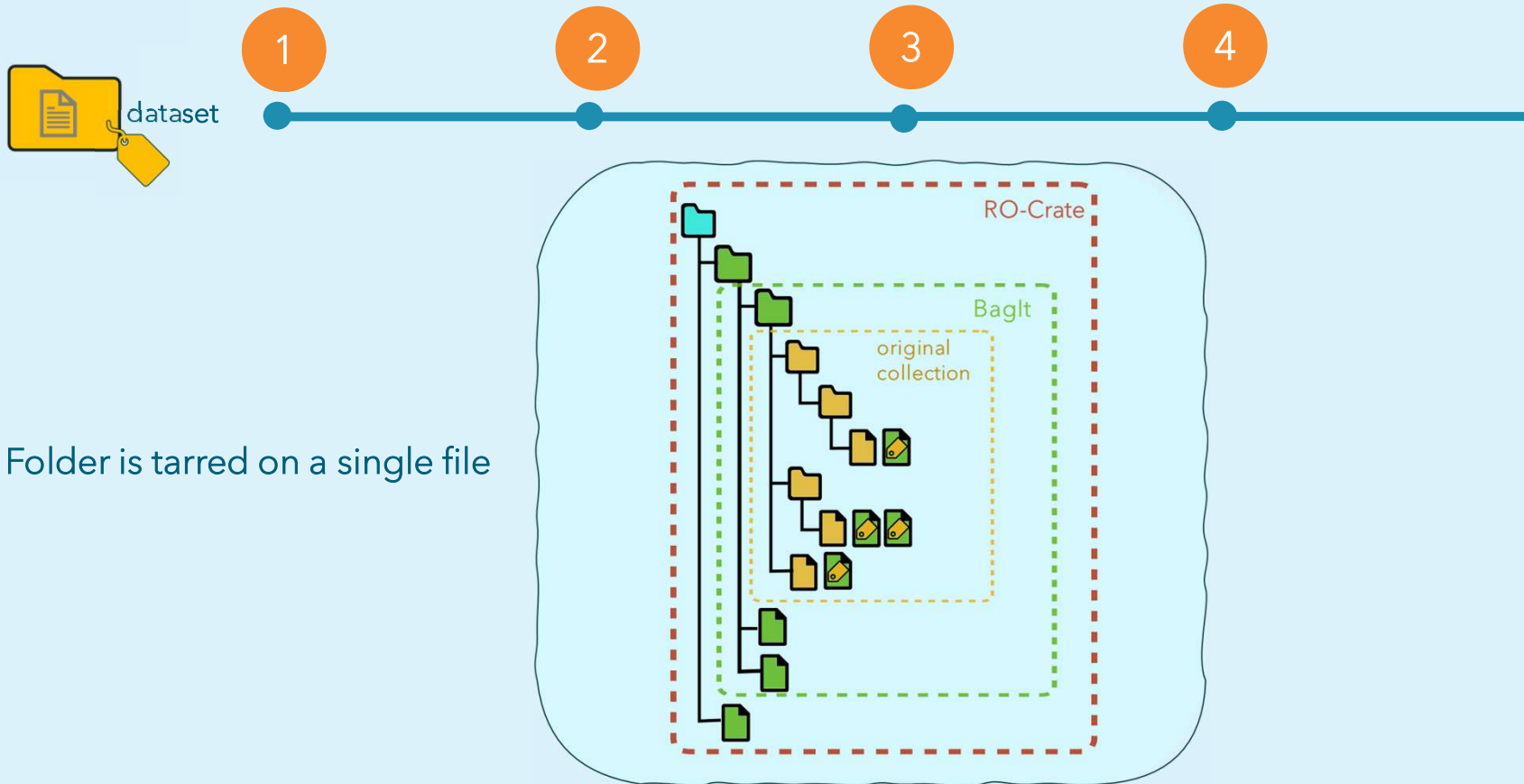
FriGO archive package



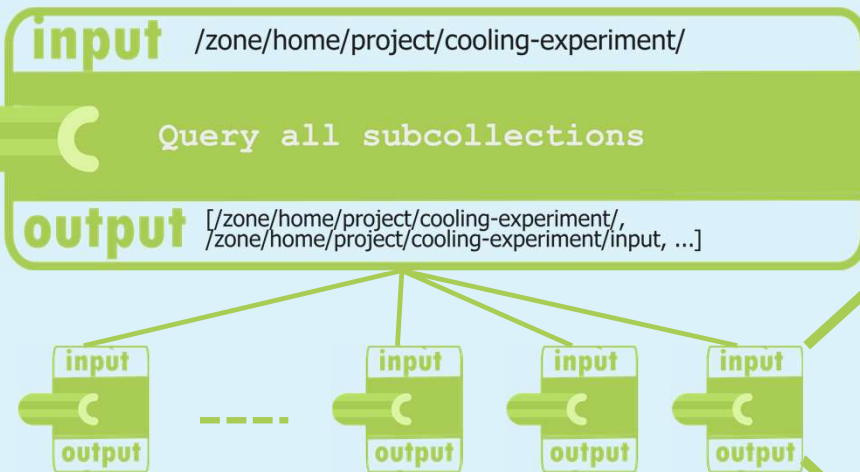
FriGO archive package



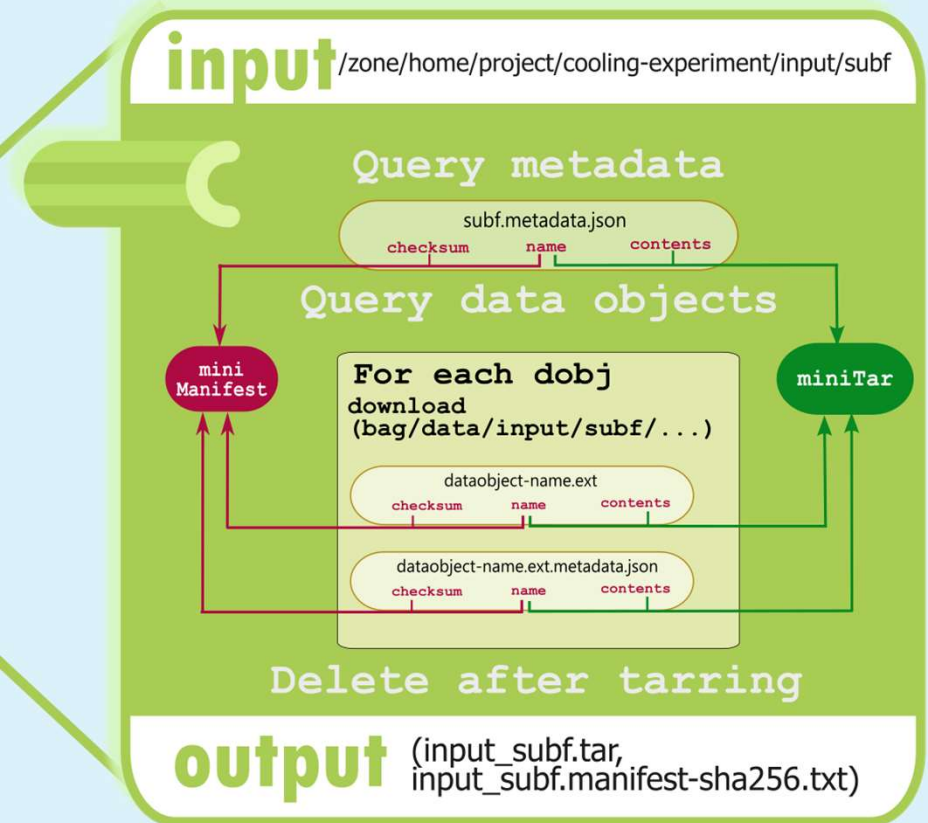
FriGO archive package



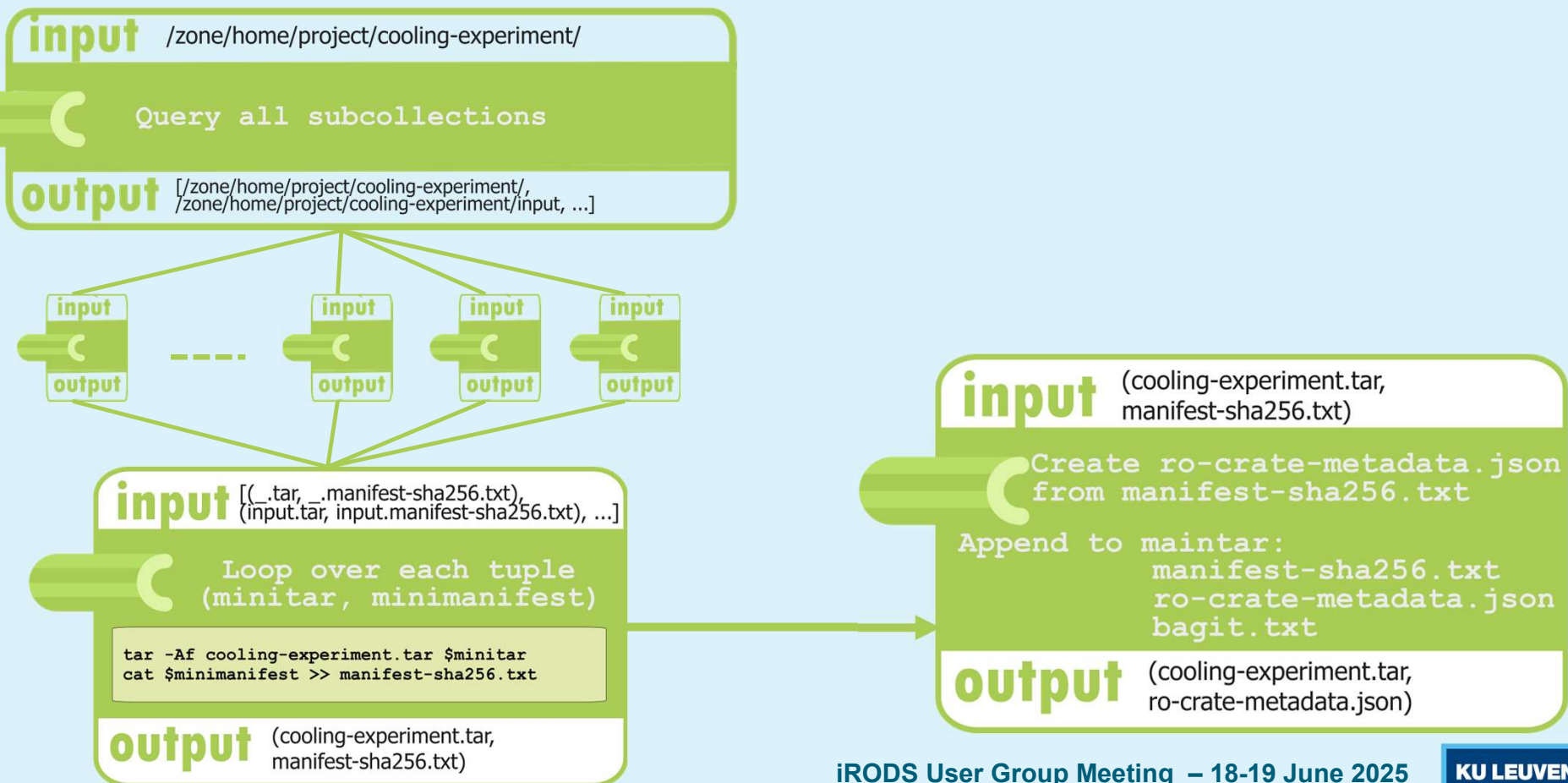
FriGO archive package: the engine behind



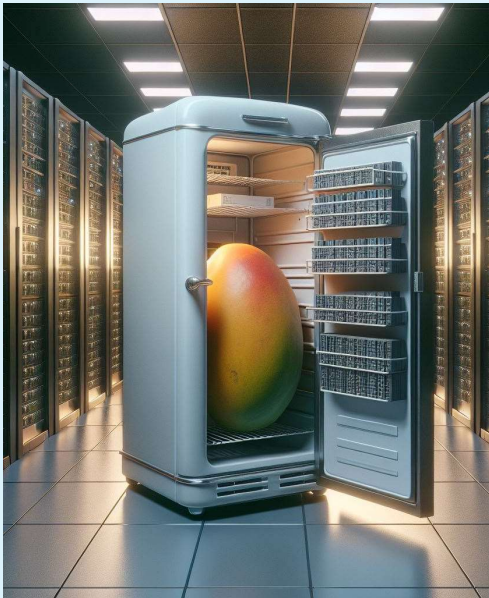
ManGO  Flow



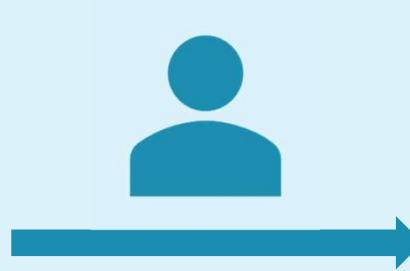
FriGO archive package: the engine behind



FriGO from the researcher's perspective



ManGO

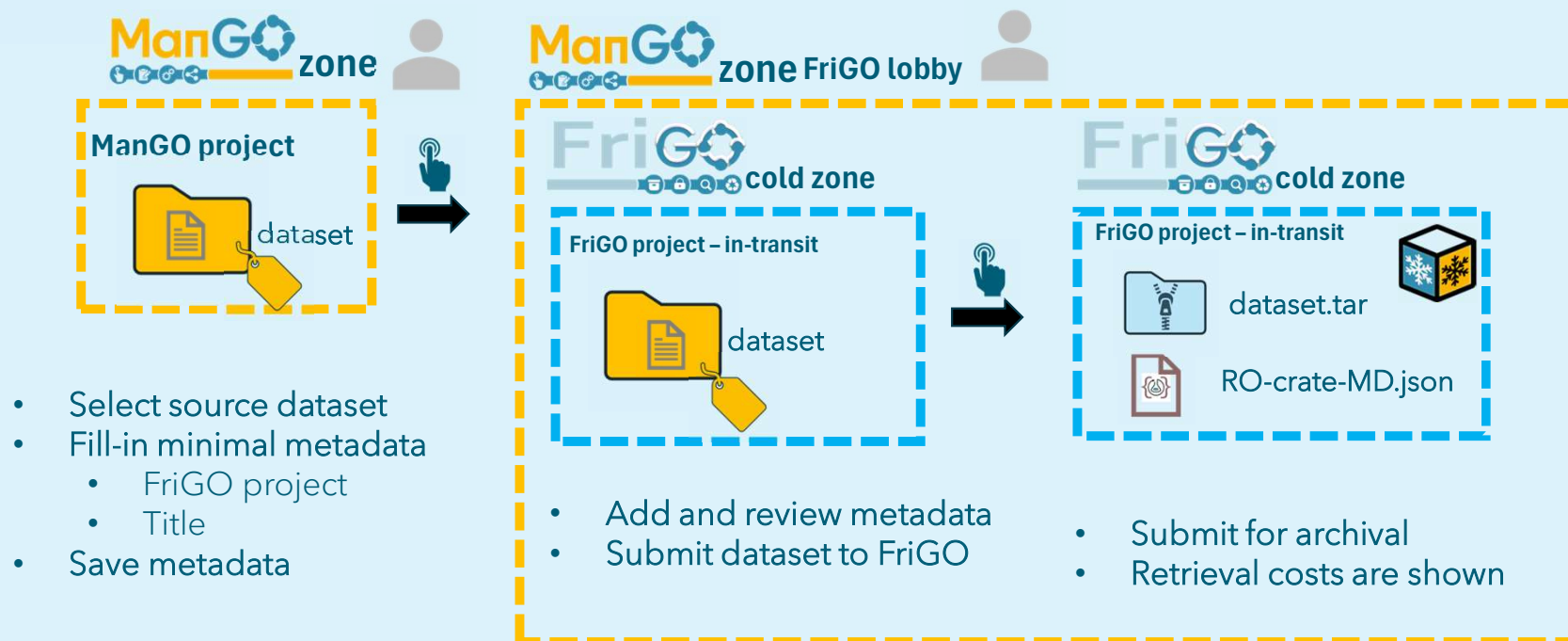


FriGO



Archive Package

Submission process - user



Dataset level metadata (MVP)



Added by the researcher

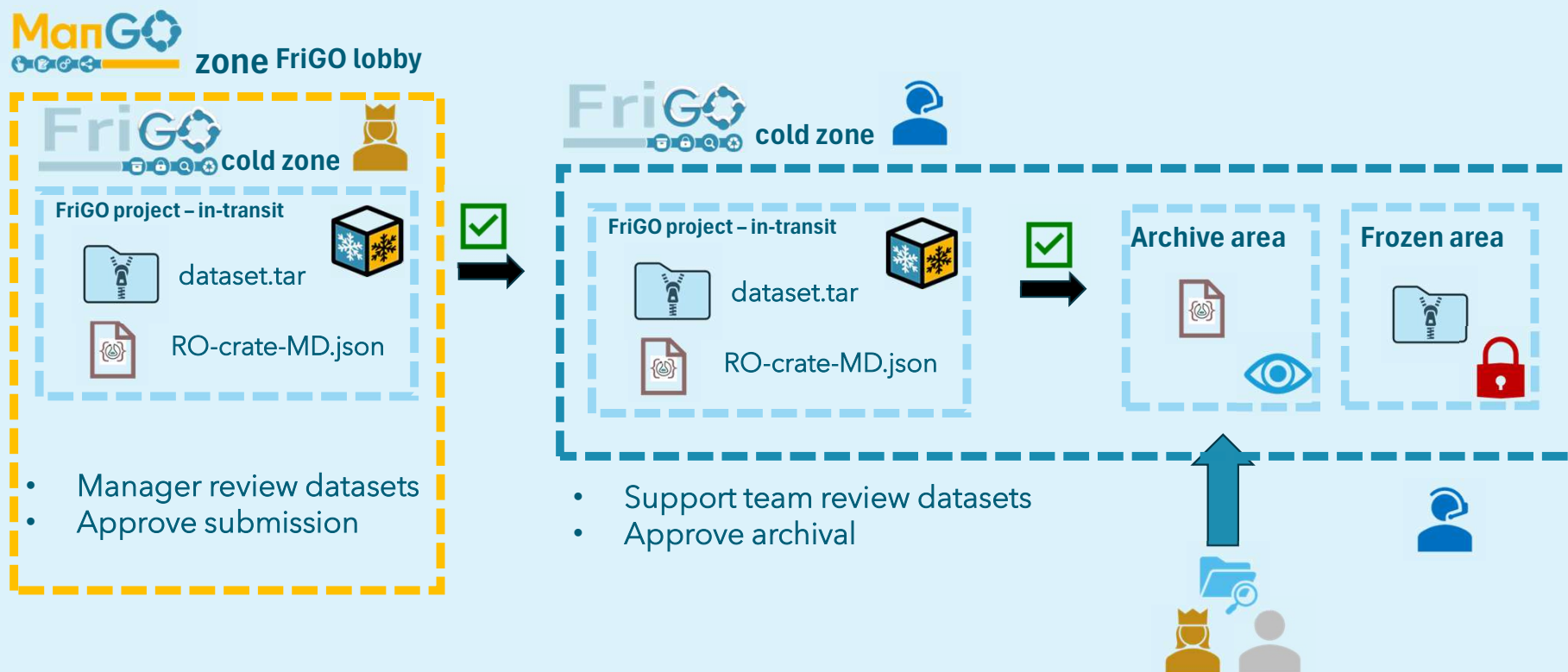
- Title of the dataset
- Description
- Author(s)
 - ORCID
 - Name, surname, email
 - Affiliation (KU Leuven)
- Lifetime




Added by the system

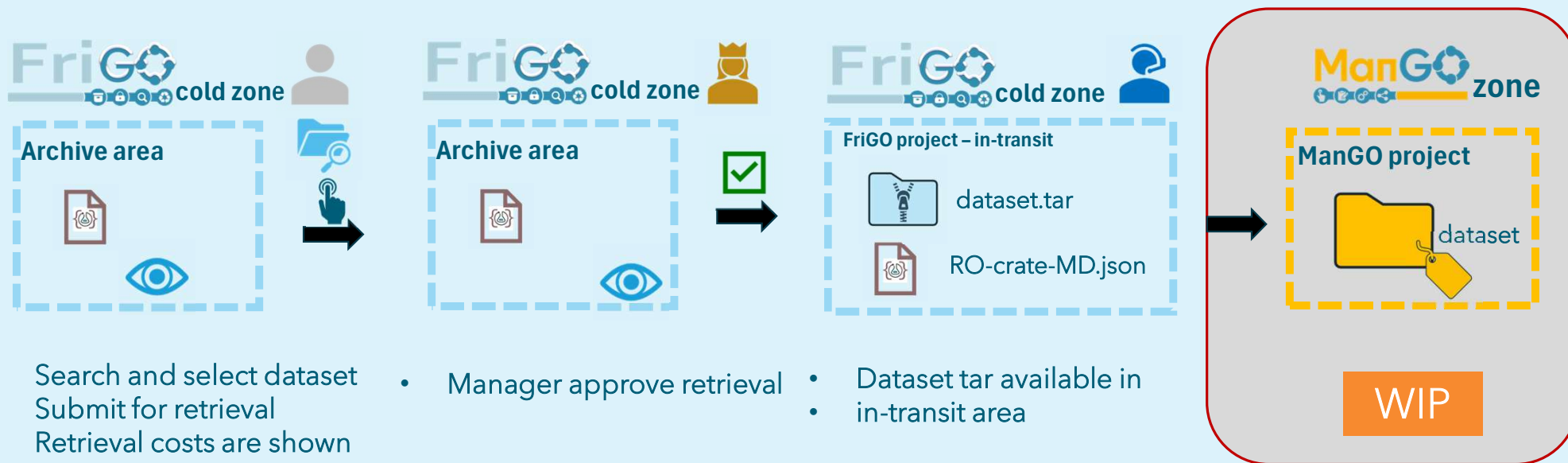
- Default license
 - with option to set another one
- Published date
 - when the tar is finished
- Expiration date
 - "lifetime" years later

Approval process - manager/support

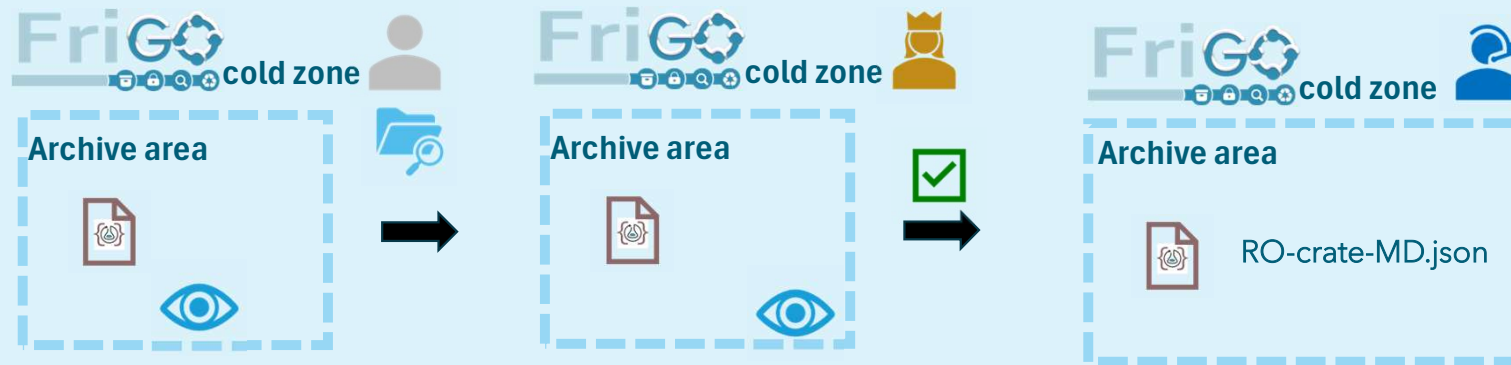


-  Project manager
-  Project member
-  FriGO administrator

Retrieval process



Delete process - WIP



- Search and select dataset
- Submit for deletion
- Add deletion metadata
- Manager approve deletion
- Support perform deletion
- Removal date is added
- Only tar is deleted
- Metadata is kept for reference



**WHAT'S
NEXT?**

Road to production



Work in Progress

- Metadata modification after archiving is rejected
- Expansion of the dataset-level metadata
- Dataset retrieval: back from FriGO to ManGO
- Dataset deletion: deadline extension, automation, documentation
- Possibility to archive data from other storage systems
- More scalability tests
- Document best practices in creating archive datasets
- Define the financial and invoicing model





<https://github.com/kuleuven>

A screenshot of the GitHub profile page for the organization 'kuleuven'. The page shows the organization's name, a 'Follow' button, and a list of repositories. The repositories listed are 'mango-ingest', 'mango-portal', 'mango-metadata-schemas', and 'mango-mdschema', each with its language, star count, license, and update date.

Overview Repositories 106 Projects Packages People

KU Leuven Follow

mango-ingest Public
Python 3 BSD-3-Clause 0 0 0 Updated last week

mango-portal Public
A web based front-end to iRODS <https://irods.org>
Jinja 2 BSD-3-Clause 1 2 0 Updated on Jun 25

mango-metadata-schemas Public
Javascript + Python application to create, manage and apply metadata schemas in iRODS
CSS 0 1 0 0 Updated on May 16

mango-mdschema Public
Python package to validate iRODS metadata based on a ManGO metadata schema.
Python 0 MIT 1 0 0 Updated on Mar 8

FriGO Coming in 2026!



iRODS User Group Meeting – 18-19 June 2025

KU LEUVEN



It takes a village to create a



ICTS - COZ



Peter
Verraedt



Filip
Sevenants



Jo
Wijnant



Yorick
Poels



Tom
Vanmierlo



Bart
Vanneste



Guy
Van Den Bergh

Paul
Borgermans



Mustafa
Dikmen



Jef
Scheepers



Danai
Kafetzaki



Joachim
Bovin



Mariana
Montes



ICTS - FOZ-RDM



**When life gives you ManGO's,
make
good data management**

Thank you!

Screenshots

(backupslices)

 Collections

 Search


 Metadata schemas

 Group administration

 FriGO lobby

 Trash

Admin 

 [gbiomed](#) » [home](#) » [datateam_gbiomed](#) » [IBR](#)

 **UGM2025-demo** 



Add collection

Upload files ...

Content



Permissions


Metadata

Extra

 Delete  Move  Copy  Download

 Copying/Download is only available for data objects.

<input type="checkbox"/>	Name	Owner	Created	Modified	Size
<input type="checkbox"/>	 languages	u0089722	2025-06-18 18:22:10	2025-06-18 18:22:27	
<input type="checkbox"/>	 scans	u0089722	2025-06-18 18:20:57	2025-06-18 18:21:38	

 [gbiomed](#) » [home](#) » [datateam_gbiomed](#) » [IBR](#)

 **UGM2025-demo** 



Add collection

Upload files ...

Content

Permissions

Metadata

Extra

* FriGO

FriGO is the place for long-term storage of your qualified and well described immutable datasets that may be re-used or re-examined in the future. The data, stored as datasets, should be relevant in its current version. There should be enough metadata provided, to allow the dataset to be re-used and make the datasets searchable in the long-term.

Fill out the form provided below to send your dataset (i.e. the current collection and its subcollections and data objects) to the FriGO lobby.

Project

cold_test_project

FriGO-Dataset Title*

The title of the dataset destined for FriGO, a metadata property in [Schema.org](#).

UGM2025-dataset-archive-demo

FriGO-Dataset Description

The description of the dataset destined for FriGO, a metadata property in [Schema.org](#).

This is a demo dataset for FriGO for UGM2025

FriGO-Dataset License*

The license for the dataset in FriGO, a metadata property in [Schema.org](#). By default, the license is [CC-BY 4.0](#). Any other license from the [SPDX list](#) may be chosen.

Default FriGO license

Select a zone


Provide a Title

Provide a
description ...

 Collections

 Search

 Metadata schemas

 Group administration


 FriGO lobby

 Trash

Admin 

FriGO lobby











Please choose a project from the list below

 cold_test_project

 public

FriGO Lobby: cold_test_project

The following datasets have been selected for FriGO

Name	Zone	Created	Status
 empty_set	ghum	2025-04-03 13:28:18	starting
 irradiation effects on optical fibres	set	2025-06-18 11:19:04	starting
 production test 1	ghum	2025-03-20 13:21:51	restored
 quota limit test	ghum	2025-04-03 13:18:15	starting
 test	icts	2025-04-03 14:56:49	starting
 test-frigo-prod-20-03	gbiomed	2025-03-20 10:07:51	restored
 test 1803 0926	ghum	2025-03-18 09:30:34	restored
 test 2003 0937	set	2025-03-20 10:04:51	restored
 test paul set datateam 2pics	set	2025-03-17 21:32:19	admin approval pending
 ugm2025-dataset-archive-demo	gbiomed	2025-06-18 18:31:57	starting

[Go back to project view](#)

UGM2025-dataset-archive-demo

Your [dataset](#) is being prepared

UGM2025-dataset-archive-demo [Save](#) [Submit](#) [Discard](#)

FriGO-Dataset Title

The title of the dataset destined for FriGO, a metadata property in [Schema.org](#).

UGM2025-dataset-archive-demo ✓

FriGO-Dataset Description

The description of the dataset destined for FriGO, a metadata property in [Schema.org](#).

This is a demo dataset for FriGO for UGM2025 ✓

FriGO-Dataset License*

The license for the dataset in FriGO, a metadata property in [Schema.org](#). By default, the license is [CC-BY 4.0](#). Any other license from the [SPDX list](#) may be chosen.

Default FriGO license

FriGO-Dataset Lifetime*

The number of years the dataset should be stored before being automatically discarded. The minimum is currently 1, the default is 10, and the maximum is 25 years.

10 ✓

FriGO-Dataset Author

Person or organisation, as described in [Schema.org](#).

ORCID

Your ORCID as in [orcid.org](#).

0000-0003-3242-3895 ✓

KU Leuven account

Your KU Leuven u/r/s/b/c account.

u0089722

Family name

Your family name, a metadata property described in [Schema.org](#).

Barcena Roig

Given name

Your given name, a metadata property described in [Schema.org](#).

Ingrid

Affiliation*

The organization you are affiliated with, a metadata property described in [Schema.org](#). The selected organization should be listed in [ror.org](#). For now, only KU Leuven is supported.

☒ KU Leuven











Email

Your email address, a metadata property described in [Schema.org](#).

ingrid.barcenaroig@kuleuven.be

FriGO Lobby: cold_test_project

The following datasets have been selected for FriGO

Name	Zone	Created	Status
 empty_set	ghum	2025-04-03 13:28:18	starting
 irradiation effects on optical fibres	set	2025-06-18 11:19:04	starting
 production test 1	ghum	2025-03-20 13:21:51	restored
 quota limit test	ghum	2025-04-03 13:18:15	starting
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 test-frigo-prod-20-03	gbiomed	2025-03-20 10:07:51	restored
 test 1803_0926	ghum	2025-03-18 09:30:34	restored
 test 2003_0937	set	2025-03-20 10:04:51	restored
 test paul set datateam 2pics	set	2025-03-17 21:32:19	admin approval pending
 ugm2025-dataset-archive-demo	gbiomed	2025-06-18 18:31:57	preparing


[Go back to project view](#)

UGM2025-dataset-archive-demo

✓ Your [dataset](#) is packaged and ready to be archived (moved to FriGO)

Submit for approval

Discard

Retrieval price: 1 

UGM2025-dataset-archive-demo

@id . /

name [\[?\]](#) UGM2025-dataset-archive-demo

@type Dataset

description [\[?\]](#) This is a demo dataset for FriGO for UGM2025

datePublished [\[?\]](#) 2025-06-18

author [\[?\]](#) [0000-0003-3242-3895](#)

expires [\[?\]](#) 2035-06-18

hasPart [\[?\]](#) [data](#)

license [\[?\]](#) Default FriGO license

Items that reference this one

about [\[?\]](#) [ro-crate-metadata.json](#)

[Check this crate](#)

UGM2025-dataset-archive-demo

Your [dataset](#) is waiting for approval from the project manager or responsible

Retrieval price: 1 

UGM2025-dataset-archive-demo

@id	./
name [?]	UGM2025-dataset-archive-demo
@type	Dataset
description [?]	This is a demo dataset for FriGO for UGM2025
datePublished [?]	2025-06-18
author [?]	0000-0003-3242-3895
expires [?]	2035-06-18
hasPart [?]	data
license [?]	Default FriGO license

Items that reference this one

about [?]	ro-crate-metadata.json
---------------------------	--

[Check this crate](#)

[Go back to project view](#)

UGM2025-dataset-archive-demo

Your [dataset](#) is waiting for approval from the project manager or responsible

Approve

Reject

Retrieval price: 1 

UGM2025-dataset-archive-demo

@id	./
name [?]	UGM2025-dataset-archive-demo
@type	Dataset
description [?]	This is a demo dataset for FriGO for UGM2025
datePublished [?]	2025-06-18
author [?]	0000-0003-3242-3895
expires [?]	2035-06-18
hasPart [?]	data
license [?]	Default FriGO license

Items that reference this one

about [\[?\]](#) [ro-crate-metadata.json](#)

[Check this crate](#)

[Go back to project view](#)

UGM2025-dataset-archive-demo

Your [dataset](#) is waiting for approval from RDM team

Retrieval price: 1 

UGM2025-dataset-archive-demo

@id	./
name [?]	UGM2025-dataset-archive-demo
@type	Dataset
description [?]	This is a demo dataset for FriGO for UGM2025
datePublished [?]	2025-06-18
author [?]	0000-0003-3242-3895
expires [?]	2035-06-18
hasPart [?]	data
license [?]	Default FriGO license

Items that reference this one

about [?]	ro-crate-metadata.json
---------------------------	--

[Check this crate](#)

Review archive request

The user u0089722 submitted a request to put ugm2025-dataset-archive-demo/UGM2025-demo.tar to cold storage at 2025-06-18 16:46:30.619 +0000 UTC.

Approve

Reject

Review message (in case of rejection)

Artifact information

Project	cold_test_project
Artifact	ugm2025-dataset-archive-demo/UGM2025-demo.tar
Dataset name	UGM2025-dataset-archive-demo
Object identifier	f8ee1af0-0753-4e29-afb6-12d35867a1b0
Size	727 kB
Last updated	2025-06-18 18:36:21 +0200 CEST
Resources	default
mg.cold.active_path	/gbiomed/home/datateam_gbiomed/IBR/UGM2025-demo
mg.cold.active_zone	gbiomed
mg.cold.size	727040
Metadata files	<ul style="list-style-type: none">ro-crate-metadata.json


UGM2025-dataset-archive-demo

@id	/
name [?]	UGM2025-dataset-archive-demo
@type	Dataset
description [?]	This is a demo dataset for FriGO for UGM2025
datePublished [?]	2025-06-18
author [?]	0000-0003-3242-3895
license [?]	Default FriGO license
hasPart [?]	data
expires [?]	2035-06-18
Items that reference this one	
about [?]	ro-crate-metadata.json

Check this crate

 ProjectsAdmin 

UGM2025-dataset-archive-demo

[Go back to project](#)[Download RO-Crate](#)[Retrieve dataset](#)Retrieval price: 1 

UGM2025-dataset-archive-demo

@id	./
name [?]	UGM2025-dataset-archive-demo
@type	Dataset
description [?]	This is a demo dataset for FriGO for UGM2025
datePublished [?]	2025-06-18
author [?]	0000-0003-3242-3895
expires [?]	2035-06-18
hasPart [?]	data
license [?]	Default FriGO license

Items that reference this one

[about \[\\[?\\]\]\(#\)](#) [ro-crate-metadata.json](#)[Check this crate](#)