

XML-to-JSON-Schema-Converter README

version 0.4

George Moyano

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Introduction

XML-to-JSON-Schema-Converter produces JSON Schema from XML-Schema.

It is an automated pipeline with the following tasks:

1. Convert
2. Extract
3. Generate
4. De-Reference
5. Validate

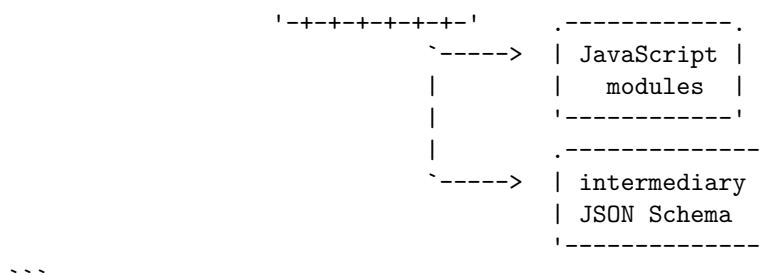
Each task is discretely implemented for increased maintainability and modularity. A project folder for each task contains a README.md file with more details, to include, configuration and usage.

The remainder of this document provides an overview description of each task in the conversion pipeline.

Convert

This task takes each data component described in XML Schema and re-describes it in JavaScript modules and JSON schema.

```
...  
  
.-----  
| XML Schema |  
'-----'  
      ^-----> .+--+--+--+--++.  
                  + JSONIX/JAXB +  
                  + compiler  +
```



The JSON schema produced by this task is considered intermediary for purposes of schema-language binding and data modeling. In many cases, further processing is required for programming language schema binders. For example, the implementation of JSON constructs, such as “anyof” and “allof”, are not well-supported. In addition, the decomposition of general and complex JSON schema into specialized and discrete JSON schema increases composability and re-useability.

Software Components

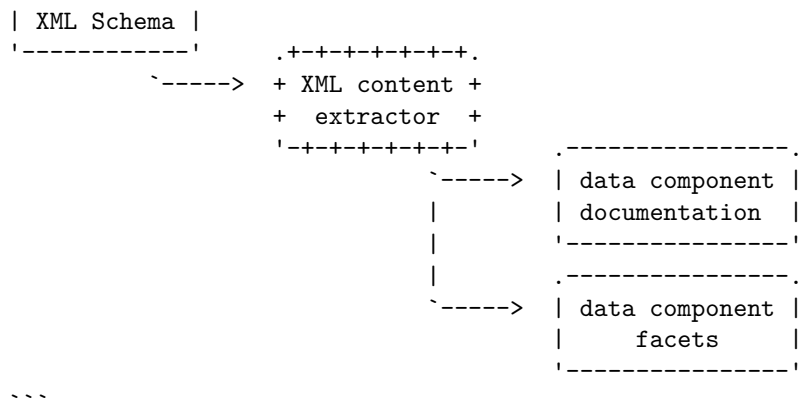
Library	Language	Package
JSONIX 2.4.1	JavaScript	NPM
jsonix-schema-compiler 2.3.9	JavaScript	NPM
JAXB	Java	java-1.8.0-openjdk

Binary	Package
Node v6.9.1	nodejs
XJC 2.2.8	java-1.8.0-openjdk

Extract

This task extracts valuable XML Schema content ignored by Java XJC/JAXB. XML documentation and facets for each data component are converted and formatted as JSON data structures. Facets include value constraints such as numeric maximum and minimum, and character string length.

— — —



Software Components

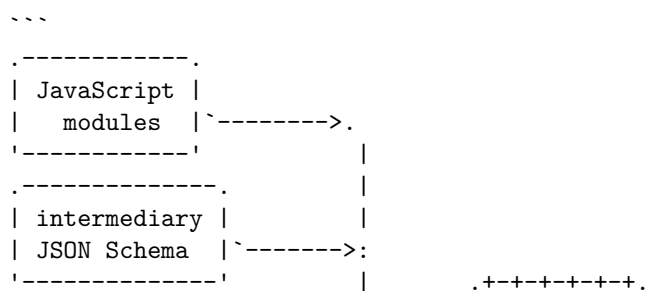
What is wrong

Library | Language | Package | extract-xml-schema-documentation.xsl | XSL | n/a | extract-xml-schema-facets.xsl | XSL | n/a | SaxonEE9-7-0-18J* | Java | Saxonica *SaxonEE is the purchased product, however, most XSL 2.0-compatible XML transformers should meet expectations.

Binary	Package
Node v6.9.1	nodejs
GNU bash v4.2.46	x86_64-redhat-linux-gnu

Generate

This task generates JSON Schema components from the outputs of the Convert and Extract tasks.



```

.------.      :----> + schema +
| data component |      |      + generator +
| documentation | `----->: '+++++++'
|-----'      |      `-----> | JSON schema |
.------.      |      | components |
| data component |      |
| facets         | `----->'
|-----'
...

```

JSON Schema References

Since this task decomposes general and complex JSON schema into specialized and discrete JSON schema, schema components may reference other JSON schema components to complete a conceptual representation.

For example, the following NIEM Crash schema snippet references (“\$ref”) the identifier for the JSON schema that describes the property “Location2DGeospatialCoordinate”:

```

```json
{
 "title": "Crash",
 "id": "http://release.niem.gov/niem/domains/jxdm/5.1/#Crash",
 "type": "object",
 "properties": {
 "Location": {
 "id": "http://release.niem.gov/niem/niem-core/3.0/#Location",
 "type": "object",
 "properties": {
 "Location2DGeospatialCoordinate": {
 "$ref": "http://release.niem.gov/niem/niem-core/3.0/
 /#Location2DGeospatialCoordinate"
 }
 }
 }
 }
}
}
}
}
```

```

Software Components

| Library | Language | Package |
|---------------------|------------|---------|
| schema-generator.js | JavaScript | n/a |

| Binary | Package |
|-------------|---------|
| Node v6.9.1 | nodejs |

De-Reference

This task creates a JSON Schema that is de-referenced. In other words, references (`$ref`) are replaced with the contents of JSON schema.

For example, a snippet of the de-referenced Crash component is depicted below:

```
```JSON
{
 "title": "Crash",
 "id": "http://release.niem.gov/niem/domains/jxdm/5.1/#Crash",
 "type": "object",
 "properties": {
 "Location": {
 "id": "http://release.niem.gov/niem/niem-core/3.0/#Location",
 "type": "object",
 "properties": {
 "Location2DGeospatialCoordinate": {
 "id": "http://release.niem.gov/niem/niem-core/3.0
 /#Location2DGeospatialCoordinate",
 "type": "object",
 "properties": {
 "GeographicCoordinateLatitude": {
 "id": "http://release.niem.gov/niem/niem-core/3.0
 /#GeographicCoordinateLatitude",
 "type": "object",
 "properties": {
 "LatitudeDegreeValue": {
 "id": "http://release.niem.gov/niem/niem-core/3.0
 /LatitudeDegreeValue",
 "type": "object",
 "properties": {
 "value": {
 "type": "number"
 }
 }
 }
 }
 }
 }
 }
 }
 }
 }
}
```

...

## Software Components

Library	Language	Package
json-schema-ref-parser v3.1.2	JavaScript	NPM

Binary	Package
Node v6.9.1	nodejs

## Validate

This task validates the de-referenced JSON Schema.

## Software Components

Library	Language	Package
ajv v4.11.3	JavaScript	NPM

Binary	Package
Node v6.9.1	nodejs

## Conclusion

## Appendix A - Use Case: NIEM XML Schema Components

Search NIEM XML Schema Components

Generate NIEM Schema Subset

Configure XML-to-JSON-Schema-Converter tasks