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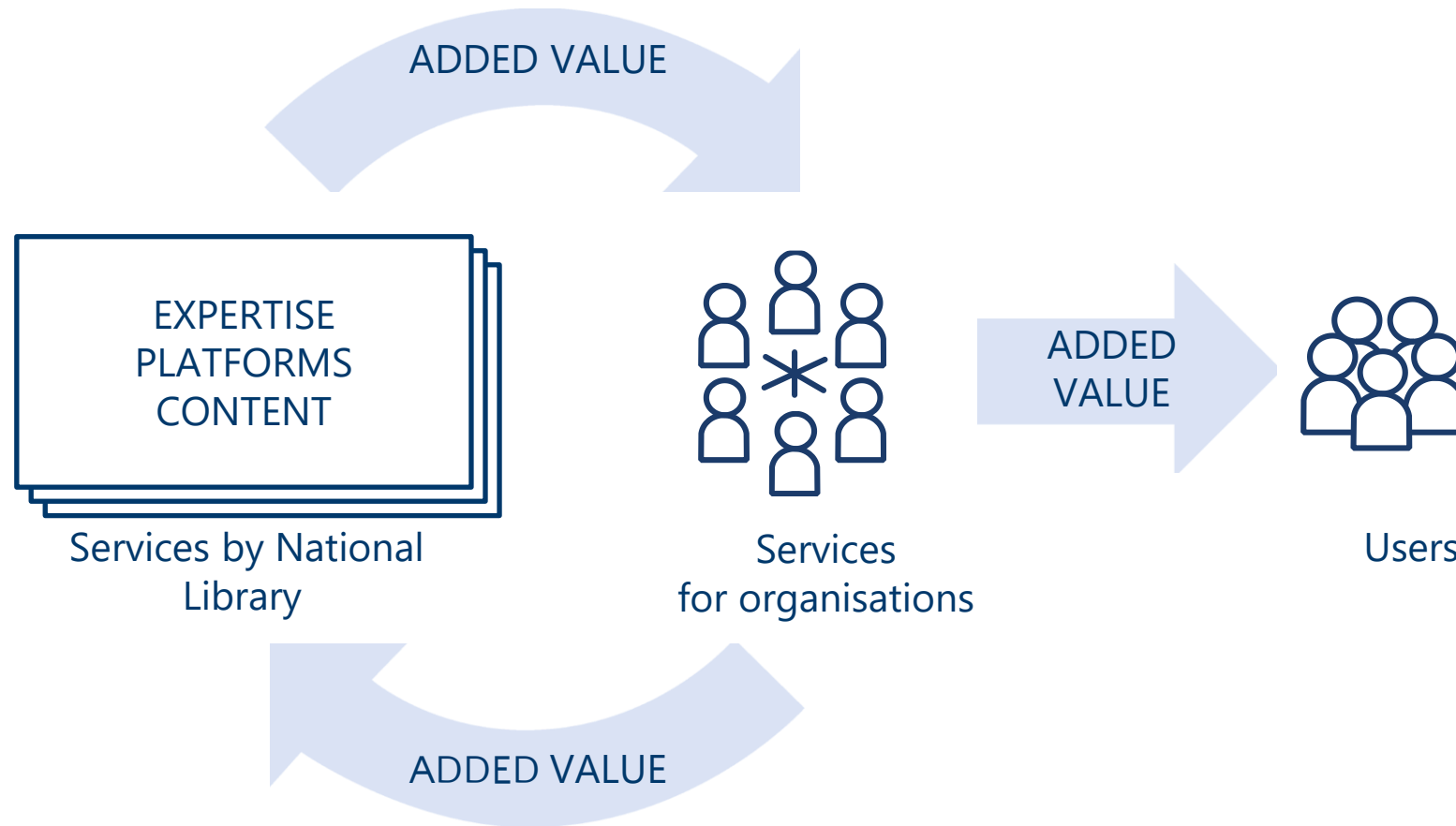# Long live the knowledge!

Proper metadata and how it is created with URN and other persistent identifiers

Matias Frosterus, Riitta Koikkalainen,
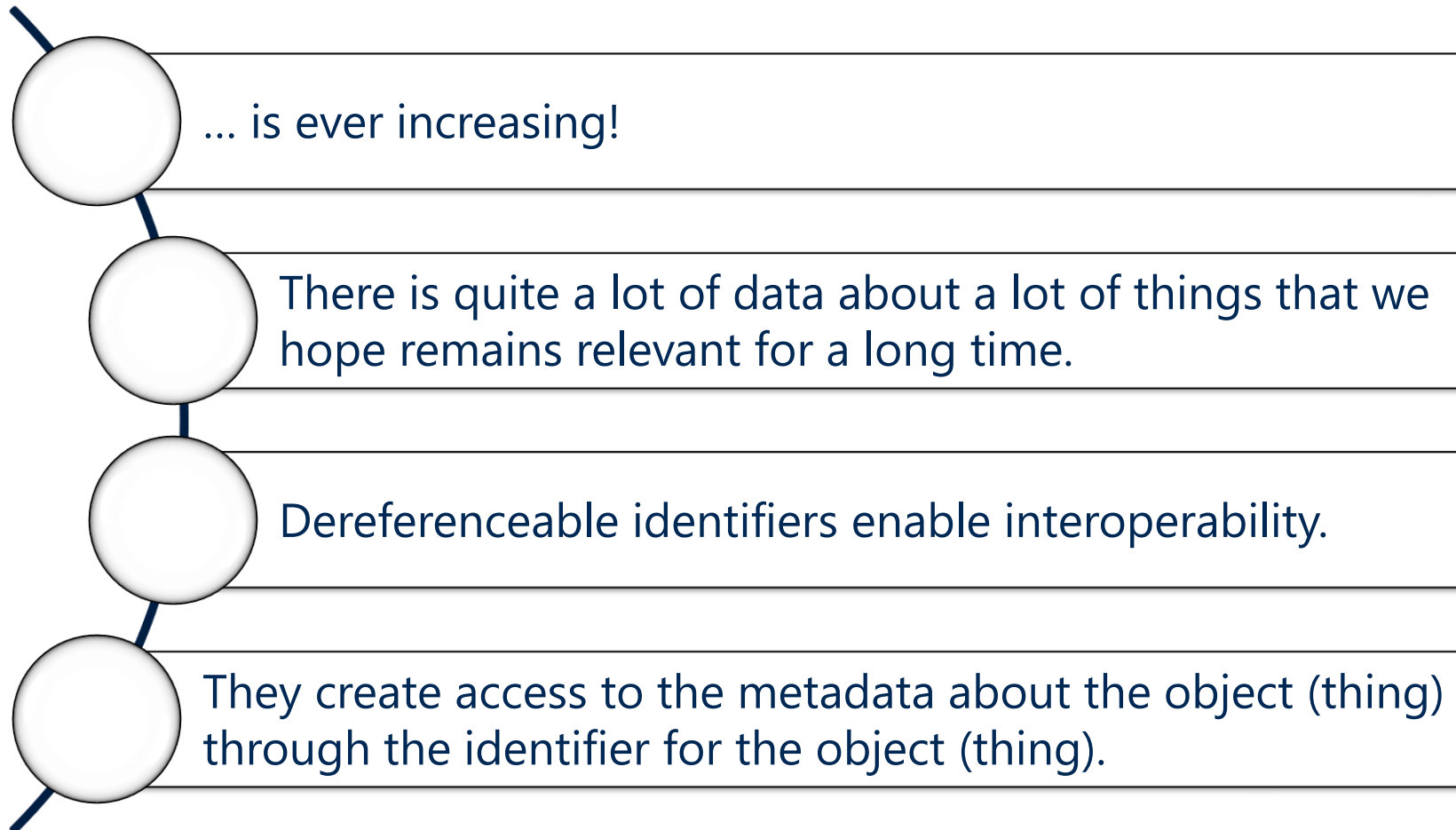Emma Pietarila, and Ulriika Vihervalli

Contents

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The National Library of Finland, at your service

ADDED VALUE

EXPERTISE
PLATFORMS
CONTENT

Services by National
Library

Services
for organisations

ADDED
VALUE

Users

ADDED VALUE

FOSTERING ACCESS, ACCESSIBILITY AND REUSE OF CONTENT

Importance of PIDs for libraries and other cultural heritage organisations (1/2)

… is ever increasing!

There is quite a lot of data about a lot of things that we hope remains relevant for a long time.

Dereferenceable identifiers enable interoperability.

They create access to the metadata about the object (thing) through the identifier for the object (thing).

Importance of PIDs for libraries and other cultural heritage organisations (2/2)

PIDs are needed for:

- long-term preservation
- objects to be identified reliably
- objects to be identified persistently
- to meet FAIR principles

National library of Finland & identifiers, esp. URN

National Library of Finland & identifiers – PIDs included (1/2)

Nat Lib Fi has an active role in standardisation.

We have an identifier service to organise what we do.

The service has been surprisingly difficult to package and market.

National Library of Finland & identifiers – PIDs included (2/2)

NatLibFi distributes traditional identifiers (ISBN, ISSN, ISMN) as well as PIDs like ISNI and URN.

Main focus on
- libraries
- wider GLAM
- publishers
- and beyond: public administration, copyright organisations, etc.

Close up:
URN

Uniform Resource Name, URN

Internet standard – RFC 8141 (2017)

first use at NLF in 1997

urn.fi service launched in 2007

URN:ISBN – RFC 8254 (2017)

URN:NBN – National Bibliography Number, RFC 8458 (2018)

- digitised material: maps, manuscripts, sketchbooks...
- born-digital material: theses, reports, other e-publications

URN Structure

URN	Namespace identifier	Namespace specific string
URN:	NBN:	fi-fd2023-00032488
URN:	ISBN:	978-952-64-0323-6
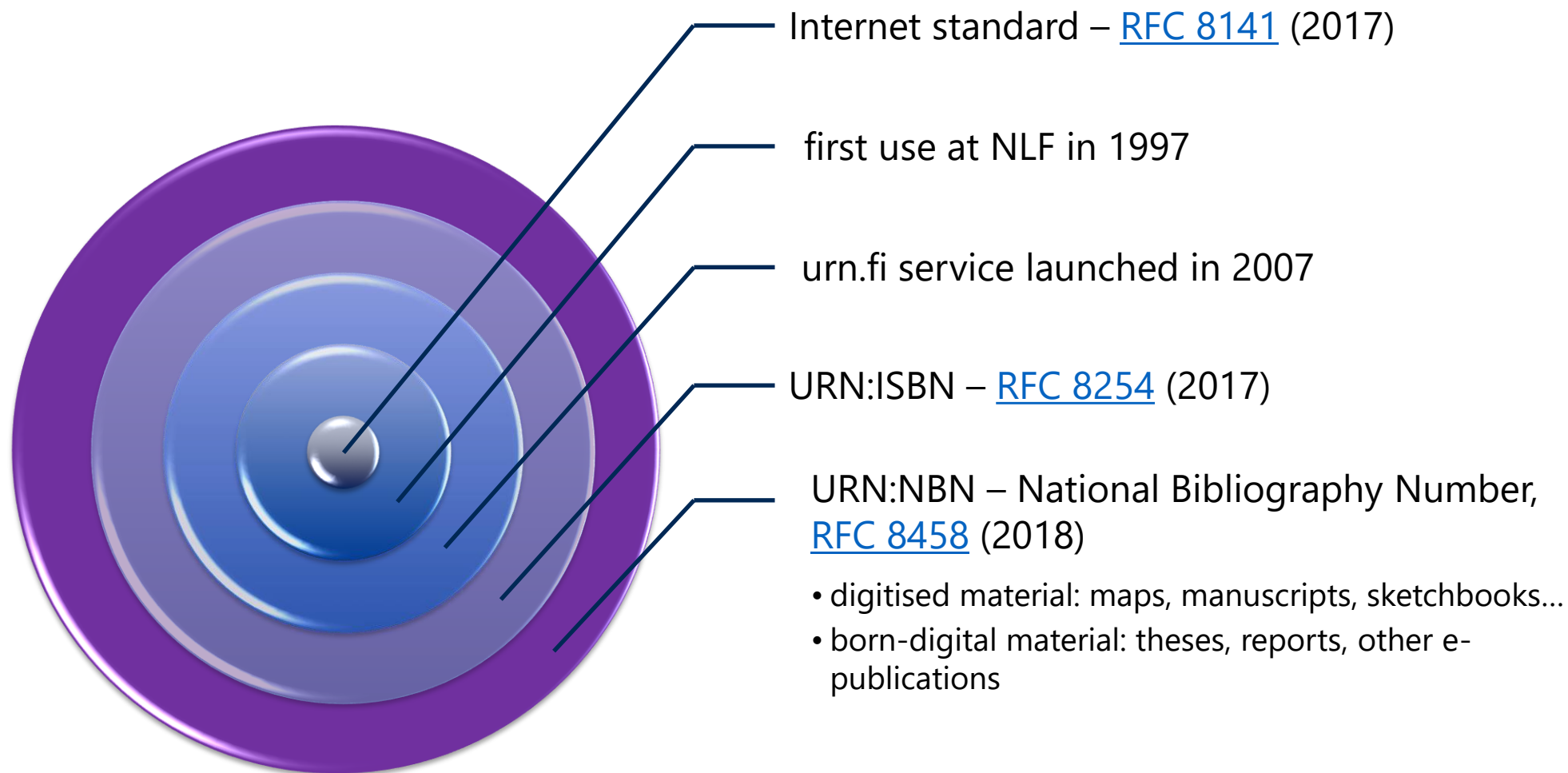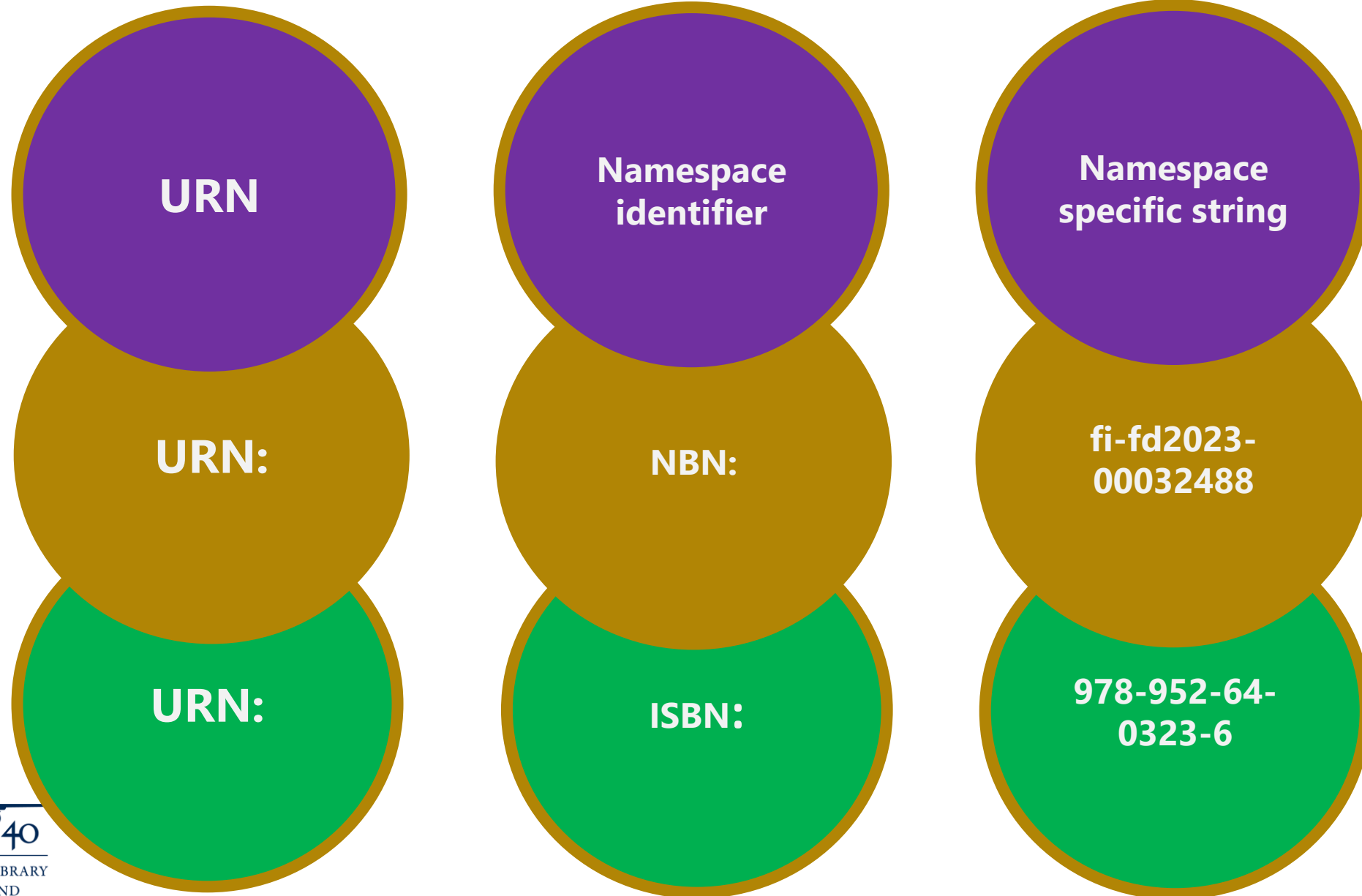
URN:ISBN example

Robots and the Future of Welfare Services – A Finnish Roadmap

Files

isbn9789526403236.pdf (7.73 MB)

School of Electrical Engineering | D4 Julkaistu kehittämis- tai tutkimusraportti tai -selvitys

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Permanent link to this item

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URN:NBN example

Title information   **Show MARC-fields**   ✕

Tabvlae Georgaphicae Cl: Ptolemęi admentem autoris restitutæ & emendatę Per Gerardum Mercatorem Illustriss: Ducis Cliuię &č: Cosmographū.

Permanent address
http://urn.fi/URN:NBN:fi-fd2023-00032488

author.
Ptolemaios, Klaudios,
(FI-ASTERI-N)000136284

cartographer.
Mercator, Gerhardus,
(FI-ASTERI-N)000220544

NBN
fd2023-00032488 skl

other identifier
URN:NBN:fi-fd2023-00032488 urn

system control number
(FI-DIGI)2672873

Ptolemy, map of Asia Minor, 1578 by Sebastian Münster

URN:NBN in European nation

- 13 national libraries in Europe use URN:NBNs

- CENL recommendation from 2007 but mixed PID use

- over 113 million URN:NBNs issued

- PID development in the EU: EOSC projects

- URN:NBN Landscape Report

URN:NBN
users

eosc | FAIRCORE4EOSC
Core Components Supporting a FAIR EOSC

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Benefits of URN

persistent

unique

independent

non-commercial

versatile

open

Challenges of URNs

varying technical skills

resource constraints

lack of communication between providers

institutional prioritisation

varying user commitment

rise of other PIDs

Formal contracts with users (organisations) needed.

URN – functionalities 2019–202? (1/3)

2019

Each URN refers to only one URL

URN 1

URL lotus

URN 2

URL rose

URN – functionalities 2019– 202? (2/3)

2020

Each URN refers to several URLs

URN 1

URL lotus a

URL lotus b

URL lotus c

URN 2

URL rose a

URL rose b

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URN – functionalities 2019–202? (3/3)

202?

Each URN refers to multiple URLs

URN1

URL lotus a

URL lotus b

URL lotus c

URL lotus d

URL lotus e

URL lotus f

URL lotus g

URN functions, future
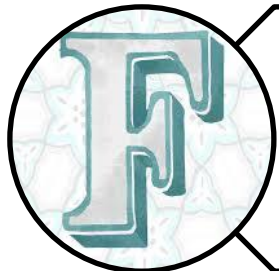
URN is used, maintained, and developed as business as usual.

URN – new functionalities, ideas, spring 2024
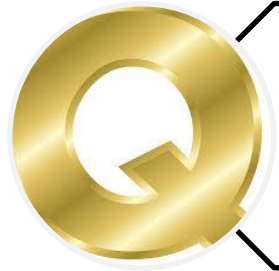
Query =
Q-component

Request =
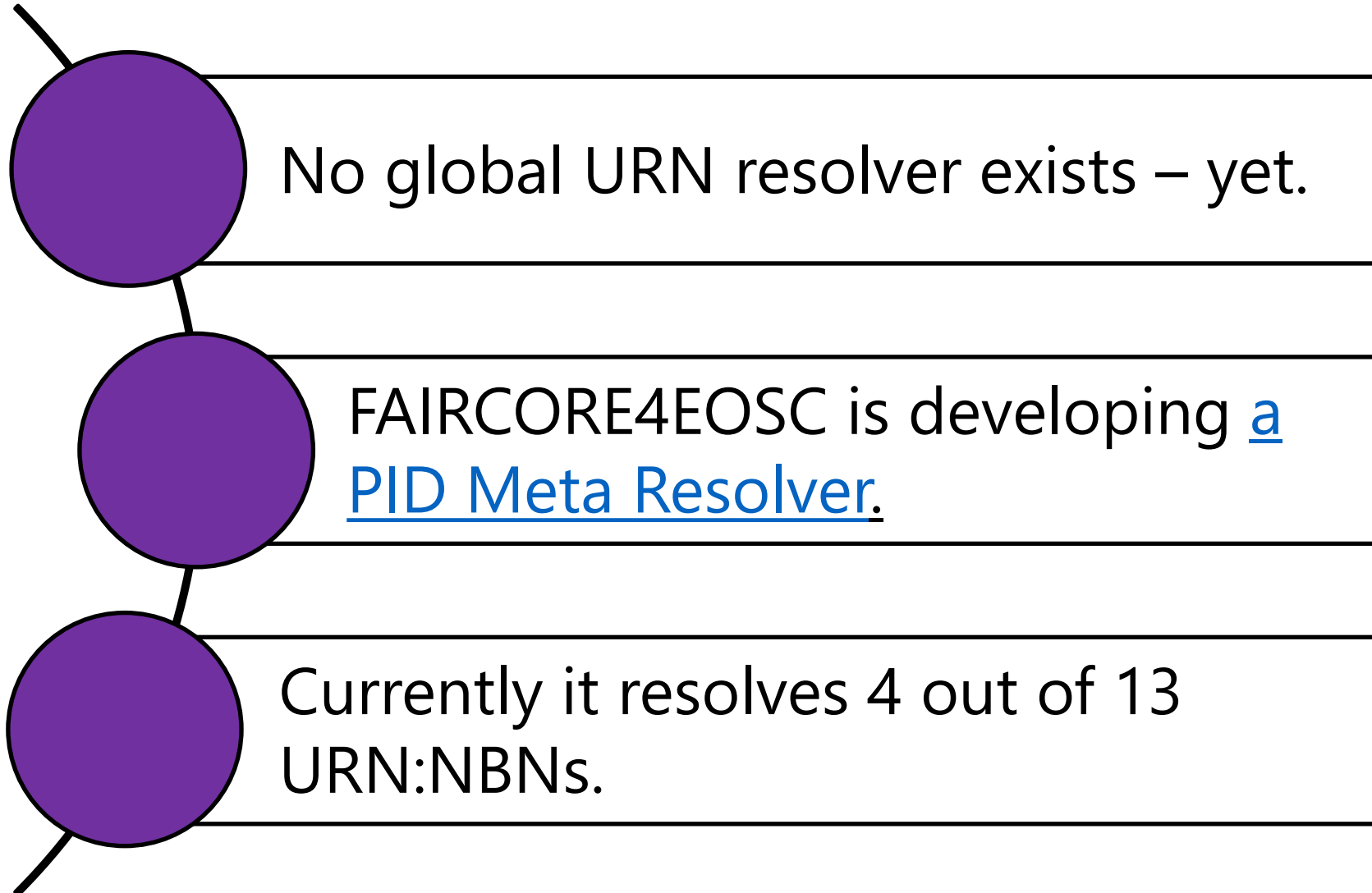R-component

Fragment =
F-component

Functionalities Q, R & F were sketched in updated standard RFCs (RFC 8141; RFC 8458).

None is in production amongst URN:NBN users.

This is due to lack of resources and communication.

URN resolver – latest news

No global URN resolver exists – yet.

FAIRCORE4EOSC is developing [a PID Meta Resolver](#).

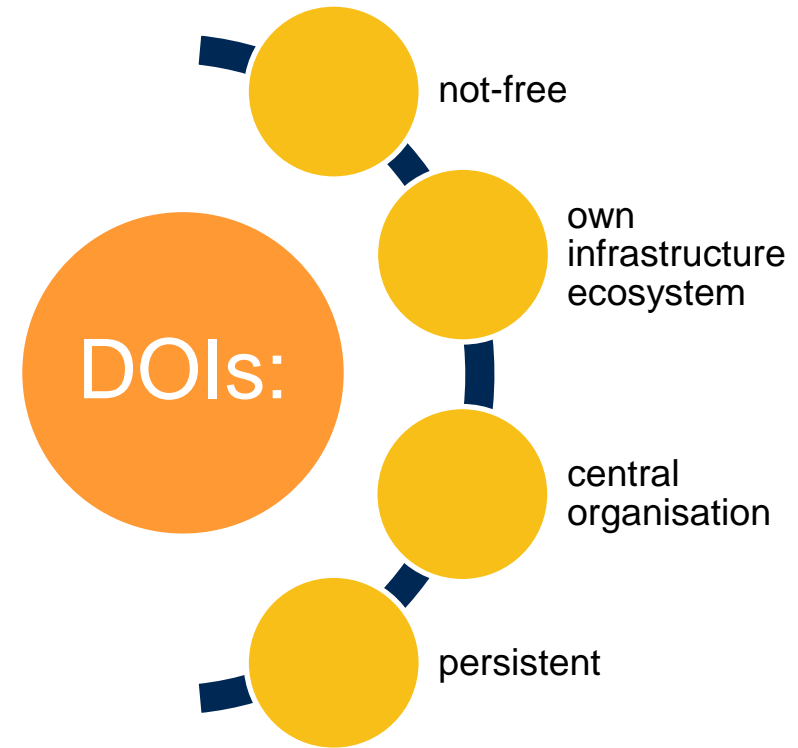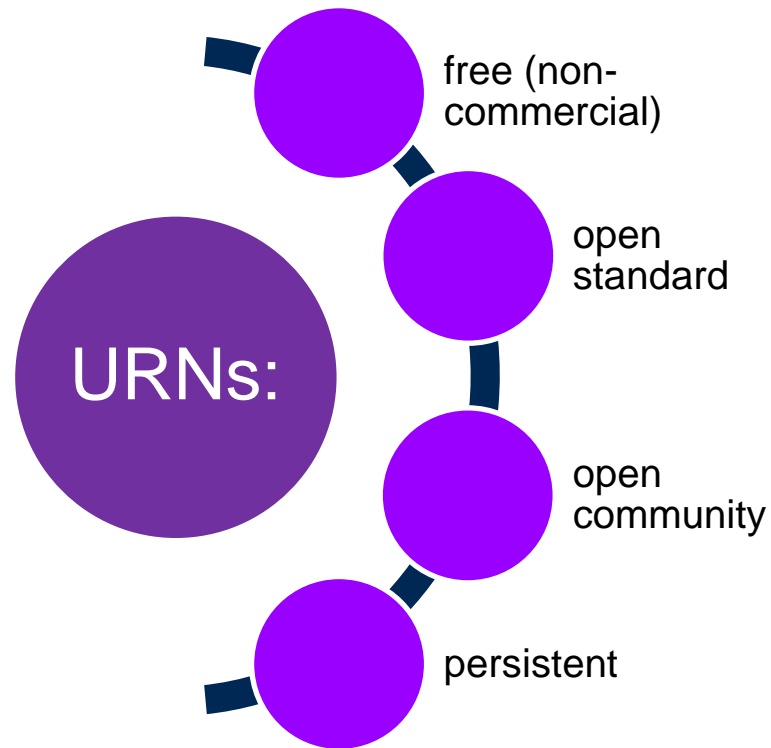Currently it resolves 4 out of 13 URN:NBNs.

The future of PID landscape – URNs in it

- URNs on the rise for cultural heritage
  - e.g. new NAN namespace
  - URNs for new uses – metadata?

- URN:NBN provider network – can cooperation pave way for technical development?

- URNs may decline in higher education due to the dominance of DOIs – URNs cannot match visibility.

No one PID to rule them all. Instead: embrace diversity and improve interoperability.

Siblings or cousins? URN and Digital Object Identifier DOI

URNs:
- free (non-commercial)
- open standard
- open community
- persistent

DOIs:
- not-free
- own infrastructure ecosystem
- central organisation
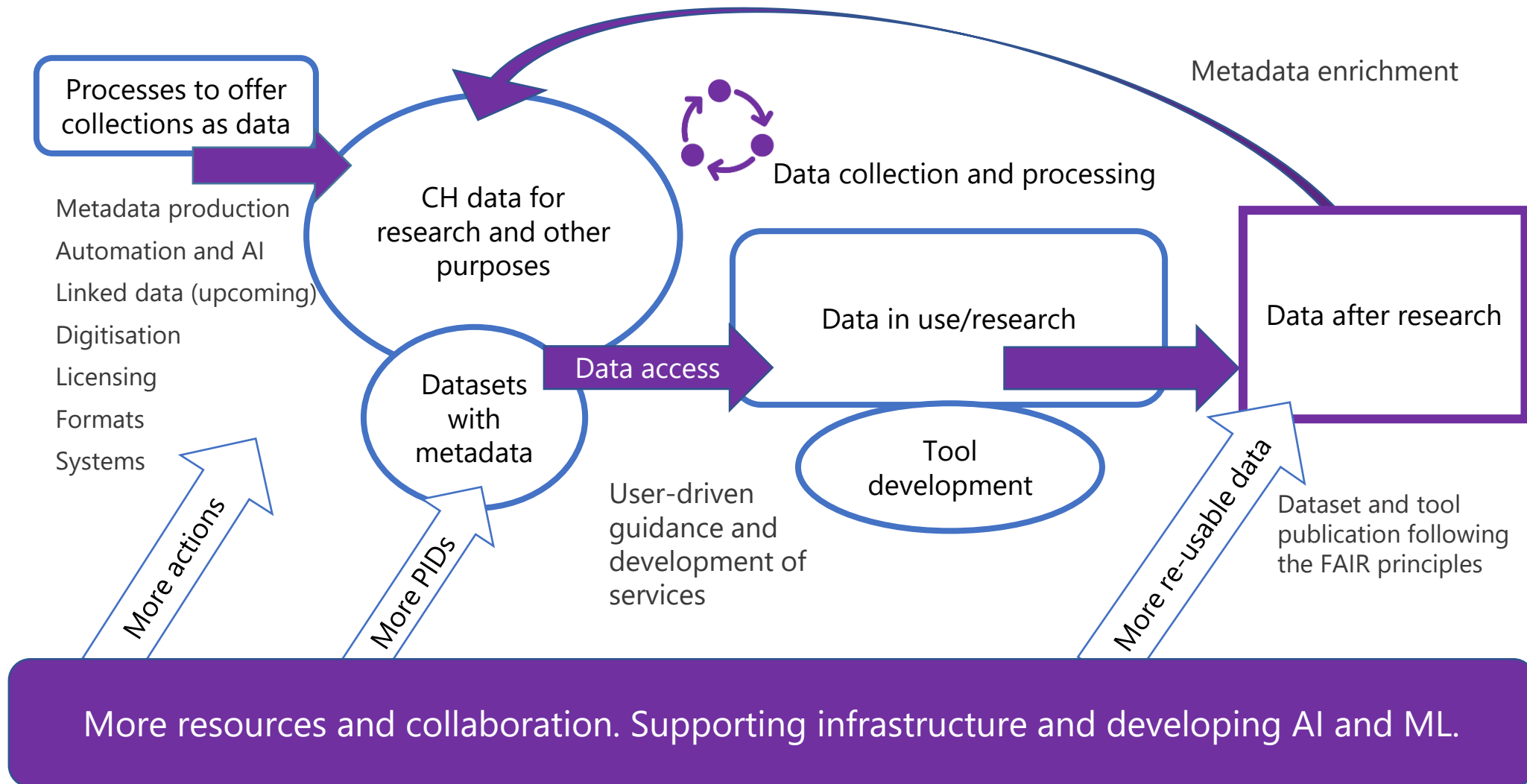- persistent

Benefits of using PIDs: FAIR becomes real

data management

inter-operability

responsible

persistent

unique

open

Post Sciptum: Ten + one advice for using PIDs

1. If the material has **already** been **given** a unique and **permanent identifier**, **use it**.

2. If there is a **managed and standardised identification system** for a type of material, use it.

3. If possible, **use** existing, open, and widely used **vendor-independent technologies**.

4. If there is no ready identification system and you create your own organization-specific identification system solution, carefully design it. **Avoid unnecessary semantics**, and design the identifier **suitable** to be applied as a permanent functional identifier that also **works online** and **does not change** over time.

5. Ensure the **uniqueness** and **permanence** of the IDs you provide, so that they can also be applied to e.g. the long time preservation service.

6. Follow **the guidelines and practices** of the identification system you are applying. If the system is your own, create **clear user instructions** for it.

7. If a **new version** of the identified item is published, give it a **new ID** and take care of **linking to previous versions** or (if the item is removed) to their metadata

8. **Do not re-use or destroy the IDs**.

9. If you use **Cool URIs**, make them **clear** and manage them carefully.

10. Document and publish the policies and principles of ID distribution.

11. **Be responsible.**

Suomen PID-verkosto (2023). Pysyvien tunnisteiden kansallinen tiekartta. The list translation by Riitta Koikkalainen.

References & acknowledgements

de Castro, P., Herb, U., Rothfritz, L., & Schöpfel, J. (2023). Building the plane as we fly it: the promise of Persistent Identifiers. Zenodo. https://doi.org/10.5281/zenodo.7258286

European Open Science Cloud (EOSC): https://eosc.eu/

FAIRCORE4EOSC: https://faircore4eosc.eu/

The National Roadmap for Persistent Identifiers for Finland available: https://urn.fi/URN:NBN:fi-fe2024032512910

RFC 8141: Saint-Andre P. & Klensin J. (2017). Uniform Resource Names (URNs). Available: https://datatracker.ietf.org/doc/html/rfc8141

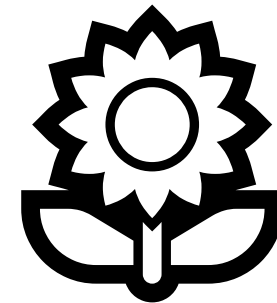RFC8254: Klensin, J. & Hakala, J. (2017). Uniform Resource Name (URN) Namespace Registration Transition. Available: https://datatracker.ietf.org/doc/html/rfc8254

RFC 8458: Hakala, J. (2018). Using National Bibliography Numbers as Uniform Resource Names. Available: https://www.rfc-editor.org/rfc/rfc8458.html

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Thank you for your attention!

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