ePIC - Persistent Identifiers for eResearch

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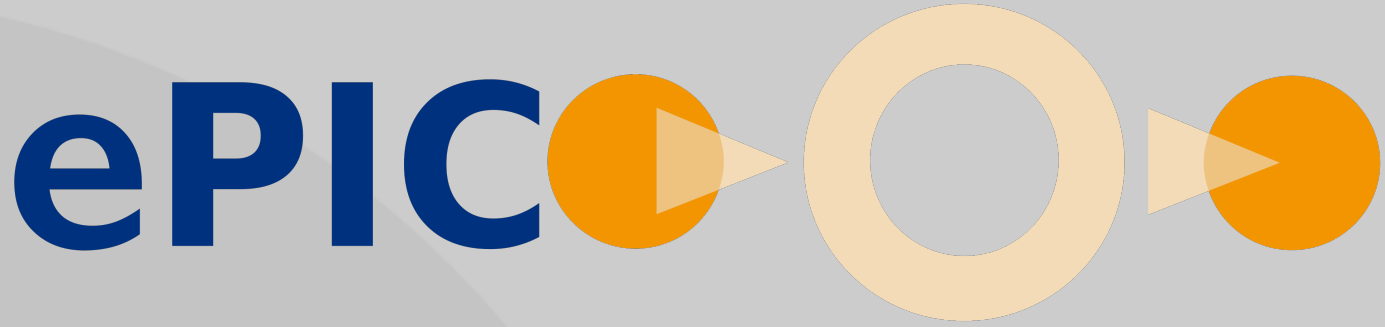
Persistent Identifiers for eResearch



Persistent Identifiers for eResearch

ePIC
Mission
Trust and Reliability
Research Data
PIDs for Data Intensive Research
Flexilibity
Granularity
Use Cases

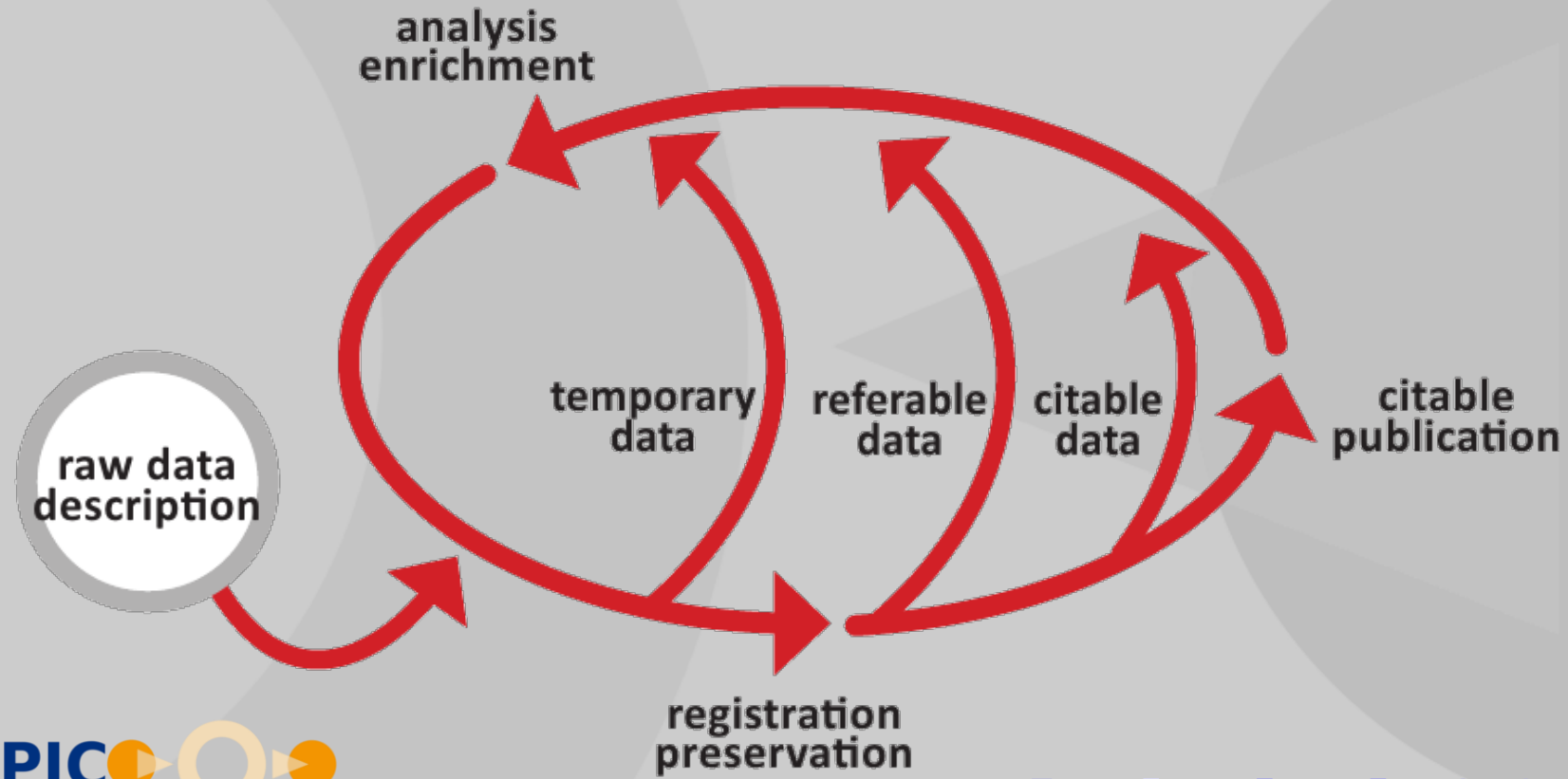
Luce (2008): *... eResearch refers to the development of, and the support for, advanced information and computational technologies to* **enhance** *all phases of research processes. ...*

ePIC provides **enhanced** Persistent Identifier
in order to **accelerate** the Research Life Cycle

The Research Data Life Cycle

data intensive research is highly collaborative

- scientists share data already in an early state
- ad hoc techniques for sharing are often prohibitive
- reliable references can accellerate the Research Life Cycle



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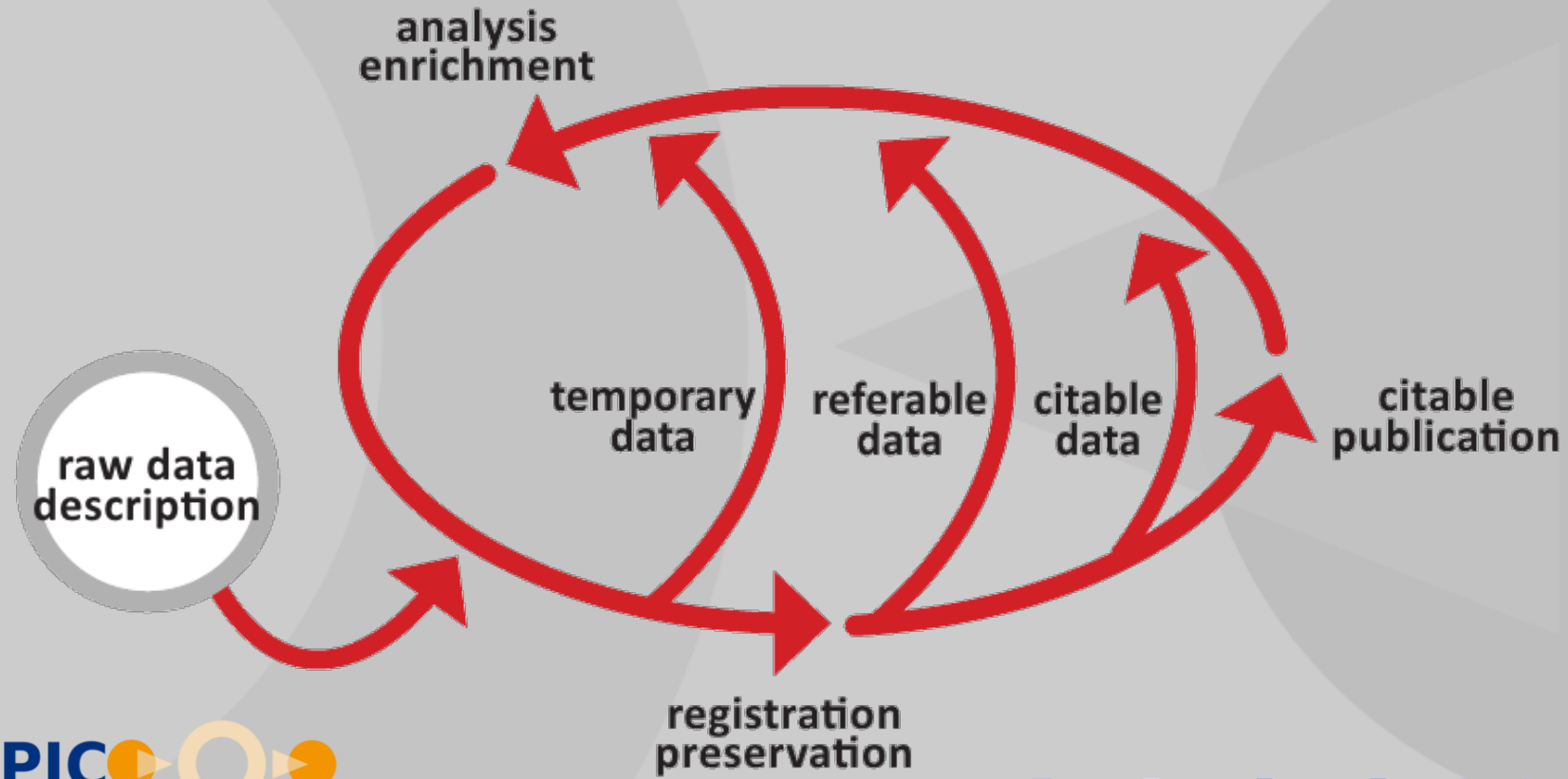

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The ePIC Members

build a network of currently six strong scientific service providers signed a contract

- to ensure a reliable and persistent identifier infrastructure
- devoted to the needs of the research community at large.

Mayor focus: the referability of data

- with finer granularity and
- for sharing during the research process

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The ePIC Members

- signed a contract to ensure
  - high availabitity for the PID services and
  - a long term perspective at organisational level
- have agreed on a Quality of Service Level,
- have implemented a redundancy scheme
- share the same service, the same API
- and the same framework of policies

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The ePIC Members

- ePIC has minted already more then 30 million PIDs
- uses currently about 30 prefixes
- two with more than 8 million, three with more than 2 million PIDs
- ePIC takes an important part in the global Handle System
- GWDG is on behalf of ePIC a Multi Primary Adminstistrator in **DONA**
- GWDG provides on behalf of ePIC a **DONA MPA GHR** and a **Handle Proxy Server**
- ePIC is interested to run a data type registry as part of **Cordra**

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Quality of Service

- Conditions of Operation
  - user management, privacy protection and secrecy
- incident management and monitoring
- support system with agreed responsabilties
- certification of ePIC PID services
- several policies for PID minting and update agreed
  - others are still under discussion
- quality of resolution
  - audits can be requested

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Sharing Data in Research

- data sharing of early results requires
  - a reliable framework of trust
  - transparent and standardized policies
  - registration for referable data
    - strong coupling between data and metadata
    - stable references
  - but also a review procedure to delete data

PIDs can be the pivot to fulfil these requirements

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Flexilibity

- ePIC PIDs can be enhanced with policies for sharing data for
  - stable references
  - transparent embargo and deletion rules
  - transparent provenance
  - direct access to data and metadata
- flexible rules for data registration granularity
- performance of resolution and minting
  - depending on needs for speed and policy

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Types

- are additional metadata stored in the PID database
- intended to be directly accessible independent of any redirection
- typical cases are
  - checksum
  - mime type (incl. version)
  - embargo time
  - expiration date
  - add. metadata file
  - basic Dublin Core

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Granularity

digital objects shared with other scientists for investigation have *finer granularity*

- use cases are
  - single experiments
  - simulation output and/or parameter sets
  - single files, tables, pictures, single scanned pages or video/audio sequences
  - snapshots of sensor outputs (dynamic data)
  - software and software versions
- in some cases these sets of digital objects are highly structured
  - and accessible by parameterized services
  - here also *templates* or *fragment identifiers* can be a solution

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Templates or Fragment Identifier

rules for strings appended to the PID (see IETF RFC 6570)

- often used to address *service functions* operating on digital objects
- the template implementation in the handle system is simply a rewrite rule
- delimiter and replacement is configurable at prefix level
- *example*
  - delimiter is `@`, which is replaced by `?`
    `11858/00-ZZZZ-0000-0001-CCD1-4@aaa=bbb&ccc=ddd`
  - translates into:
    `http://wwwuser.gwdg.de/~tkalman/downloads/formtest.php?aaa=bbb&ccc=ddd`
- be **careful**: fragment identifier are much **less persistent** then the PIDs itself
- the rewrite rule can be much more complex:
  - replace semantic string elements like URLs by other strings
  - use delimiter strings instead of characters
  - ...

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Variation in the Needs for Close Metadata

properties of digital objects and there needs for close metadata

	checksum	checksum fixed	metadata pointer	author	basic Dublin Core	mime type & version	creation date	expiration date	embargoes	versioning	templates & services	fine data granularity
edition	*		*		*					*	*	
object of edition	*			*			*		*		*	*
electronic lab notebook	*		*		*					*	*	
notebook entry		*	*	*					*			*
experiment output	*			*		*	*	*	*		*	*
image library			*		*							
image	*			*		*	*	*		*	*	*
repository entry	*			*	*	*		*		*	*	

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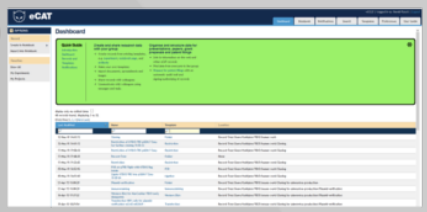
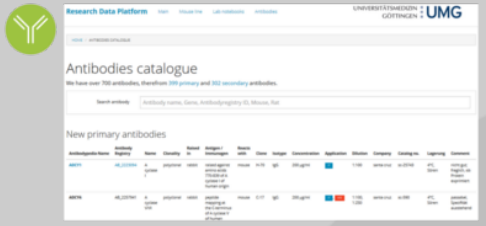
CRC1002: Modulatory Units in Heart Failure

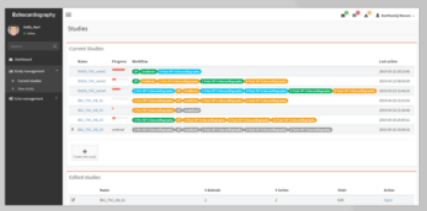
Collaborative Research Centre funded by: *Deutsche Forschungsgemeinschaft*



- template development
- based on existing standards



- Adaptation to PSI-MI/MIAPAR
- Antibody Registry/Antibodypedia



- automatic EPIC PIDs for datasets
- links to Biological databases

- PubMed standard and Indexing Number (PMID)
- PubMed Central referencing number (PMCID)
- Journal Digital Object Identifier (DOI)

- Unique name (EPIC PID)/URL

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