StrongLink HSM system archival, retrieval, metadata

DKRZ User Workshop

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Andrej Fast & Hadieh Monajemi

Deutsches Klimarechenzentrum (DKRZ)

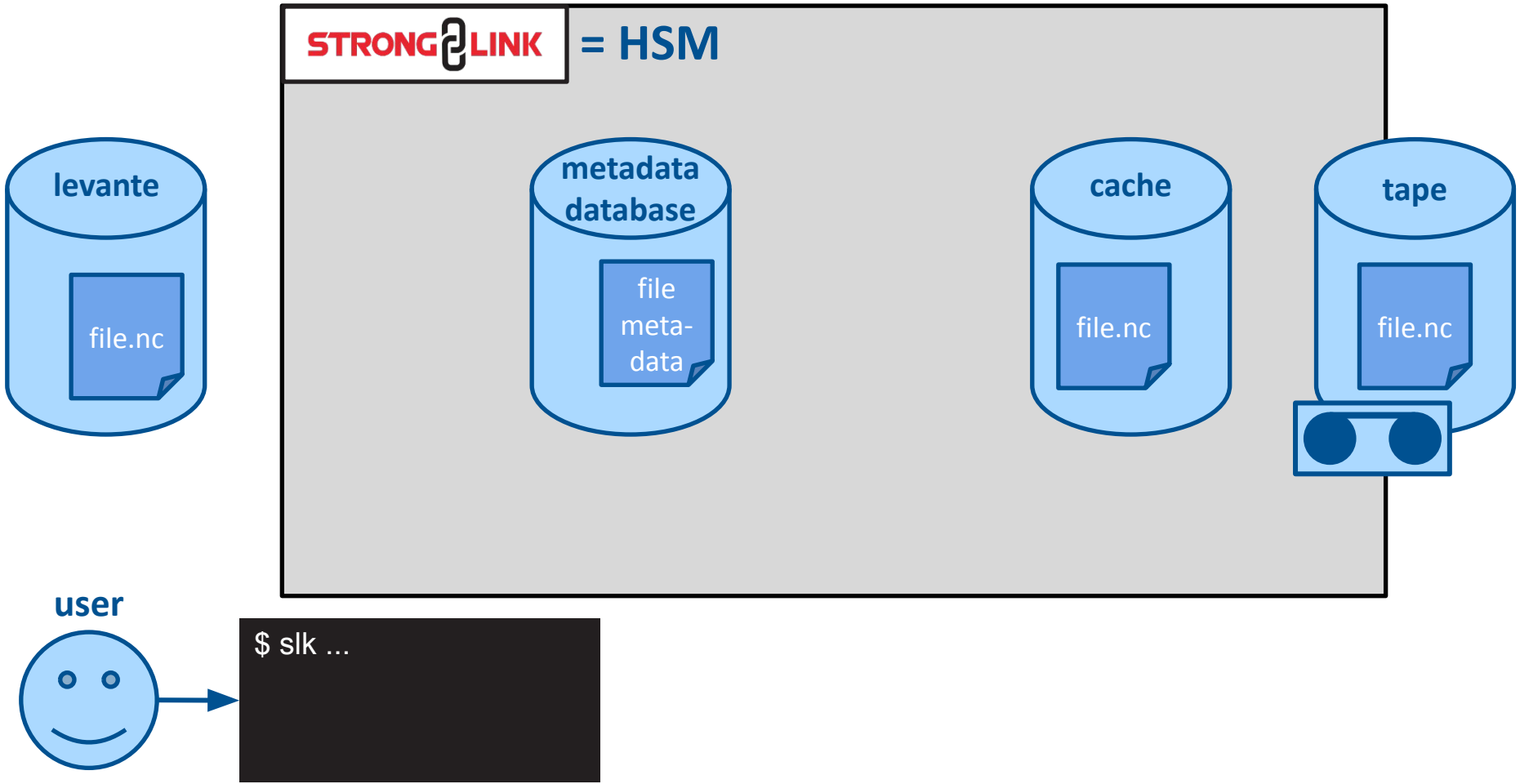
agenda

- Presentation I: Basic introduction
- Hands-On I: archival and retrieval
- Presentation II: Metadata in StrongLink
- Hands-On II: search and metadata
- Q&A

Presentation I

archival, retrieval and search

Structure HSM and slk command line interface



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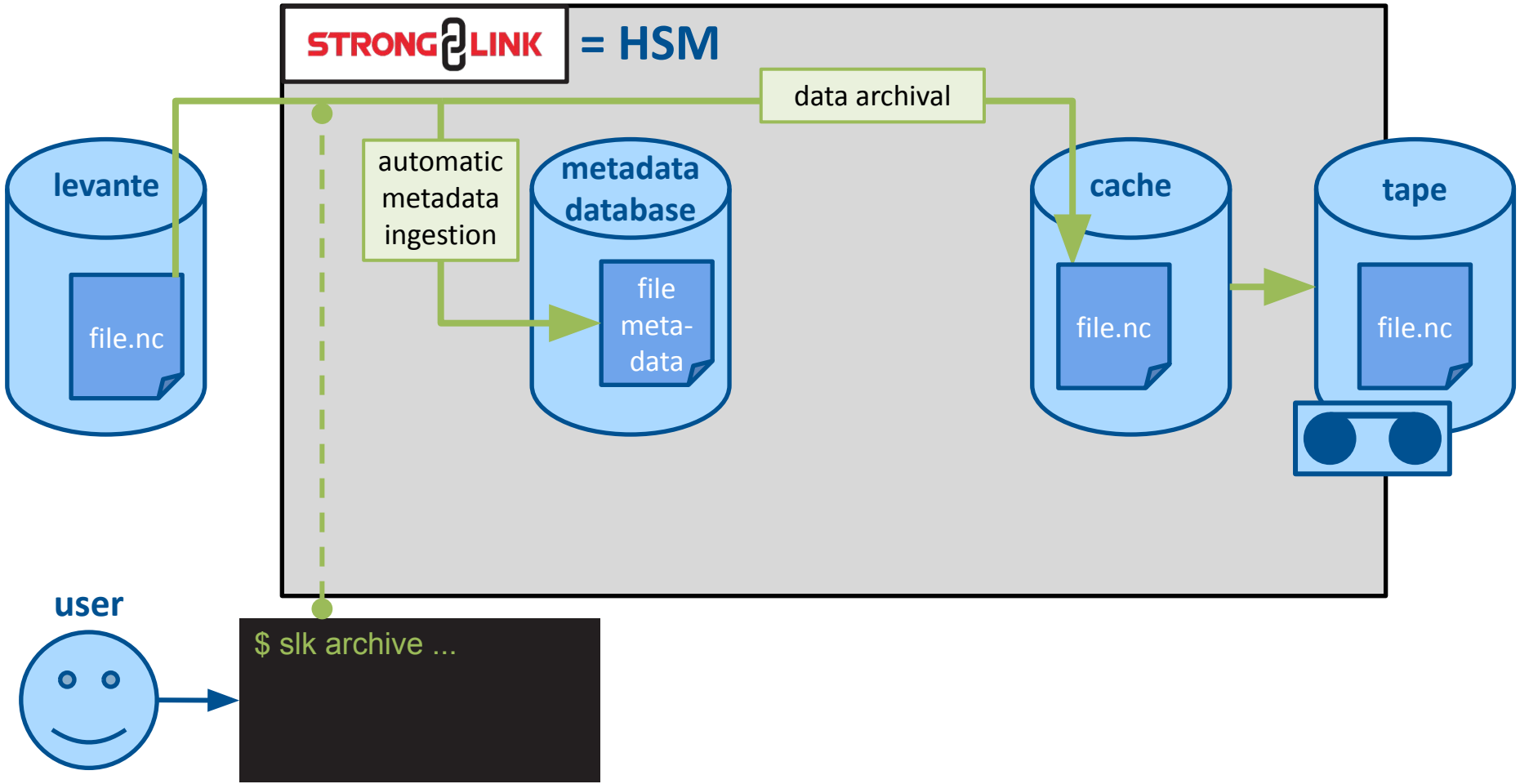

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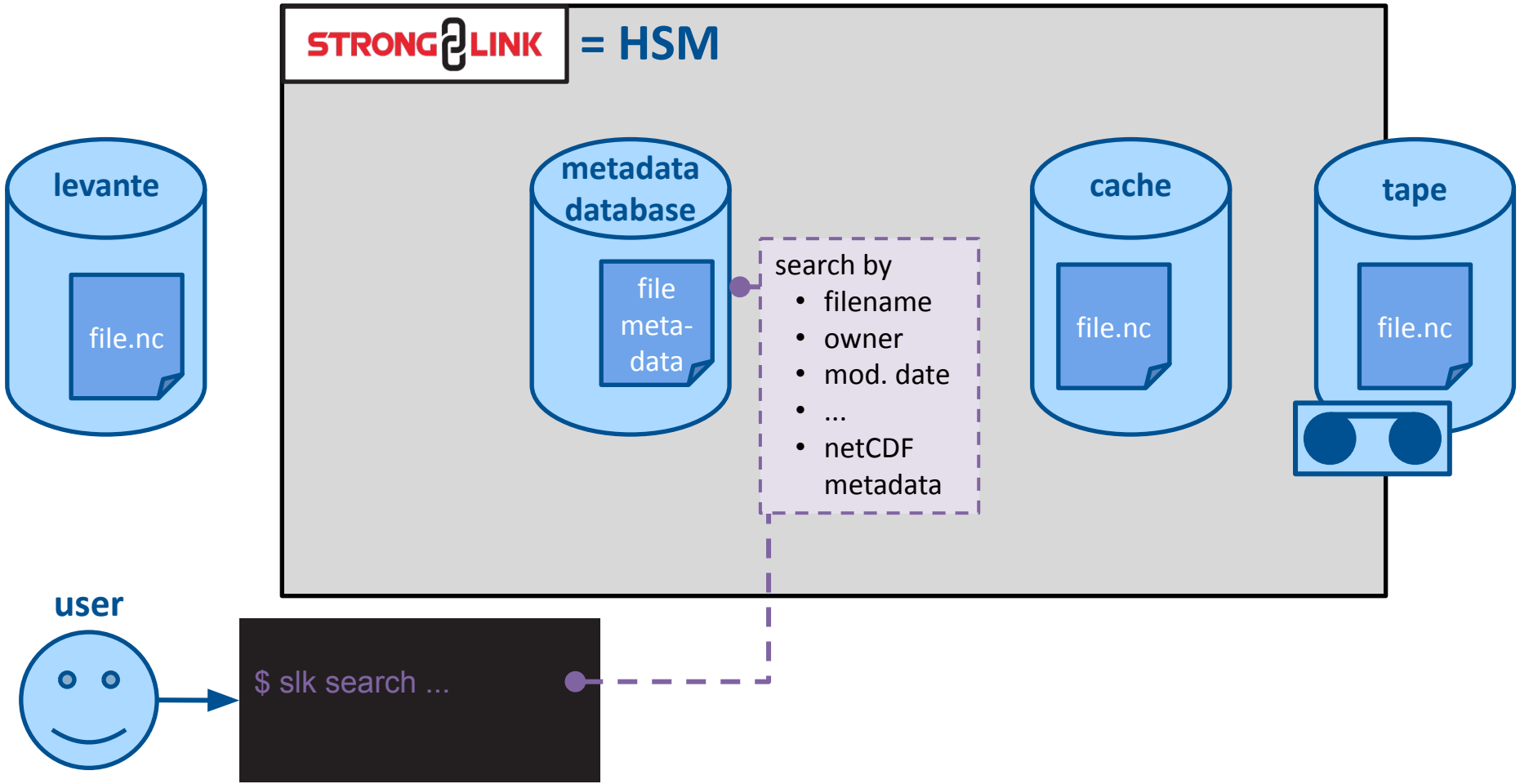

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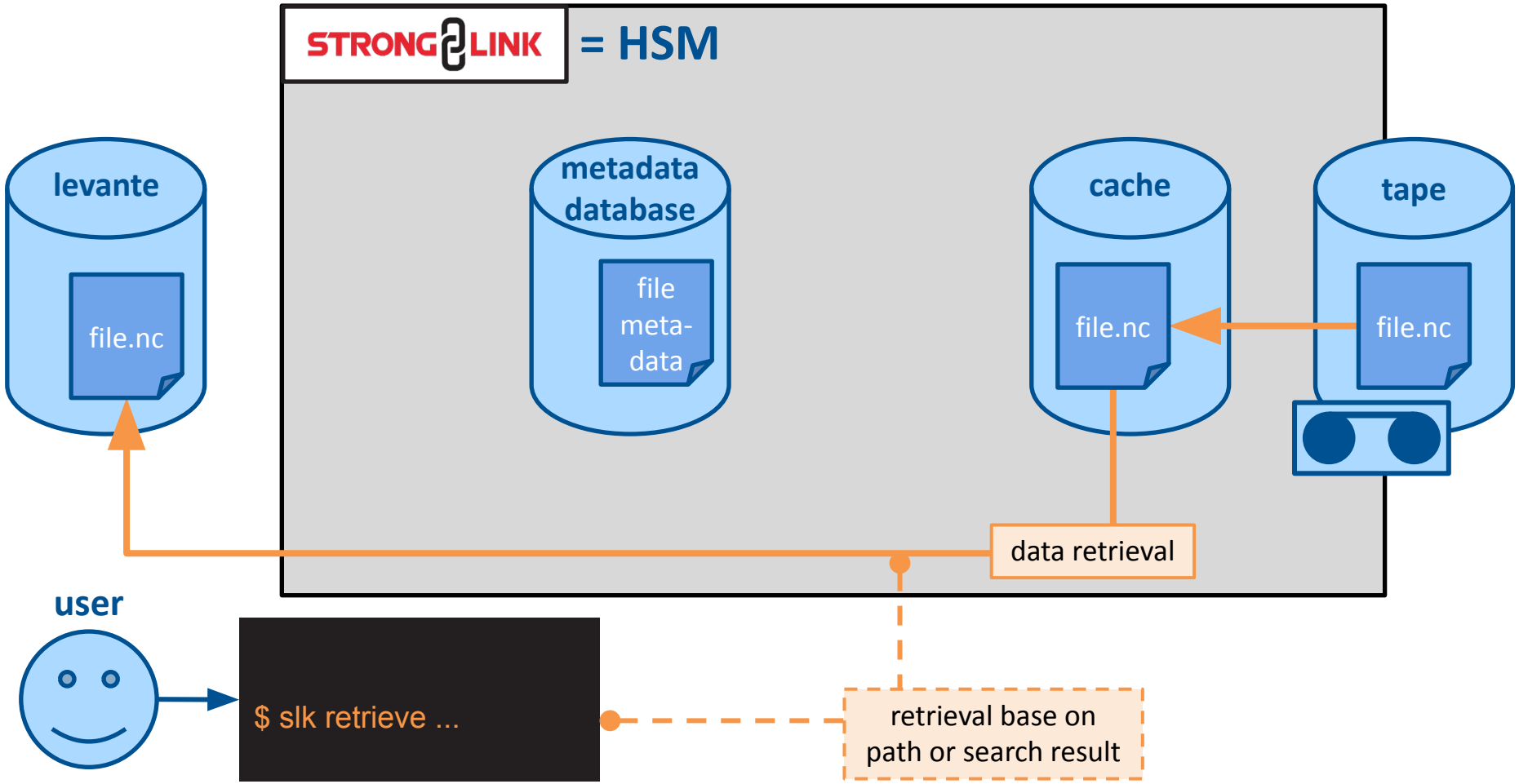

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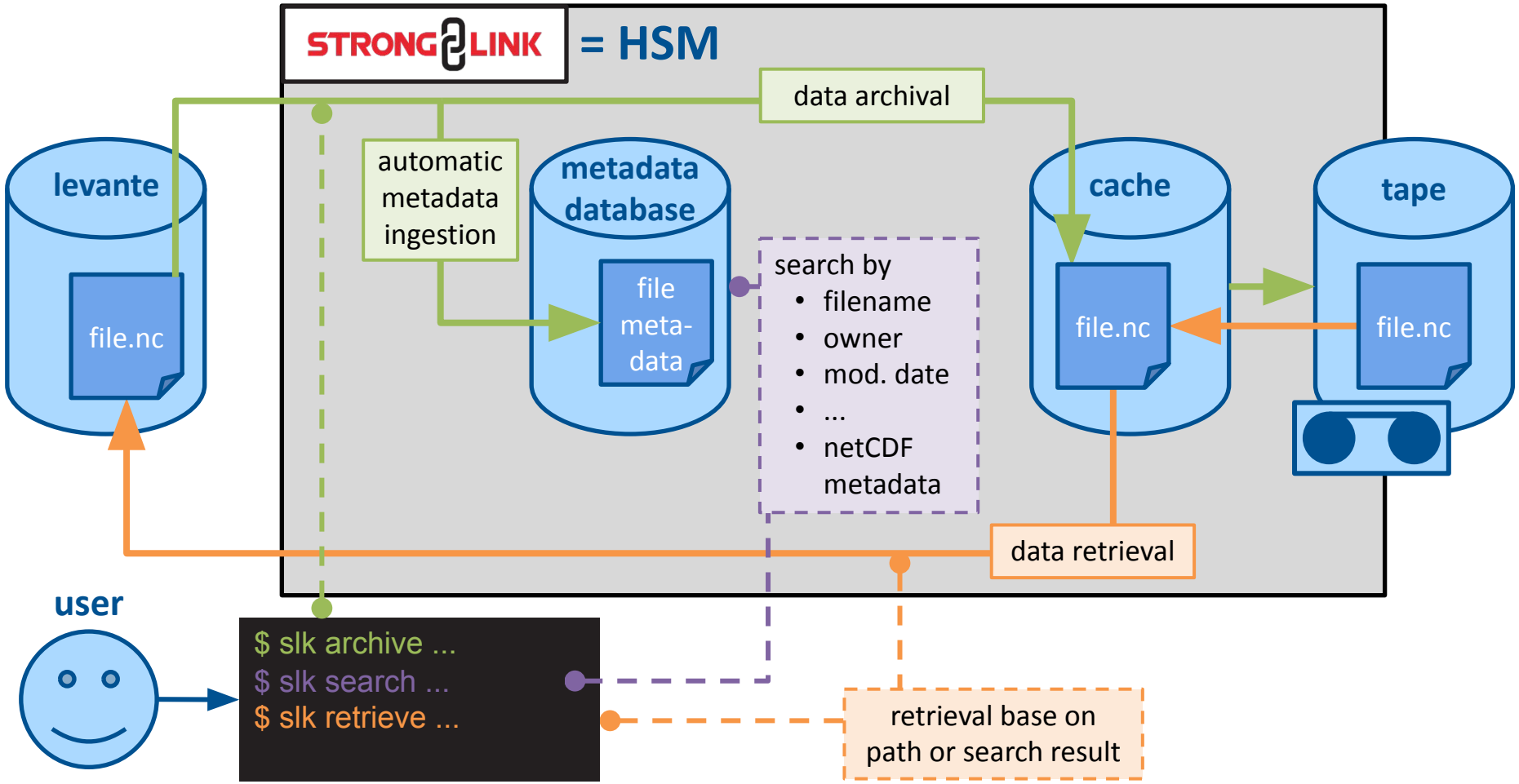
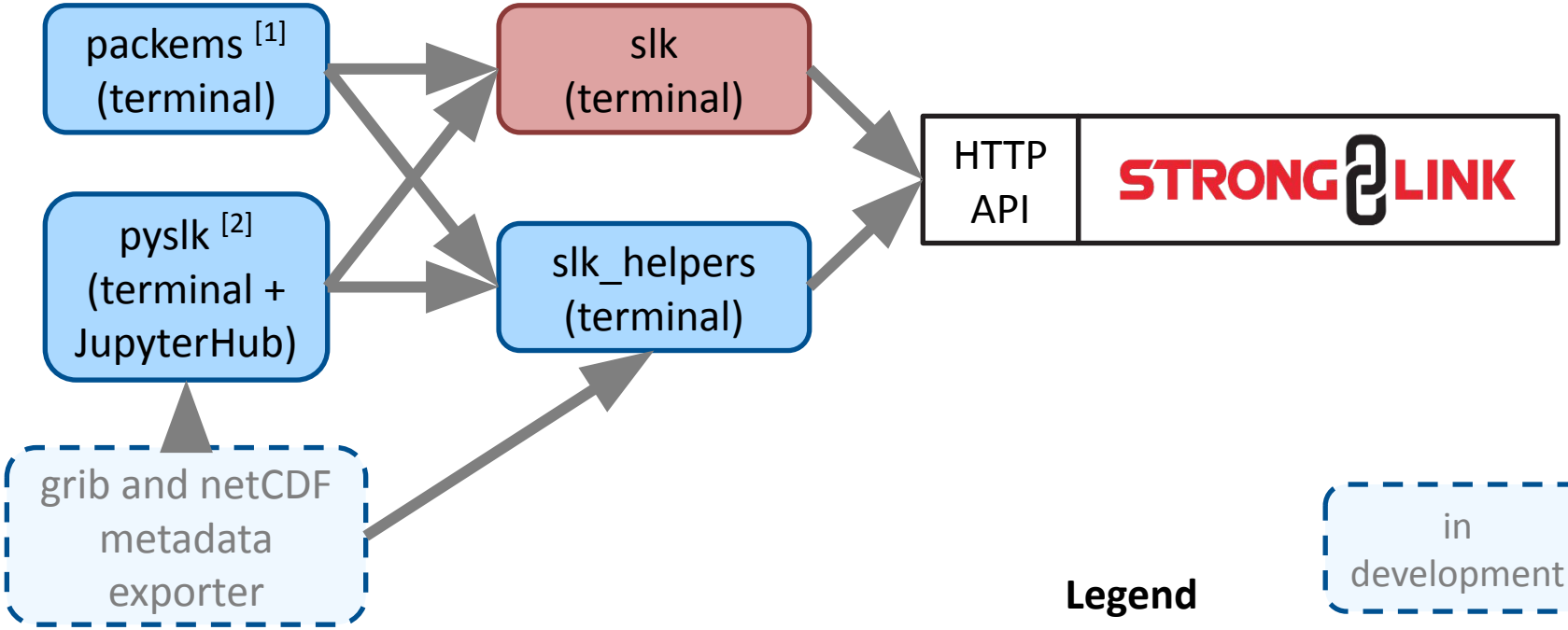


HSM tools



[1] by Kalle Wieners (MPI-M; packems) and DKRZ (listems + unpackems)
[2] DKRZ with contributions from GERICS and hereon

HSM support

- Documentation: docs.dkrz.de
- FAQ: docs.dkrz.de/doc/datastorage/hsm/hsm_faq.html
- issues / questions support@dkrz.de

Hands-On I

archival, retrieval and search

Note: Please start your Laptops and login to Levante

A few questions!

- Did you already use slk?
- Do you experience with netCDF files?
- Do you mainly use grib files?
- Which other data file formats do you use? Do you expect to archive files with this format?

Material

- We will work with slk v3.3.64 (default on levante v3.3.21) and slk_helpers v1.5.1:

```
$ module load slk/.3.3.64-gcc-11.2.0
```

- Training data (levante):

```
/work/bm0146/k204206/material_hsm_workshop
```

- Sandbox in HSM:

```
/workshop
```

Changelog:

slk: https://docs.dkrz.de/blog/2022/changelog-slk-3-3-61.html
slk_helpers: https://docs.dkrz.de/doc/datastorage/hsm/slk_helpers.html#major-changes

slk – first steps

- Login once every 30 days (currently):

```
$ module load slk/.3.3.64-gcc-11.2.0

$ slk login
Username: k204221
Password:
Login Successful

$ slk_helpers mkdir /workshop/$USER
```

Today, we use slk retrieve on the levante login nodes.
Commonly, slk retrieve is deactivated there.
Please use the interactive partition instead:
https://docs.dkrz.de/doc/datastorage/hsm/retrievals.html#interactive-retrieval

Hands-On I

- See workshop_tasks.md

Presentation II

Metadata in StrongLink

Metadata in StrongLink - Motivation

If metadata are properly filled we can ask StrongLink to provide us all files that

- were created:
  - at institute ABCD,
  - with model EFGH,
  - in project IJKL
- and contain variable MNOP.

useful for automated collection of files
e.g. via intake and Freva

Structure of metadata in StrongLink

- Metadata fields grouped into schemes
- each schema reflects metadata of similar file types:
  - *image* (JPG, PNG, …)
  - *netcdf_header* (netCDF3, netCDF4)
- one field may exist multiple times in different schemata
  - „*Title*“ in schema „*document*“ und in schema „*netcdf*“
  - If *document.title* is updated, *netcdf.title* is not automatically updated

Which metadata schemata are useful for us?

- *netcdf*: a general short metadata schema meant for different file formats (also grib) [1]
- *netcdf_header*:
  approx. 100 global attributes from netcdf files [2]
- these schemata are automatically filled when a netCDF file is archived [3]

[1] https://docs.dkrz.de/doc/datastorage/hsm/ref_metadata.html#schema-netcdf
[2] https://docs.dkrz.de/doc/datastorage/hsm/ref_metadata.html#schema-netcdf-header
[3] all global attributes with „_“ and „-“ in name are skipped currently

Metadata Tools

- slk search
  search files based on metadata
- slk tag
  set individual metadata fields
- slk tag -display
  print metadata (JSON), bug in slk 3.3.61!
- slk_helpers metadata
  print metadata (human readable)
- slk_helpers json2hsm
  write metadata from JSON files into the HSM
- slk_helpers hsm2json
  write metadata from HSM into JSON files

Hands-On II

metadata

Note: Please start your Laptops and login to Levante

Hands-On II: Metadata

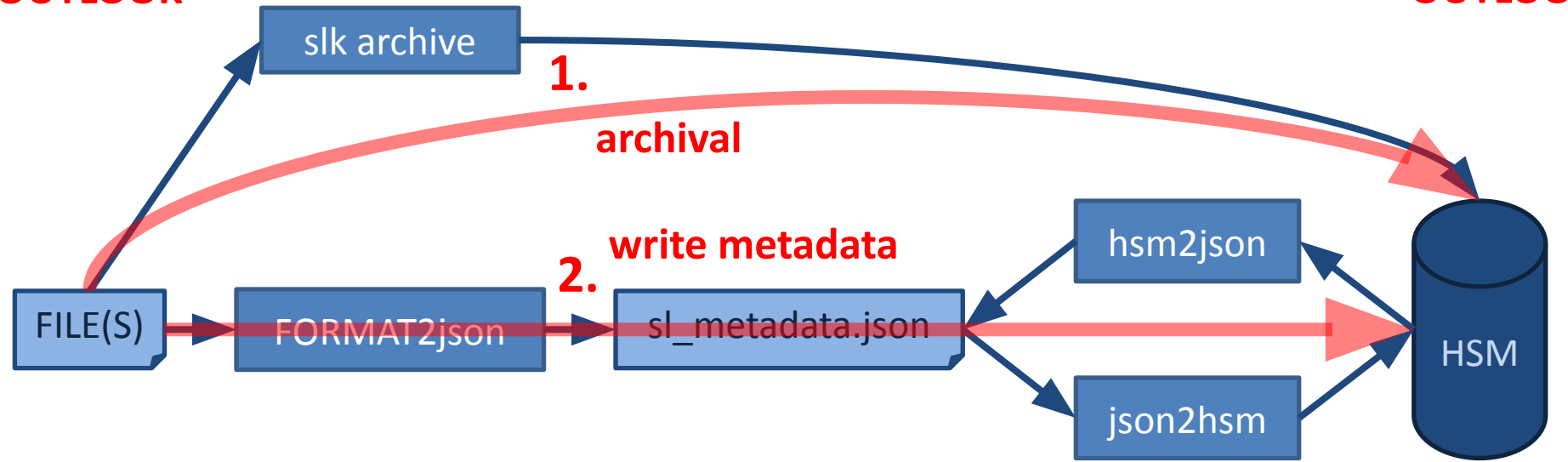
- See workshop_tasks.md

Outlook

for metadata extensions

OUTLOOK

OUTLOOK



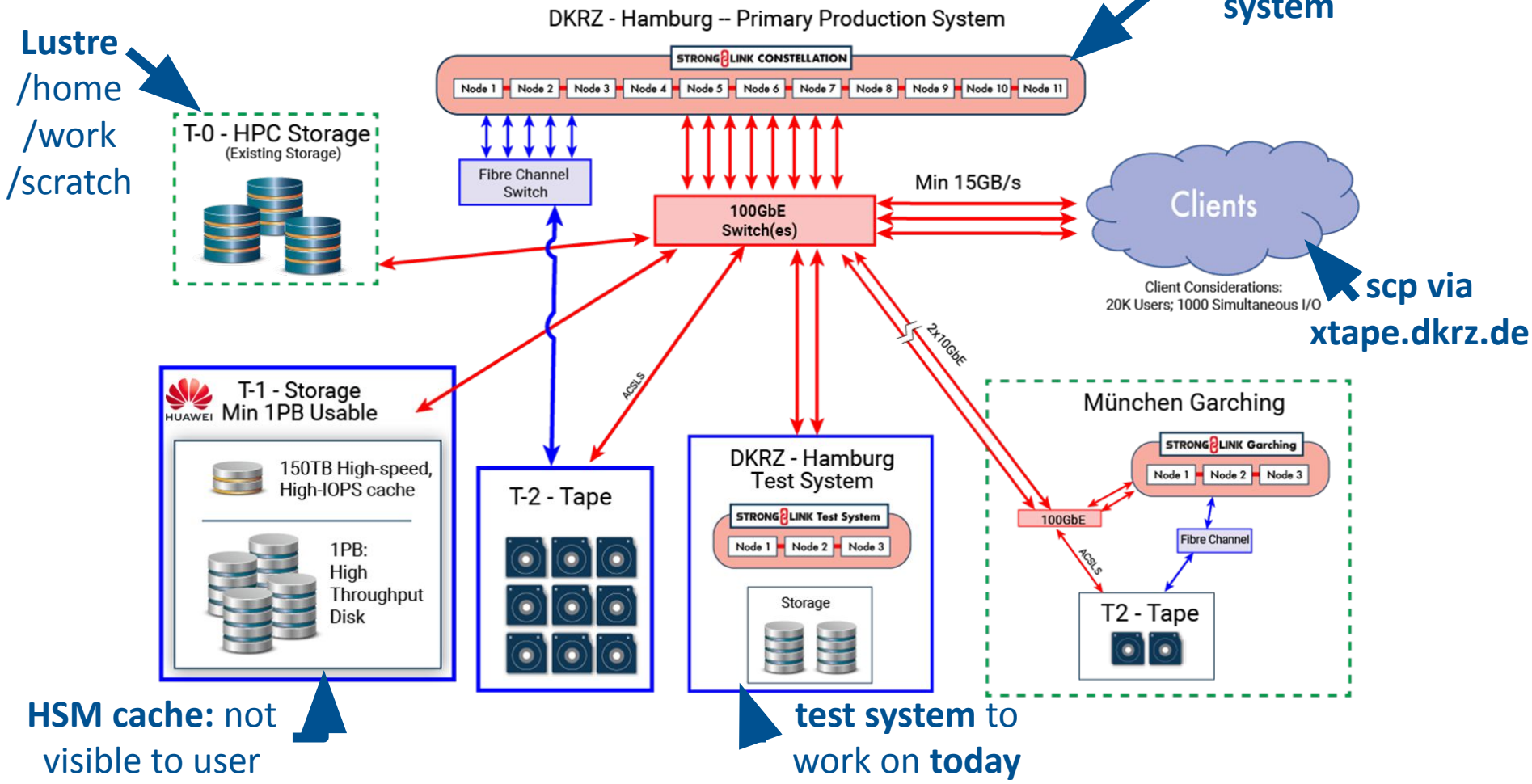
Use Case:

OUTLOOK

OUTLOOK

Q&A

The End

Backup

Detailed hardware setup