



Leiden University
Medical Center

SLICING THE FAIR PRINCIPLES

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FAIR PRINCIPLES

Findable:

- F1. (meta)data are assigned a globally unique and persistent identifier;
- F2. data are described with rich metadata;
- F3. metadata clearly and explicitly include the identifier of the data it describes;
- F4. (meta)data are registered or indexed in a searchable resource;

Accessible:

- A1. (meta)data are retrievable by their identifier using a standardized communications protocol;
 - A1.1 the protocol is open, free, and universally implementable;
 - A1.2. the protocol allows for an authentication and authorization procedure, where necessary;
- A2. metadata are accessible, even when the data are no longer available;

Reusable:

- I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
- I2. (meta)data use vocabularies that follow FAIR principles;
- I3. (meta)data include qualified references to other (meta)data;

- R1. (meta)data are richly described with a plurality of accurate and relevant attributes;
 - R1.1. (meta)data are released with a clear and accessible data usage license;
 - R1.2. (meta)data are associated with detailed provenance;
 - R1.3. (meta)data meet domain-relevant community standards;

DOI 10.1038/sdata.2016.18



“Distinct from peer initiatives that focus on the human scholar, the FAIR Principles put specific emphasis on enhancing the ability of machines to automatically find and use the data, in addition to supporting its reuse by individuals.”

Wilkinson, *et al*, “The FAIR Guiding Principles for scientific data management and stewardship, Scientific Data”, March 15, 2016, 10.1038/sdata.2016.18



FAIR PRINCIPLES AND THEIR MULTIPLE FACETS

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Interoperable:

- I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
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FAIR DATA PRINCIPLES - METADATA

Findable:

- F1. metadata are assigned a globally unique and persistent identifier;
- F2. data are described with rich metadata;
- F3. metadata clearly and explicitly include the identifier of the data it describes;
- F4. metadata are registered or indexed in a searchable resource;

Accessible:

- A1. metadata are retrievable by their identifier using a standardized communications protocol;
 - A1.1 the protocol is open, free, and universally implementable;
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- A2. metadata are accessible, even when the data are no longer available;

Interoperable:

- I1. metadata use a formal, accessible, shared, and broadly applicable language for knowledge representation.
- I2. metadata use vocabularies that follow FAIR principles;
- I3. metadata include qualified references to other metadata;

Reusable:

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FAIR DATA PRINCIPLES – DATA/DIGITAL RESOURCES

Findable:

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- F2. data are described with rich metadata;
- F3. metadata clearly and explicitly include the identifier of the data it describes;
- F4. data are registered or indexed in a searchable resource;

Accessible:

- A1. data are retrievable by their identifier using a standardized communications protocol;
 - A1.1 the protocol is open, free, and universally implementable;
 - A1.2. the protocol allows for an authentication and authorization procedure, where necessary;
- A2. metadata are accessible, even when the data are no longer available;

Interoperable:

- I1. data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
- I2. data use vocabularies that follow FAIR principles;
- I3. data include qualified references to other (meta)data;

Reusable:

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 - R1.3. data meet domain-relevant community standards;

FAIR DATA PRINCIPLES – SUPPORTING INFRASTRUCTURE

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- F4. (meta)data are registered or indexed in a searchable resource;**

Accessible:

- A1. (meta)data are retrievable by their identifier using a standardized communications protocol;
 - A1.1 the protocol is open, free, and universally implementable;
 - A1.2. the protocol allows for an authentication and authorization procedure, where necessary;
- A2. metadata are accessible, even when the data are no longer available;

Interoperable:

- I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
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Reusable:

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 - R1.1. (meta)data are released with a clear and accessible data usage license;
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 - R1.3. (meta)data meet domain-relevant community standards;

FAIR PRINCIPLES – TECHNOLOGY-RELATED

Findable:

- F1. (meta)data are assigned a **globally unique** and persistent identifier;
- F2. data are described with rich **metadata**;
- F3. metadata clearly and explicitly include the identifier of the data it describes;
- F4. (meta)data are registered or indexed in a searchable resource;

Accessible:

- A1. (meta)data are retrievable by their identifier using a **standardized communications protocol**;
 - A1.1 the protocol is open, free, and universally implementable;
 - A1.2. the protocol allows for an authentication and authorization procedure, where necessary;
- A2. metadata are accessible, even when the data are no longer available;

Interoperable:

- I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
- I2. (meta)data use vocabularies that follow FAIR principles;
- I3. (meta)data include qualified references to other (meta)data;

Reusable:

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 - R1.3. (meta)data meet domain-relevant community standards;

FAIR PRINCIPLES – SOCIAL-RELATED

Findable:

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- F3. metadata clearly and explicitly include the identifier of the data it describes;
- F4. (meta)data are registered or indexed in a searchable resource;

Accessible:

- A1. (meta)data are retrievable by their identifier using a standardized communications protocol;
 - A1.1 **the protocol is open, free, and universally implementable;**
 - A1.2. the protocol allows for an authentication and authorization procedure, where necessary;
- A2. **metadata are accessible, even when the data are no longer available;**

Interoperable:

- I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
- I2. **(meta)data use vocabularies that follow FAIR principles;**
- I3. (meta)data include qualified references to other (meta)data;

Reusable:

- R1. **(meta)data are richly described with a plurality of accurate and relevant attributes;**
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 - R1.3. (meta)data meet domain-relevant community standards;

THANK YOU!!!



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