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# **X2R Documentation**

***Release 1.0***

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## CONCEPT AND DESIGN

### 4.1 Motivation

Under Maintenance

### 4.2 Features

Under Maintenance

### 4.3 Design

Under Maintenance



## USER'S GUIDE

## 5.1 Extractor

For an input RDF content, this extractor service extracts terms from URIs of the RDF content.

**Web API Definition:**

**POST** /**extractor**{**?excludedNamespaces, checkUriStatus, rdfContent**}

**Query Parameters**

- **excludedNamespaces** – (*optional*) This specifies a list of namespaces to be skipped. That is, if a found URI belonged to this list, the URI will not be processed anymore.
- **checkUriStatus** – (*required*) This determines if *extractor* checks the status codes of found URIs.
- **rdfContent** – (*required*) This specifies the content of RDF to be processed.

**Response Headers**

- **Content-Type** – application/json

**Status Codes**

- **200** – no error
- **404** – exception

### 5.1.1 Query Parameter Format Detail

**excludedNamespace**

**checkUriStatus**

**rdfContent**

### 5.1.2 Response Format Detail

Content-Type: application/json

Response template:

```
{ "metadata": [],  
  "mapping":  
    [ { "status": "",  
        "originalURI": "",
```

```
        "replacedURI": "",
        "term": "",
        "lineNumbers": ""
      }
    ]
  }
}
```

mapping entry:

```
[{"status": "",
  "originalURI": "",
  "replacedURI": "",
  "term": "",
  "lineNumbers": ""
}]
```

## Example

### Example request:

POST `/extractor?excludedNamespaces&checkUriStatus&rdfContent` HTTP/1.1

### Example response:

```
HTTP/1.1 200 OK
Vary: Accept
Content-Type: application/json

{"metadata": [
],
 "mapping":
  [{"status": "N/A",
    "originalURI": "http://127.0.0.1/autoGeneratedUri",
    "replacedURI": "",
    "term": "auto generated uri",
    "lineNumbers": "3, 31"
  }]
}
```

## Related Documents

### See also:

- Mapper's Web API

## 5.2 Mapper

Given a RDF content, a URI mapping and an output format, this mapper service replaces URIs based on the URI mapping and return a RDF file in the output format

POST `/mapper{?rdfContent, mapping, format}`

### Query Parameters



- **rdfContent** – (required) This specifies the content of RDF to be processed.
- **mapping** – (required) This specifies the information needed for *mapper* to update the URIs found in *rdfContent*.
- **format** – (optional) This specifies the format of output.

#### Response Headers

- **Content-Type** – application/rdf+xml

#### Status Codes

- **200** – no error
- **404** – exception

## 5.2.1 Query Parameter Format Detail

**rdfContent**

**mapping**

**format**

## 5.2.2 Response Format Detail

Content-Type: application/rdf+xml

### Example

**Example request:**

```
POST /mapper?rdfContent&mapping&format HTTP/1.1
```

**Example response:**

```
HTTP/1.1 200 OK
Vary: Accept
Content-Type: application/rdf+xml
```

```
<?xml version="1.0" encoding="UTF-8"?>
  <rdf:RDF
    xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
    xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema#">
    <rdf:Description rdf:about="http://openisdm.iis.sinica.edu.tw/VR/DaTongSportsCenter">
      <rdf:type rdf:resource="http://www.w3.org/2003/01/geo/wgs84_pos#SpatialThing"/>
      <updatedAt xmlns="http://openisdm.iis.sinica.edu.tw/VR/"
        rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2013-07-31T03:23:47Z</updatedAt>
      <geo:long>121.516</geo:long>
      <hasTelephone xmlns="http://openisdm.iis.sinica.edu.tw/VR/">2592-0055</hasTelephone>
      <hasName xmlns="http://openisdm.iis.sinica.edu.tw/VR/">Da Tong Sports Center</hasName>
      <geo:location>No.51, Dalong St., Datong Dist., Taipei City 103, Taiwan (R.O.C.)</geo:location>
      <usedFor xmlns="http://openisdm.iis.sinica.edu.tw/VR/">Sport</usedFor>
      <createdAt xmlns="http://openisdm.iis.sinica.edu.tw/VR/"
        rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2012-11-28T09:05:13Z</createdAt>
      <geo:lat>25.0648</geo:lat>
```

```
</rdf:Description>
</rdf:RDF>
```

## **Related Documents**

### **See also:**

- [Extractor's Web API](#)

## DEVELOPER'S GUIDE

### 6.1 Coding Style

This project follows the Python official coding style [PEP8](#).

### 6.2 Versioning

The versioning follows [Semantic Versioning 2.0](#).

Here quote the summary of Semantic Version below:

Given a version number MAJOR.MINOR.PATCH, increment the:

MAJOR version when you make incompatible API changes, MINOR version when you add functionality in a backwards-compatible manner, and PATCH version when you make backwards-compatible bug fixes.

Additional labels for pre-release and build metadata are available as extensions to the MAJOR.MINOR.PATCH format.

### 6.3 Documentation

For documentation, this project uses [Sphinx](#), which is a Python documentation generator. The syntax used in Sphinx is [reStructuredText](#). The code comments are also written in reStructuredText by which the Sphinx can generate API references automatically from the comments. This practice makes sure the consistency between code and documents to some extent.

Here is a full code comment example quoted from [Documenting Your Project Using Sphinx](#).

The `an_example_pypi_project` contains

- An `__init__` file for the module.
- `useful_1.py` and `useful_2.py`. These files are IDENTICAL so I'll only reprint one here.
- The `code.rst` file which pulls it all together. This file lives in the `doc` directory.

---

**Note:** The idea behind the `auto` directives is to keep as much documentation in the code docstrings as possible. However, Sphinx still aims to give you control not found when using real auto tools like `doxygen` or `epydoc`.

Therefore, that is why you need the small stub file `code.rst` to basically act as a director for pulling the docstrings from the code.

---

Contents of `an_example_pypi_project.__init__`:

```
"""A pypi demonstration vehicle.

.. moduleauthor:: Andrew Carter <andrew@invalid.com>

"""

import useful_1
import useful_2

def start():
    "This starts this module running ..."
```

Contents of an\_example\_pypi\_project.useful\_1:

```
"""
.. module:: useful_1
   :platform: Unix, Windows
   :synopsis: A useful module indeed.

.. moduleauthor:: Andrew Carter <andrew@invalid.com>

"""

def public_fn_with_googley_docstring(name, state=None):
    """This function does something.

    Args:
        name (str): The name to use.

    Kwargs:
        state (bool): Current state to be in.

    Returns:
        int. The return code::

        0 -- Success!
        1 -- No good.
        2 -- Try again.

    Raises:
        AttributeError, KeyError

    A really great idea. A way you might use me is

    >>> print public_fn_with_googley_docstring(name='foo', state=None)
    0

    BTW, this always returns 0.  **NEVER** use with :class: 'MyPublicClass'.

    """
    return 0

def public_fn_with_sphinx_docstring(name, state=None):
    """This function does something.

    :param name: The name to use.
    :type name: str.
```

```

:param state: Current state to be in.
:type state: bool.
:returns: int -- the return code.
:raises: AttributeError, KeyError

"""
return 0

def public_fn_without_docstring():
    return True

def _private_fn_with_docstring(foo, bar='baz', foobarbas=None):
    """I have a docstring, but won't be imported if you just use ':members:'.
    """
    return None

class MyPublicClass(object):
    """We use this as a public class example class.

    You never call this class before calling :func:`public_fn_with_sphinx_docstring`.

    .. note::

        An example of intersphinx is this: you cannot use :mod:`pickle` on this class.

    """

    def __init__(self, foo, bar='baz'):
        """A really simple class.

        Args:
            foo (str): We all know what foo does.

        Kwargs:
            bar (str): Really, same as foo.

        """
        self._foo = foo
        self._bar = bar

    def get_foobar(self, foo, bar=True):
        """This gets the foobar

        This really should have a full function definition, but I am too lazy.

        >>> print get_foobar(10, 20)
        30
        >>> print get_foobar('a', 'b')
        ab

        Isn't that what you want?

        """
        return foo + bar

    def _get_baz(self, baz=None):
        """A private function to get baz.

```

*This really should have a full function definition, but I am too lazy.*

```
"""
return baz
```

And finally, contents of `code.rst` which pulls it all together:

```
Documentation for the Code
*****

.. automodule:: an_example_pypi_project

useful #1 -- auto members
=====

This is something I want to say that is not in the docstring.

.. automodule:: an_example_pypi_project.useful_1
   :members:

useful #2 -- explicit members
=====

This is something I want to say that is not in the docstring.

.. automodule:: an_example_pypi_project.useful_2
   :members: public_fn_with_sphinx_docstring, _private_fn_with_docstring

.. autoclass:: MyPublicClass
   :members: get_foobar, _get_baz
```

---

**Note:** The documents like `code.rst` are located at `/docs/`. And the built documents are located at `/build_docs/`. Currently, two formats are supported in X2R-ME, namely PDF and HTML formats. The documents are also online available by linking the GitHub to ReadTheDocs services. The online X2R-ME's documents can be accessed via <http://x2r-me.readthedocs.org/en/latest/>.

---

## 6.4 Testing

This project uses Python `unittest` to conduct unit testing. The test codes are located at `/x2r-me/testsuite/unit/`. The test fixture, such as test data and test databases, used by test suites are located at `/x2r-me/testsuite/test_fixtures/`. Currently, this project are not using framework for acceptance testing. And all the acceptance testing codes are located in `/x2r-me/testsuite/acceptance/`.

## API REFERENCE

### 7.1 Web API

**POST /extractor{?excludedNamespaces, checkUriStatus, rdfContent}**

#### Query Parameters

- **excludedNamespaces** – (*optional*) This specifies a list of namespaces to be skipped. That is, if a found URI belonged to this list, the URI will not be processed anymore.
- **checkUriStatus** – (*required*) This determines if *extractor* checks the status codes of found URIs.
- **rdfContent** – (*required*) This specifies the content of RDF to be processed.

#### Response Headers

- **Content-Type** – application/json

#### Status Codes

- **200** – no error
- **404** – exception

For the detail spec., see `Extractor Web API`

**POST /mapper{?rdfContent, mapping, format}**

#### Query Parameters

- **rdfContent** – (*required*) This specifies the content of RDF to be processed.
- **mapping** – (*required*) This specifies the information needed for *mapper* to update the URIs found in *rdfContent*.
- **format** – (*optional*) This specifies the format of output.

#### Response Headers

- **Content-Type** – application/rdf+xml

#### Status Codes

- **200** – no error
- **404** – exception

For the detail spec., see `Mapper Web API`

## 7.2 Python API

`class extractor.Extractor` (*graph*)

Extractor parses an RDF content and provides services:

- 1.extract URIs
- 2.extract Blank Nodes
- 3.look up for URI's line number
- 4.translate URIs into terms

`getBnodes` ()

This function is used to extract blank nodes.

**Returns** Array<str>. This function returns an array of blank nodes.

`getUris` ()

This function is used to extract URIs.

**Returns** Array<str>. This function returns an array of URIs.

`get_lines` (*sio*, *lookup\_term*)

This function is used to look up “lookup\_term” inside the given RDF content.

**Parameters** `lookup_term` (*str.*) – the uri for look up.

**Returns** str. A string with all the line numbers, where the luupup\_term is found, used “,” as the delimiter.

`testUri` (*uri*)

This function is used to test if the “uri” is reachable.

**Parameters** `uri` (*str.*) – the uri for testing reachability.

**Returns** boolean. True for reachable and False for unreachable.

`class mapper.Mapper` (*graph*)

`commit` ()

This function is used to save all URI replacements and output to a string.

**Returns** str. The string of result RDF with replaced URIs.

`mapping` (*json\_str*)

This function is used to replaced mutiple URIs at once.

**Parameters** `json_str` (*str.*) – this json string defines multiple replacements

**Returns** str. The string of result RDF with replaced URIs.

`replaceUri` (*oUri*, *uUri*)

This function is used to systemantically replace URIs.

**Parameters**

- `oUri` (*str.*) – the original URI.
- `uUri` (*str.*) – the replced URI.

**Returns** int. The count of replacements.

`class tokenizer.Tokenizer`

Tokenizer realizes serveral tokenization heuristics:



- 1.identifying camelcase word
- 2.identifying all captials word
- 3.treat all non alphanumeric chars as delimiters

**tokenized** (*string*)

This function is the integration of all known tokenizers. Theoretically, any compound words can be tokenized by this function.

**Parameters** **string** (*str*) – The string to tokenize.

**Returns** **str** – the tokenized and normalized string.

**tokenized\_url** (*uri*)

This function truncate the input URI's head and output the tail part of the input URI. Be precisely, only the tail part after the last slash will be preserved. For example, input "<http://www.xx/yy/zz-AB>" will get the output as "zz ab"

**Parameters** **string** (*str*) – The string (URI) to tokenize.

**Returns** **str** – the tokenized and normalized string.



`/extractor{?excludedNamespaces,  
checkUriStatus, rdfContent}`

`POST /extractor{?excludedNamespaces,  
checkUriStatus, rdfContent},19`

`/mapper{?rdfContent, mapping, for-  
mat}`

`POST /mapper{?rdfContent, mapping,  
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