The Handle System

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(GWDG)

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Metadata and Persistent Identifiers for
Social and Economic Data
Berlin, 7. May 2012

The Handle System

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Scientific Data
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PID+Metadata
Handle+Metadata

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   - Handle+Metadata

EPIC

EPIC Partners:

GWDG
Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen

SARA
Reken- en Netwerkdiensten

CSC
IT Center for Science

Mission: ... setting up and maintaining a joint service with high availibility for registering, storing and resolving persistent identifiers based on handles for the scientific community on a non-profit basis. (MoU)
Candidates: DKRZ, CINECA, CINES, STFC, BSC, INGV, DESY, PSNC
more ...
http://pidconsortium.eu

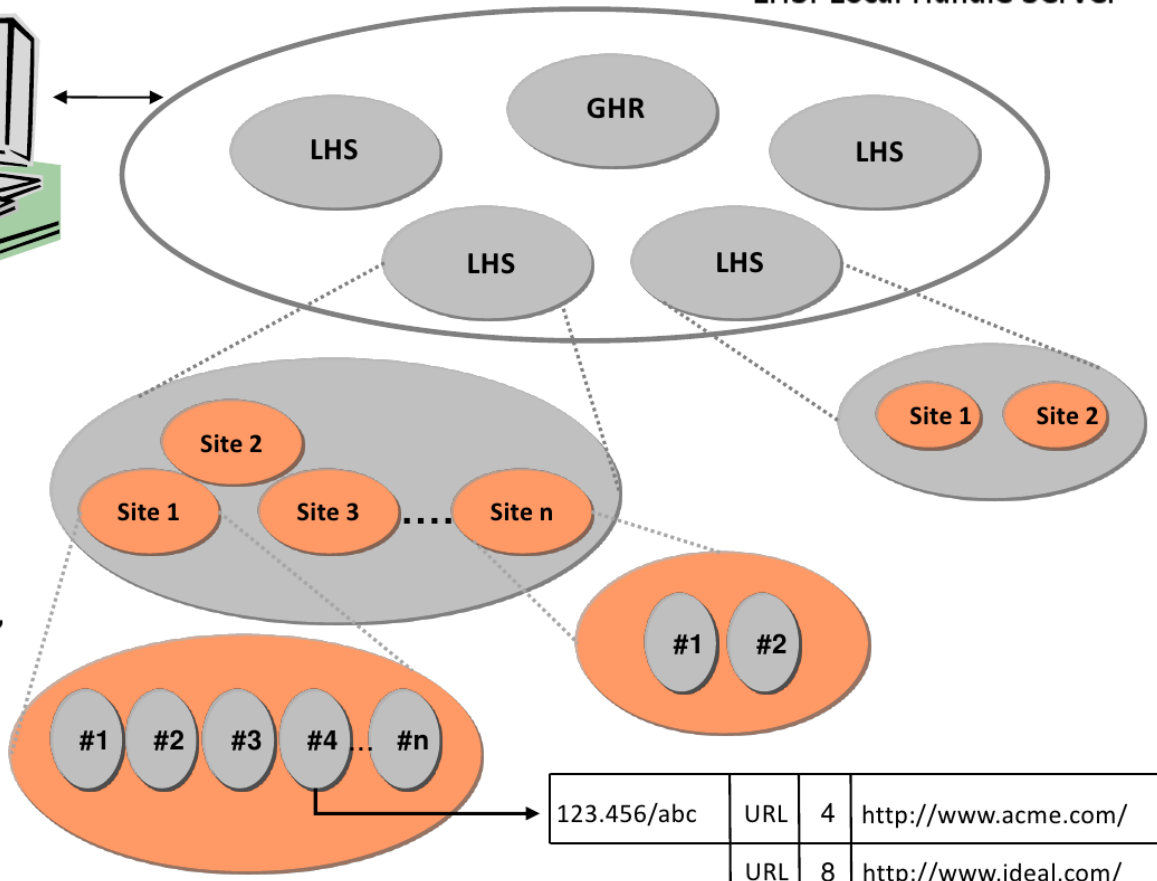
GWDG

- GWDG is a corporate facility of the Max-Planck-Gesellschaft and the
- Georg-August University of Göttingen.
- for both it is IT competence center
- and operates a computer center for all local institutes
- GWDG was founded in 1970 as company.
- is located in Göttingen
- It operates on a non-profit principle
- 25,000 users, 1000 HPC users
- Staff: about 80 employees
- several funded eScience projects

Handle System

Handle Resolution

GHR: Global Handle Registry
LHS: Local Handle Server



The Handle System is a collection of handle services, each of which consists of one or more replicated sites, each of which may have one or more servers.

123.456/abc	URL	4	http://www.acme.com/
	URL	8	http://www.ideal.com/

Handle System

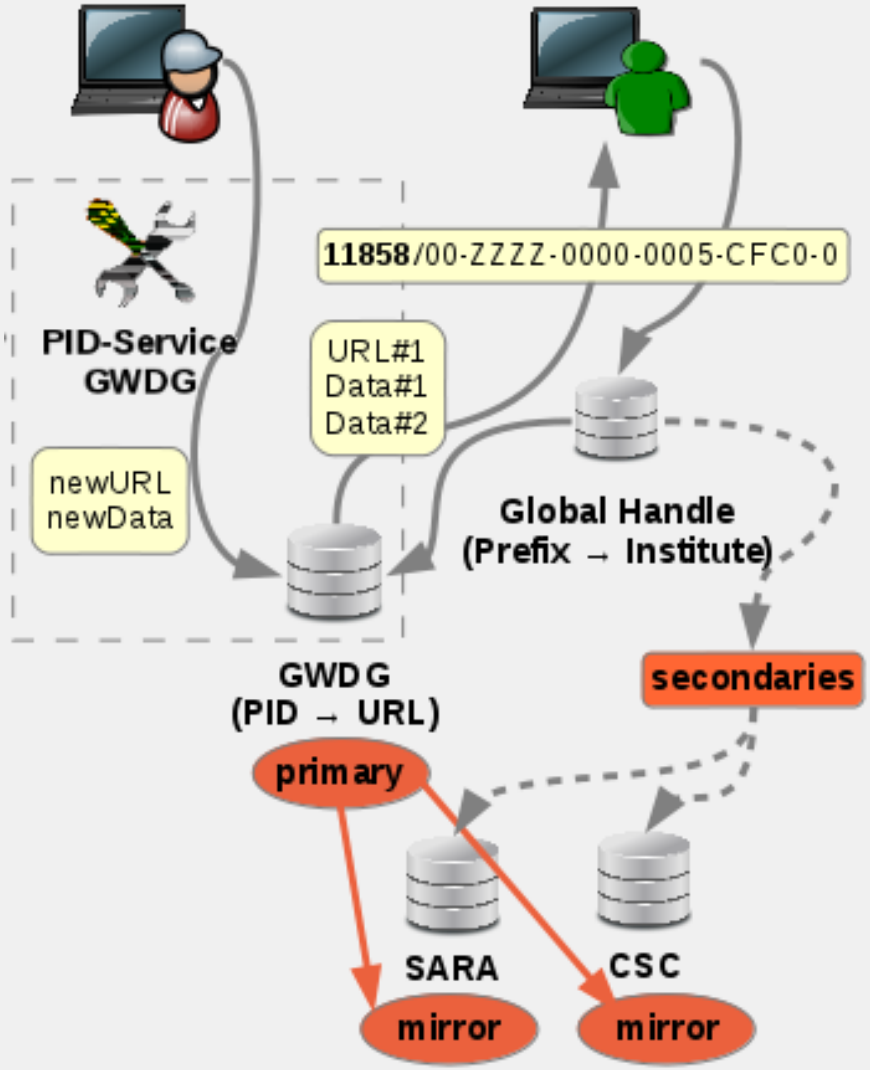
- Highly redundant resolution system
  - LHS resolves for one prefix
  - Secondary LHS is mirror of Primary
  - Answer given by the fastest LHS
- Single point of failure: GHR?
  - GHR is a cluster of servers
  - Secondary GHR at GWDG and in China (and Australia in near future)

Handle System

Quality and Trust

- uniqueness has to be guarantueed by the LHS
  - as the other trust issues too
- EPIC is aimed to build an umbrella for handle LHS
  - with common software bases
  - common quality of service
  - mutual backup of services

Handle System



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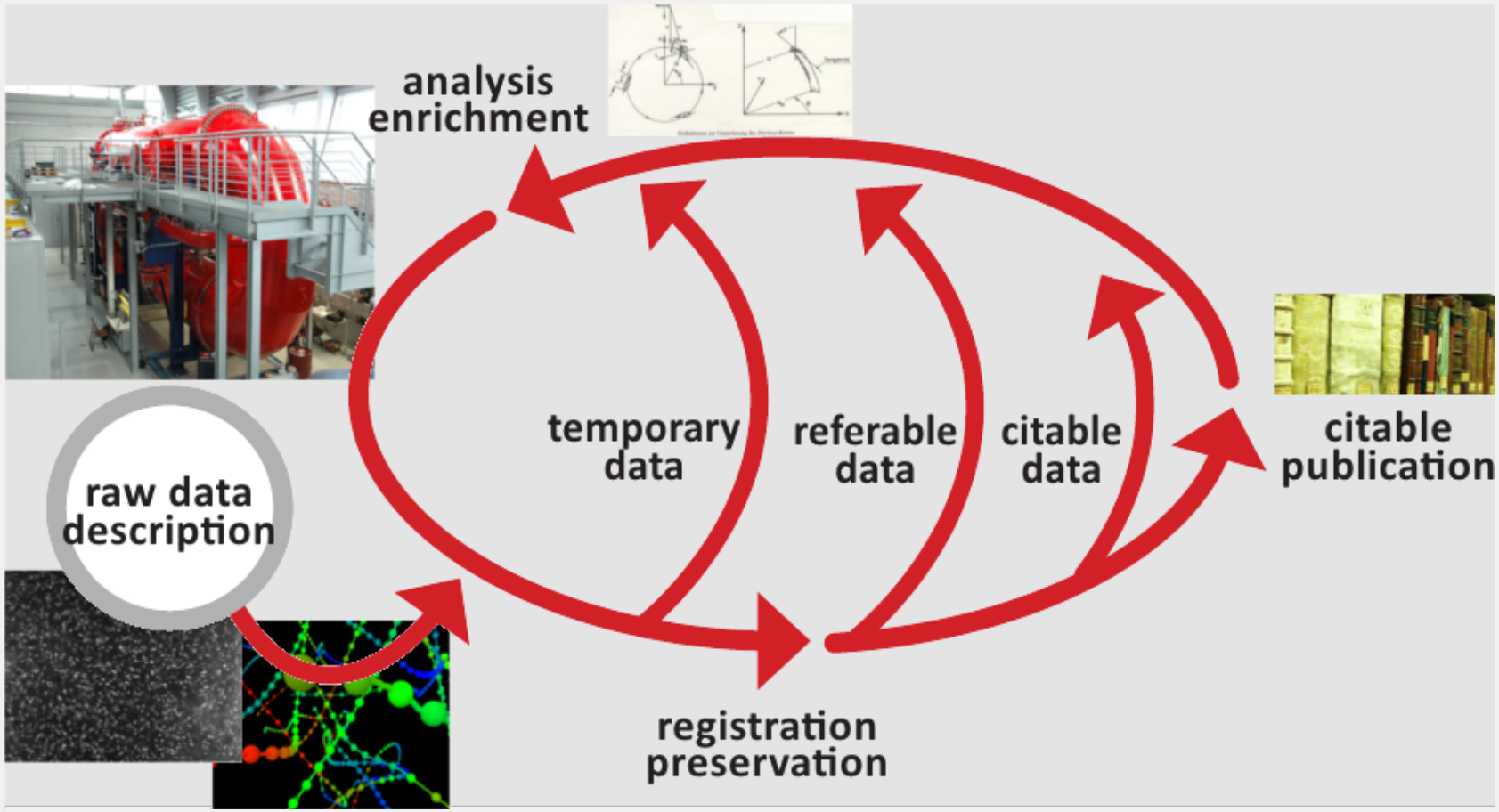
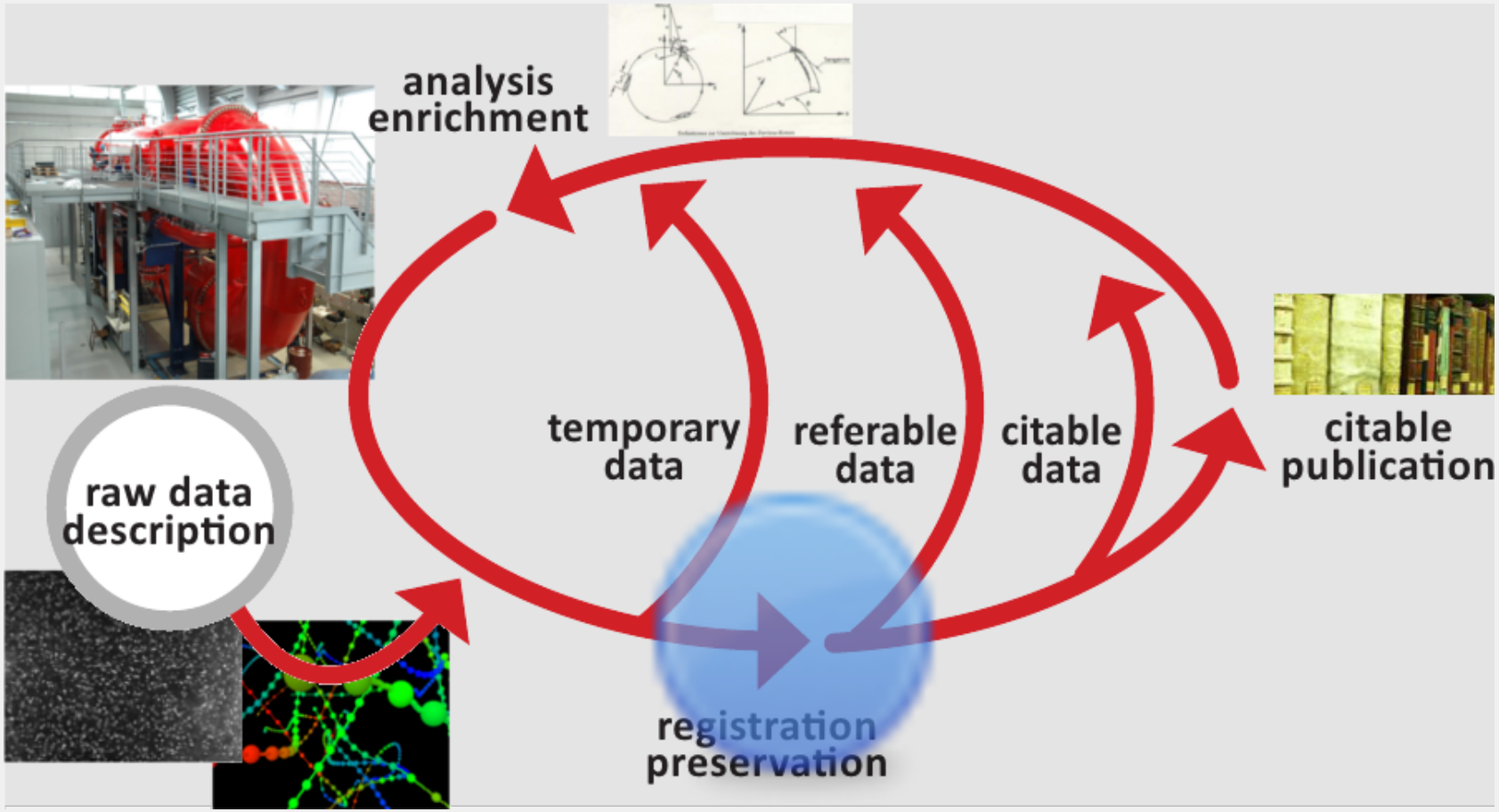
The Lifecycle of Scientific Data



The Lifecycle of Scientific Data

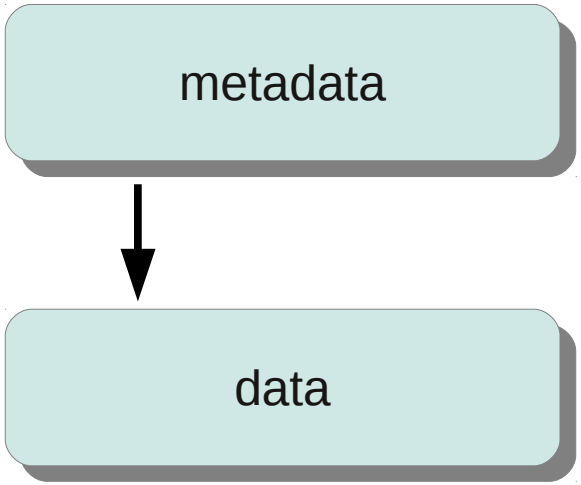


The Lifecycle of Scientific Data

- scientific data, that is not cited, may (must?) be removed after a while
  - due to data lifecycle management to fullfil good scientific practices
  - because storing data becomes more and more expensive
- remember: persistence in PID means persistence of the identifier, not necessarily of the data

Maintaining Data Objects

Maintaining Data Objects



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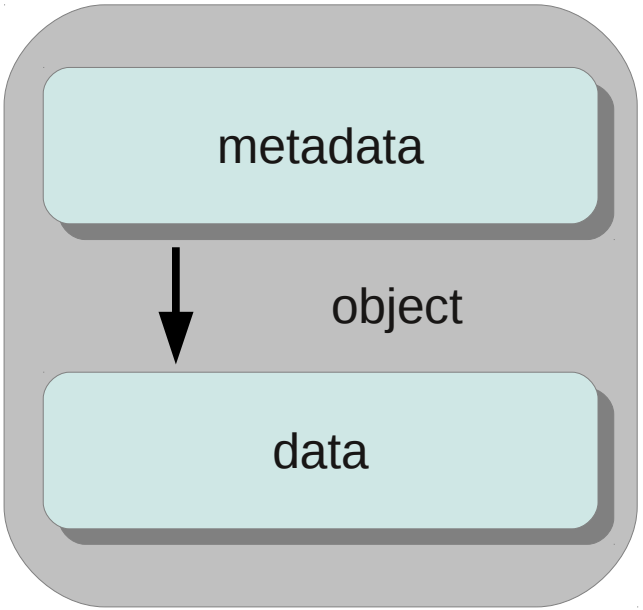

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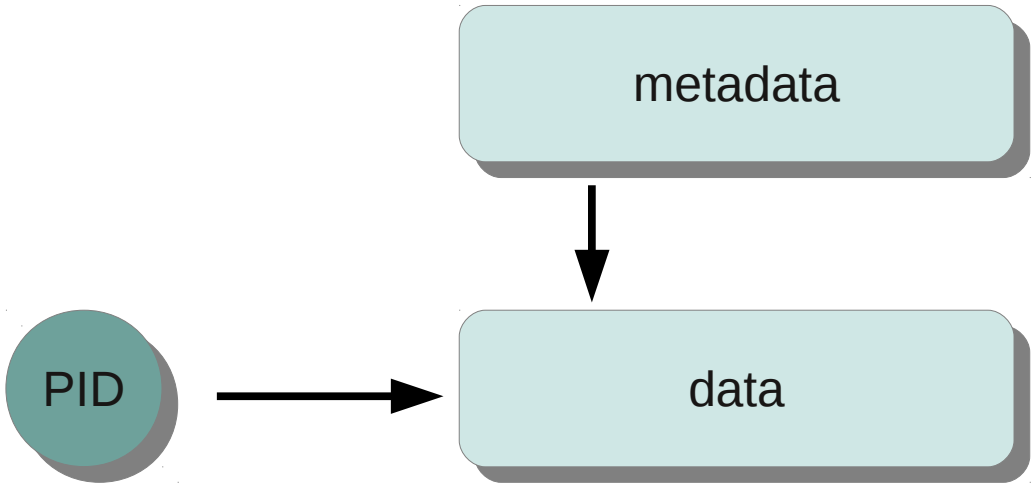

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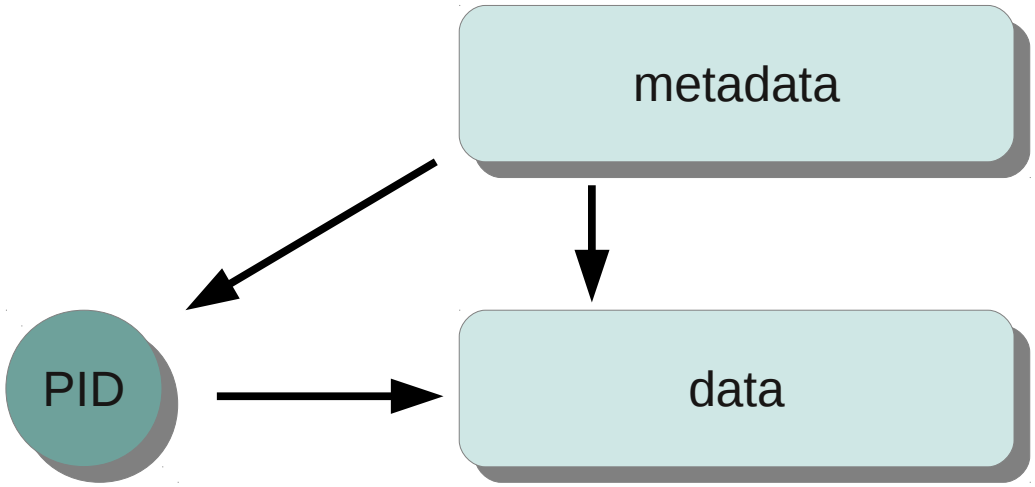

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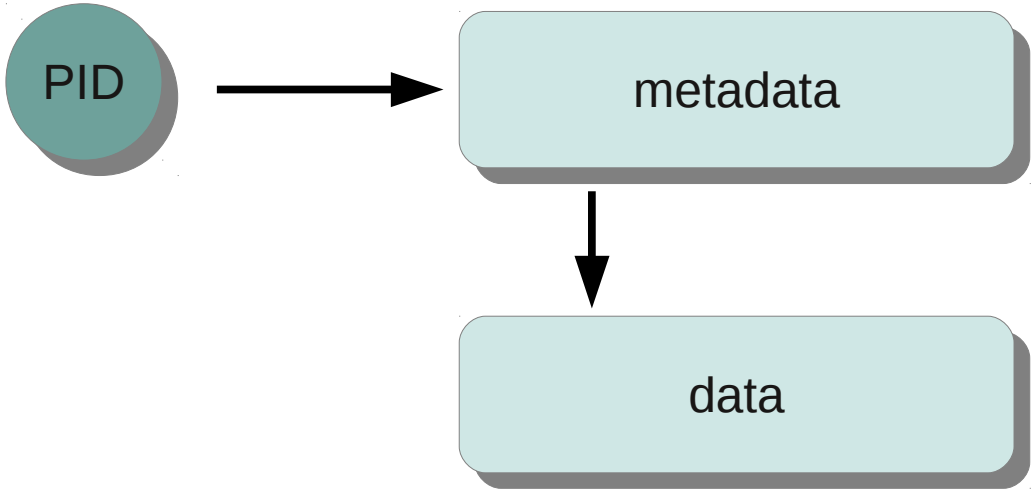

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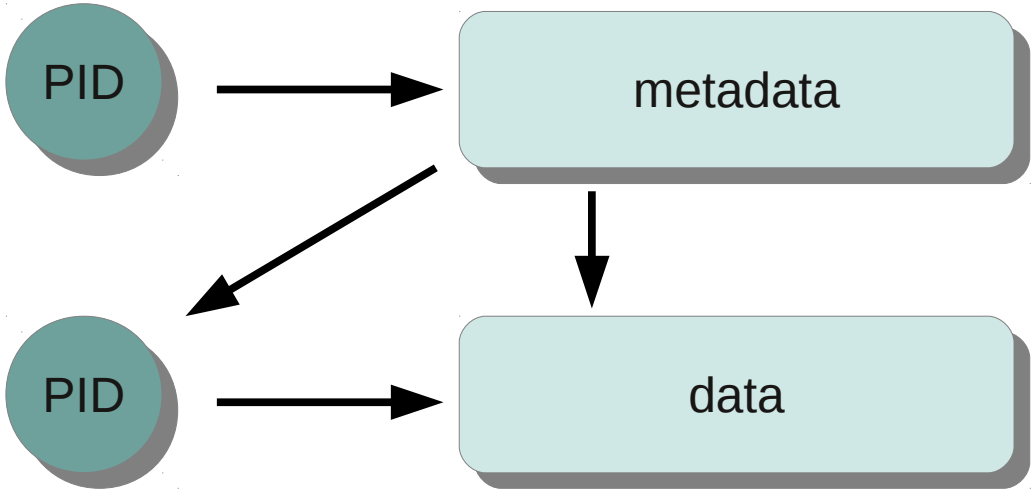

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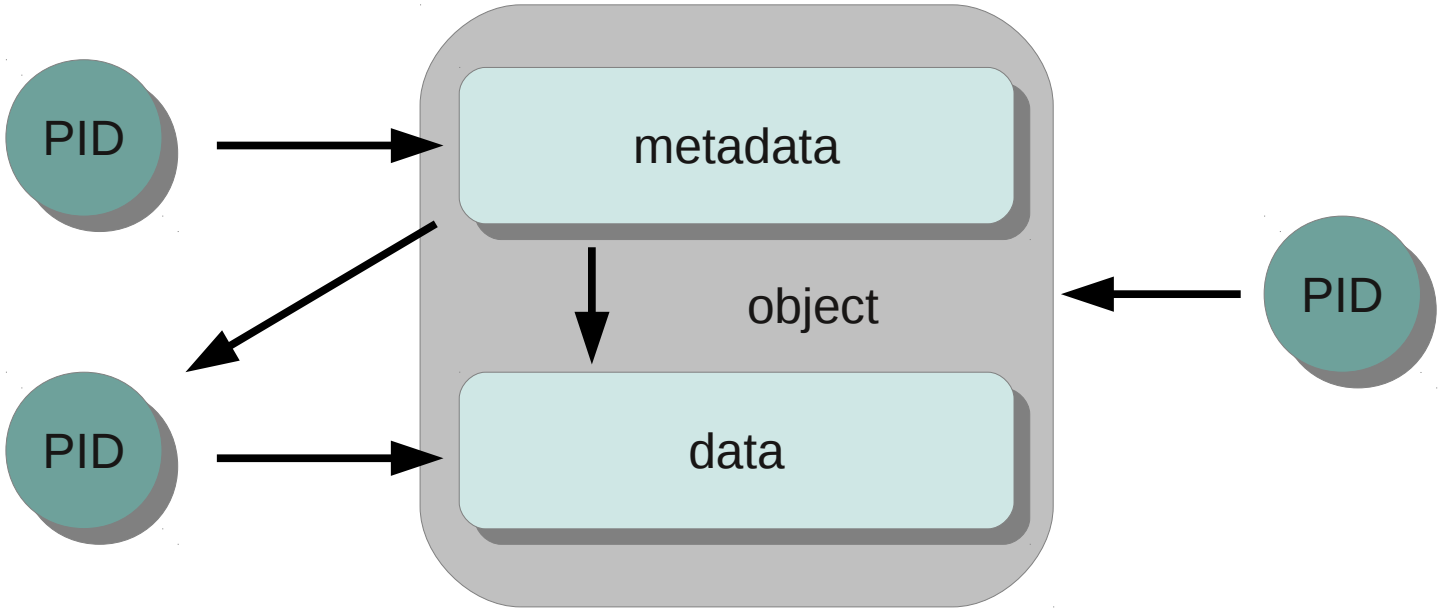

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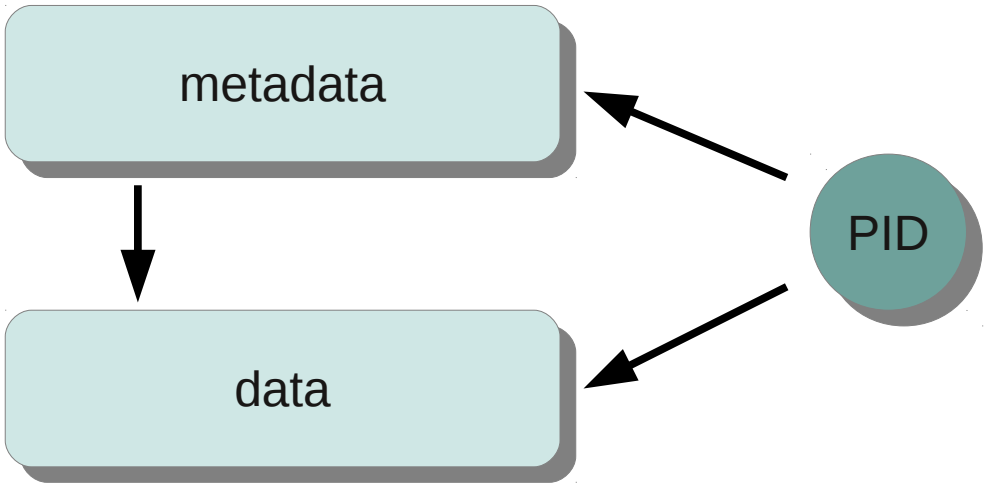

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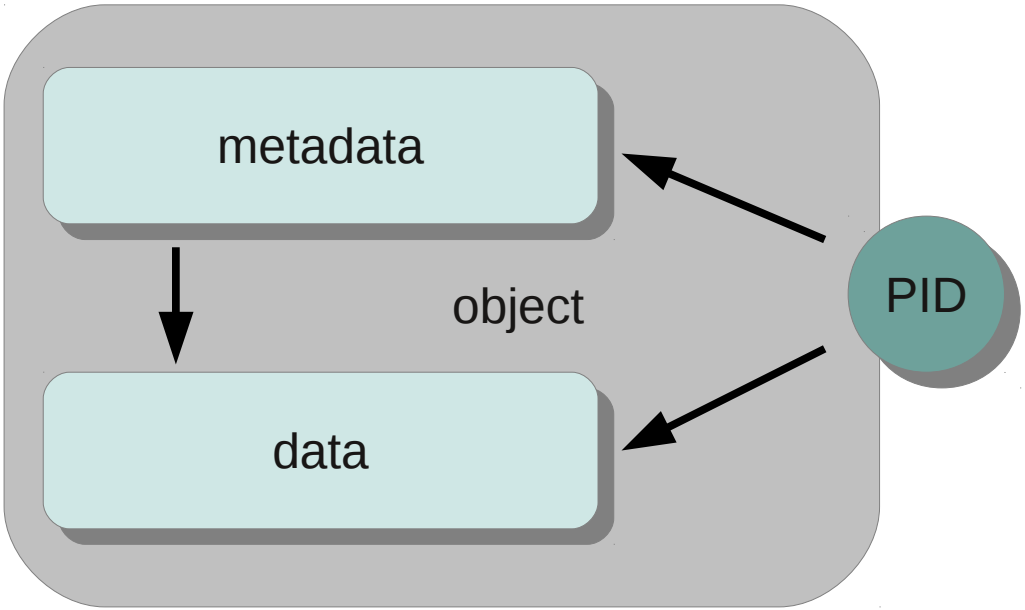

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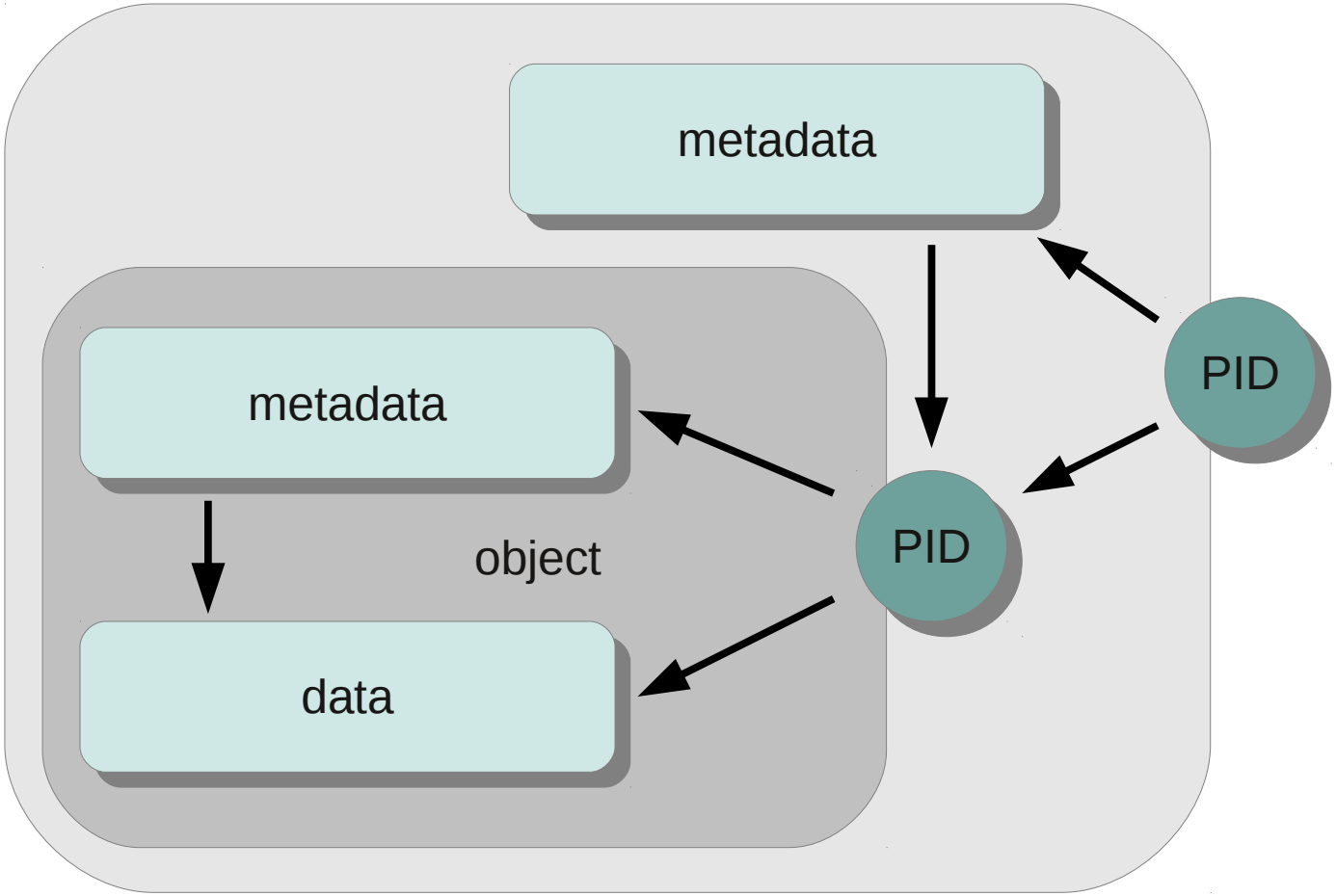

Handle, Data and Metadata

- what can the handle system do, to refer to both: data and metadata?
  - the handle PID is originally designed for one reference: it resolves to the URL
- but:
  - handle uses a database to store the URL for a PID
  - this database can contain other fields too
  - and the LHS can be asked to resolve these other fields

Handle, Data and Metadata

Examples of other PID fields:

- expiration date
  - because scientific data gets outdated, the PID must contain an expiration date
  - or the PID must point to the metadata, that contains the expiration date
  - in any case one needs to get more information, then just the URL of the object
  - expir.date can be part of the metadata if and only if PID points to metadata or to both, data and metadata
- checksum
  - for integrity check it makes sense to maintain a checksum
  - checksum can be part of the metadata if and only if PID points to metadata or to both, data and metadata
- metadata
  - must be an additional field if one also wants the PID to refer to the data directly

the current EPIC solution

11858/00-ZZZZ-0000-0005-BD17-A
Prefix / Suffix

Create Verbose Handle

URL: http://www.gwdg.de/~parallel/parallelrechner/Hardware_Ueberblick.pdf
Filesize: (in bytes)
Checksum: (optional, see below)
Checksum is write-once, lower case hex: 'md5:32digits' or 'sha1:40digits'
Title: Parallelrechner Hardware Ueberblick der GWDG
Author(s): Ulrich Schwardmann
Publication date: 2010-11-12 (see below)
Expiry date: (optional, see below)
Dates can be in format yyyy, yyyy-mm-dd or yyyy-mm-dd hh:mm:ss
Metadata URL: http://www.gwdg.de/~parallel/parallelrechner/Hardware_Ueberblick.xml
Suffix: (user defined, optional)
Confirm in XML: (default: HTML)
Enter data above and Create Verbose Handle

XML-Output of Handle content


```
−<pidserviceresponse>
  <action>view</action>
 −<Handle>
    <pid>11858/00-ZZZZ-0000-0005-BD17-A</pid>
   −<url>
      http://www.gwdg.de/~parallel/parallelrechner/Hardware_Ueberblick.pdf
    </url>
    <size>-1</size>
    <pubdate>2010-11-12</pubdate>
    <title>Parallelrechner Hardware Ueberblick der GWDG</title>
    <authors>Ulrich Schwardmann</authors>
   −<metadata_url>
      http://www.gwdg.de/~parallel/parallelrechner/Hardware_Ueberblick.xml
    </metadata_url>
    <creator>demo2</creator>
  </Handle>
 −<User>
    <uid canCreate="no" canModify="no">anonymous</uid>
  </User>
</pidserviceresponse>
```

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    <size>-1</size>
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Thanks for your attention

Questions ???