Updates to the FDSN Recommendations for DOIs

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What do we have today?

- 2014: IRIS and some EIDA data centers worked together and publish the first version of the FDSN Recommendations for DOIs.
http://dx.doi.org/10.7914/D11596
- Major first step to improve the **FAIR**ness of our data.
- First time that our seismic networks are properly visible outside from the community. Otherwise, you needed to write a paper for that.
- Networks are identified by a DOI and the datasets can be properly cited in publications (no more Acknowledgements).
- FDSN provides some important services (e.g. citation) and can mint DOIs if the data provider needs it.

https://www.fdsn.org/networks/citation/

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- Input network codes separated by a space
- **GE**: Permanent network
- **ZE_2012**: Temporary network with code ZE and start year 2012
- **GB**: Permanent network without DOI

- Permanent networks have two-letter codes (e.g. GE)
- Temporary network codes start with a number or X, Y or Z
- Temporary networks must be identified as CODE_YEAR (e.g. ZE_2012, 3D_2014)

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What can we improve?

- Resource type
- Use of ORCIDS and RORs to identify persons and institutions
- Specification of (meta)data formats
- More details about Contributors
- Landing pages
- Links to metadata
- Inclusion in StationXML since schema version 1.1. (currently 1.2)

Improvements

- Resource type: „dataset" (previously „other")
  - Because „dataset" is „data encoded in a defined structure"

```xml
<resourceType resourceTypeGeneral="Dataset">
    Seismic Network
</resourceType>
```

- Specification of (meta)data formats

```xml
<formats>
    <format>application/vnd.fdsn.mseed</format>
    <format>application/xml</format>
</formats>
```

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Improvements - Rights

- It can be repeated to record complex rights characteristics.
- License and embargo information are the most important things.
- Use the complete title of a license.
- Example for open data:

```
<rightsList>
  <rights rightsIdentifier="CC-BY-4.0" rightsIdentifierScheme="SPDX"
      rightsURI="https://creativecommons.org/licenses/by/4.0/legalcode"
      schemeURI="https://spdx.org/licenses/">
    Creative Commons Attribution 4.0 International
  </rights>
</rightsList>
```

Improvements - Rights

- Example for embargoed data:

```
<rightsList>
  <rights
      rightsURI="https://vocabularies.coar-
repositories.org/access_rights/c_f1cf/">
    embargoed access
  </rights>
  <rights
      rightsIdentifier="CC-BY-4.0" rightsIdentifierScheme="SPDX"
      rightsURI="https://creativecommons.org/licenses/by/4.0/legalcode"
      schemeURI="https://spdx.org/licenses/">
    Creative Commons Attribution 4.0 International
  </rights>
</rightsList>
```

Improvements – Use of ORCIDs and RORs

	The ORCID iD: a unique, persistent identifier free of charge to researchers
	An **ORCID record** connected to the ORCID iD, and
	A set of **Application Programming Interfaces (APIs)**, as well as the services and support of communities of practice that enable interoperability between an ORCID record and member organizations so researchers can choose to allow connection of their iD with their affiliations and contributions

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Improvements – Use of ORCIDs and RORs

https://ror.org/04z8jg394

Helmholtz Centre Potsdam - GFZ German Research Centre for Geosciences

ORGANIZATION TYPE
Facility

OTHER NAMES
GFZ, Helmholtz-Zentrum Potsdam - Deutsches GeoForschungsZentrum GFZ

WEBSITE
http://www.gfz-potsdam.de/en/home/

RELATIONSHIPS
Parent Organization(s)
Helmholtz Association of German Research Centres

LOCATION
Potsdam (GeoNames ID 2852458)
Germany

OTHER IDENTIFIERS
GRID grid.23731.34
ISNI 0000 0000 9195 2461
Crossref Funder ID 501100010956
Wikidata Q1205654

Improvements - Contributors

ProjectLeader: Person officially designated as head of project team or sub- project team instrumental in the work necessary to development of the resource.

ContactPerson: Person with knowledge of how to access the dataset, or who can solve issues related to it.

DataCollector: Person/institution responsible for finding or gathering/collecting data under the guidelines of the author(s) or Principal Investigator (PI).

DataCurator: Person tasked with reviewing, enhancing, cleaning, or standardizing metadata and the associated data submitted for storage, use, and maintenance within a data centre or repository.

DataManager: Person (or organisation with a staff of data managers, such as a data centre) responsible for maintaining the finished resource.

Sponsor: Person or organisation that issued a contract or under the auspices of which a work has been written, printed, published, developed, etc.

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Improvements - Contributors

```xml
<contributors>
  <contributor contributorType="ProjectLeader">
    <contributorName>Starr, Joan</contributorName>
    <givenName>Joan</givenName>
    <familyName>Starr</familyName>
    <nameIdentifier schemeURI="http://orcid.org/"
            nameIdentifierScheme="ORCID">
        0000-0002-7285-027X
    </nameIdentifier>
    <affiliation affiliationIdentifier="https://ror.org/03yrm5c26"
            affiliationIdentifierScheme="ROR"
            schemeURI="https://ror.org/">
        California Digital Library
    </affiliation>
  </contributor>
</contributors>
```

Improvements – Related identifiers

We suggest to include here only the articles or reports describing the dataset (e.g. "isDocumentedBy")

```
<relatedIdentifiers>
    <relatedIdentifier relatedIdentifierType="DOI"
            relationType="IsDocumentedBy">
        10.5072/example-full
    </relatedIdentifier>
    <relatedIdentifier relatedIdentifierType="DOI"
            relationType="IsDocumentedBy">
        10.4401/ag-4196
    </relatedIdentifier>
</relatedIdentifiers>
```

Improvements – DOI information in StationXML

Add the DOI to the network level in StationXML

```
<Network code="CO">
    <Identifier type="DOI">
        doi:10.1341/abcde
    </Identifier>
    <Identifier type="ARK">
        ark:12341515
    </Identifier>
...
</Network>
```

Improvements – Landing page

Add a link to the DataCite API to get the metadata

```
<link rel="describedby"
href="https://api.datacite.org/dois/application/vnd.datacite.datacite+xml
/10.XX/YY" type="application/vnd.datacite.datacite+xml" />
```

Add a link to the seismological metadata

```
<link rel="item"
href="/fdsnws/station/1/query?net=8F&level=response&start=2018-01-
01&end=2019-12-31" type="application/xml" />
```

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Conclusion

- What we present here is the result of long discussions with the participation of many institutions.
- Only updating the previous document with a minimum set of improvements.
- Follow the same approach regarding mandatory, recommended or optional attributes.
- We expect this to be accepted and adopted to improve the visibility of all our seismic networks.