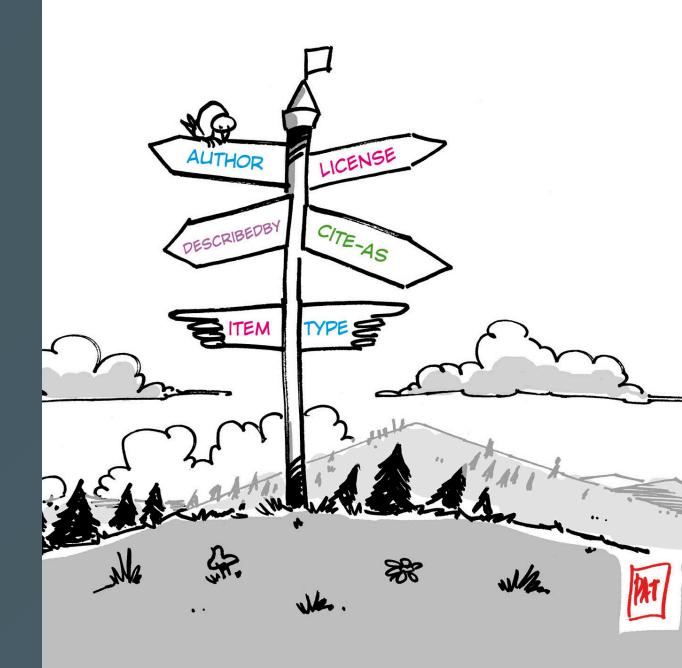# Introduction to Signposting

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Overview

1. How do PIDs currently resolve to repositories?

2. Why are the Linked Data practices not enough?

3. Signposting in HTTP

4. FDO and Signposting

5. More "advanced" Signposting

A typical PID resolution

```
GET https://doi.org/10.abcd/j.mystery.14

HTTP/1.1 302 Found
Location: http://www.example.com/repo/item/14
```

Browsers follow the **redirection** to the repository's **landing page**

```
GET http://www.example.com/repo/item/14

HTTP/1.1 200 OK
Content-Type: text/html

<html>
  <head> ... </head>
  <body>
```
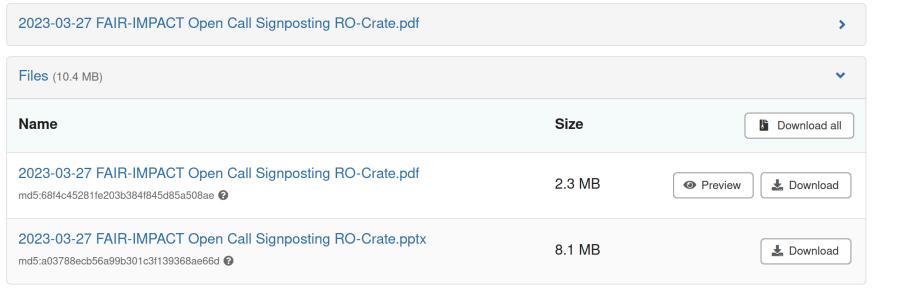
Enabling FAIR Signposting and RO-Crate for content/metadata discovery and consumption

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Webinar of *FAIR-IMPACT Support Offer #2,* presented 2023-03-27.

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Additional details

Related works

Is supplement to

Versions

Version v5 10.5281/zenodo.7774582	Mar 27, 2023
Version v4 10.5281/zenodo.7774474	Mar 27, 2023
Version v3 10.5281/zenodo.7774025	Mar 27, 2023
Version v2 10.5281/zenodo.7773623	Mar 27, 2023
Version v1 10.5281/zenodo.7773579	Mar 27, 2023

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Cite all versions? You can cite all versions by using the DOI 10.5281/zenodo.7773578. This DOI represents all versions, and will always resolve to the latest one. Read more.
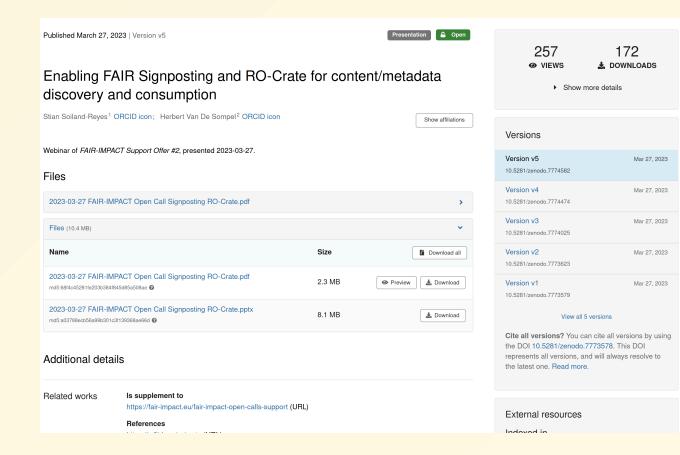
A typical landing page

HTML for human readability
and human navigation

A **preview** of the resource

Metadata (e.g. *title*, *abstract*,
author) listed as text

Link to **download** (e.g. a `.pdf`)
... and many unrelated links

What about the machines?

- Site-specific JSON -- schema must be already known

- "Secret" API -- do some URL rewriting

- API documented as URL patterns
  `http://api.example.com/items/{item}.json`
  - -- but what is the `{item}` ?

```
GET http://api.example.com/items/14.json

HTTP/1.1 200 OK
Content-Type: application/json

{ "title": "Data 14",   "download": "http://cdn.example.net/item14.zip" }
```

Some webby attempts

- **Content negotiation** can redirect to alternative content representation -- if format is known

```
GET http://www.example.com/repo/item/14
Accept: application/json

HTTP/1.1 303 See Other
Location: http://api.example.com/items/14.json
```

- ... but which JSON schema is used?

- What about those download links?

- What was the persistent identifier? Type?

FAIR Signposting

```
HTTP/1.1 200 OK
Content-Type: text/html
Link: <http://cdn.example.net/item14.zip>; rel="item"
Link: <http://api.example.com/items/14.json>; rel="describedby"
Link: <https://doi.org/10.abcd/j.mystery.14>; rel="cite-as"
Link: <https://schema.org/TrainingMaterial>; rel="item"

<html>...
```
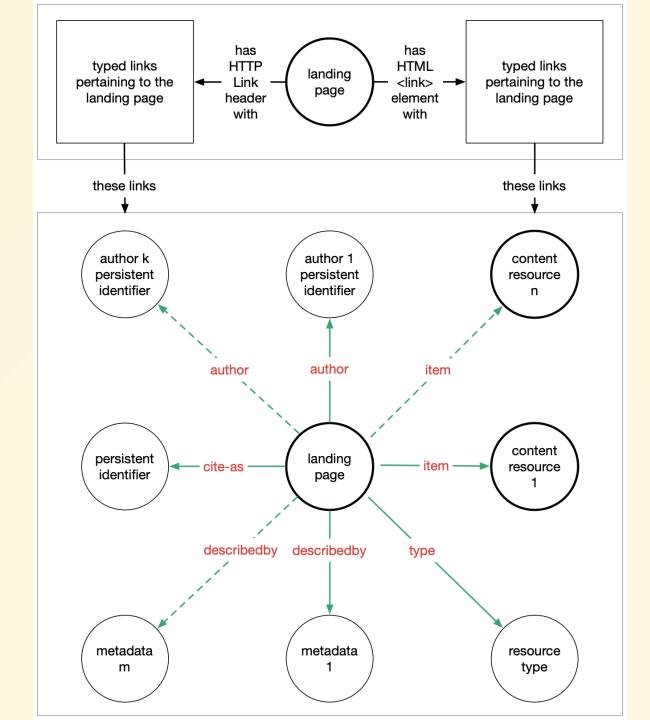
Additional `Link` headers, just like `rel=stylesheet`

No need to retrieve the HTML, use HTTP `HEAD` to only get headers.

https://doi.org/10.17487/RFC8288

Link relations

rel=	FDO concept
`cite-as`	PID
`type`	FDO type
`describedby`	metadata
`item`	bytestream
`author`	*(attribute)*
`license`	*(attribute)*

https://signposting.org/

Alternative Signposting methods

```html
<html>
<head>

<link rel="stylesheet"   href="https://cdn.jsdelivr.net/npm/bootstrap..." />
<link rel="cite-as"      href="https://doi.org/10.abcd/j.mystery.14"   />
<link rel="item"         href="http://cdn.example.net/item14.zip"   />
<link rel="describedby"  href="http://api.example.com/items/14.json" />
<link rel="type"         href="https://schema.org/TrainingMaterial"   />


</head>
<body>
...
```

HTML signposting with `<link>` can be used if you don't have control over the HTTP server, e.g. content delivery network (CDN).

Linkset JSON (`rel="linkset"`)

```json
{ "linkset": [
  { "anchor": "http://www.example.com/repo/item/14",
    "cite-as": [
      { "href": "https://doi.org/10.abcd/j.mystery.14" }
    ],
    "item": [
      { "href": "http://cdn.example.net/item14.zip" }
    ],
    "describedby": [
      { "href": "http://api.example.com/items/14.json" }
    ]
  },
  { "anchor": "..." }
] }
```

<https://doi.org/10.17487/RFC9264

Make the links meaningful

Specify the content `type` :

```
Link: <http://cdn.example.net/item14.zip>; rel="item";
      type="application/zip"
```

Useful for alternative metadata formats.

For generic types, also specify a `profile` :

```
Link: <http://api.example.com/marc/14>; rel="describedby"; type="application/xml";
      profile="http://www.loc.gov/MARC21/slim"
```

Useful for JSONs with different schemas

Next steps:

- https://signposting.org/FAIR/

- https://github.com/stain/signposting-tutorial

- https://signposting.org/adopters/

Acknowledgements