www.osgeo.org

OSGeo

OGC API Records: Overview and early implementations

Angelos Tzotsos

OSGeo President

OGC API Records SWG member

OSGeo: Empower everyone with open source geospatial

- Working with the community and our partners:
  - **Open Source:** a collaborative approach to software development.
  - **Open Data:** freely available information to use as you wish
  - **Open Standards:** avoid lock-in with interoperable software
  - **Open Education:** removing the barriers to learning and teaching
  - **Open Science:** share data and software for responsible research
- OSGeo projects heavily involved in the implementation of INSPIRE

OSGeo

Projects ⌄ Resources About OSGeo ⌄ Initiatives ⌄ Community ⌄

OSGeo Projects >

Community projects >

View all projects >
Choose a project >

OSGeo Projects

Content Management Systems
GeoNode

Desktop Applications
Marble
gvSIG Desktop
QGIS Desktop
GRASS GIS

Geospatial Libraries
PROJ
GeoTools
Orfeo ToolBox
GDAL/OGR
GEOS

Metadata Catalogs
GeoNetwork
pycsw

Other
OSGeoLive

Spatial Databases
PostGIS

Web Mapping
MapServer
deegree
OpenLayers
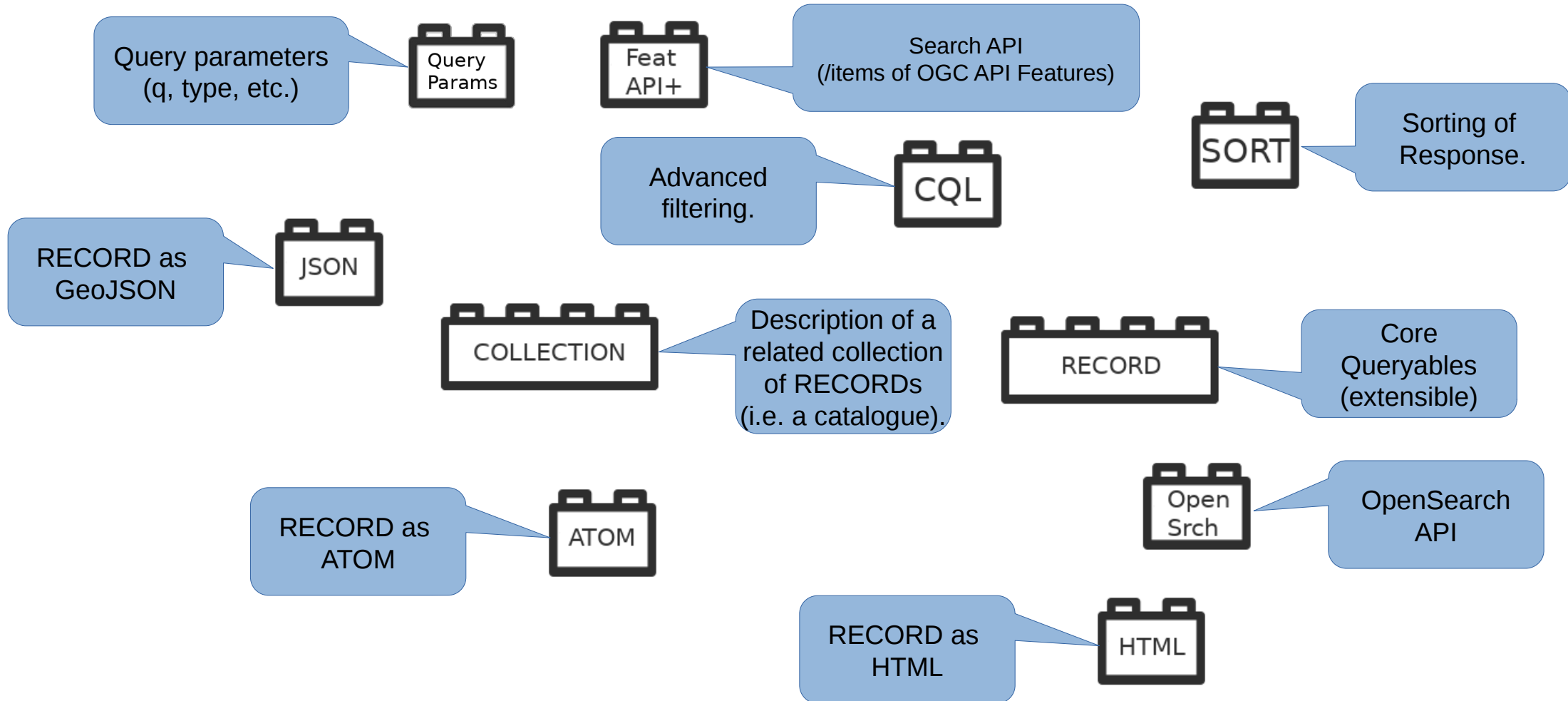GeoMoose
Mapbender
PyWPS
GeoServer

- 1990s:

  - Service Oriented Architecture (SOA)

  - WMS (1999)

- 2000s:

  - Web 2.0 (Ajax, JavaScript, Slippy maps, Tiles)

  - OGC WFS (2002), WCS (2003), WPS (2005), CSW (2007)

- Today:

  - REpresentational State Transfer (REST)

  - HTTP verbs, HTTP codes

  - JavaScript Object Notation

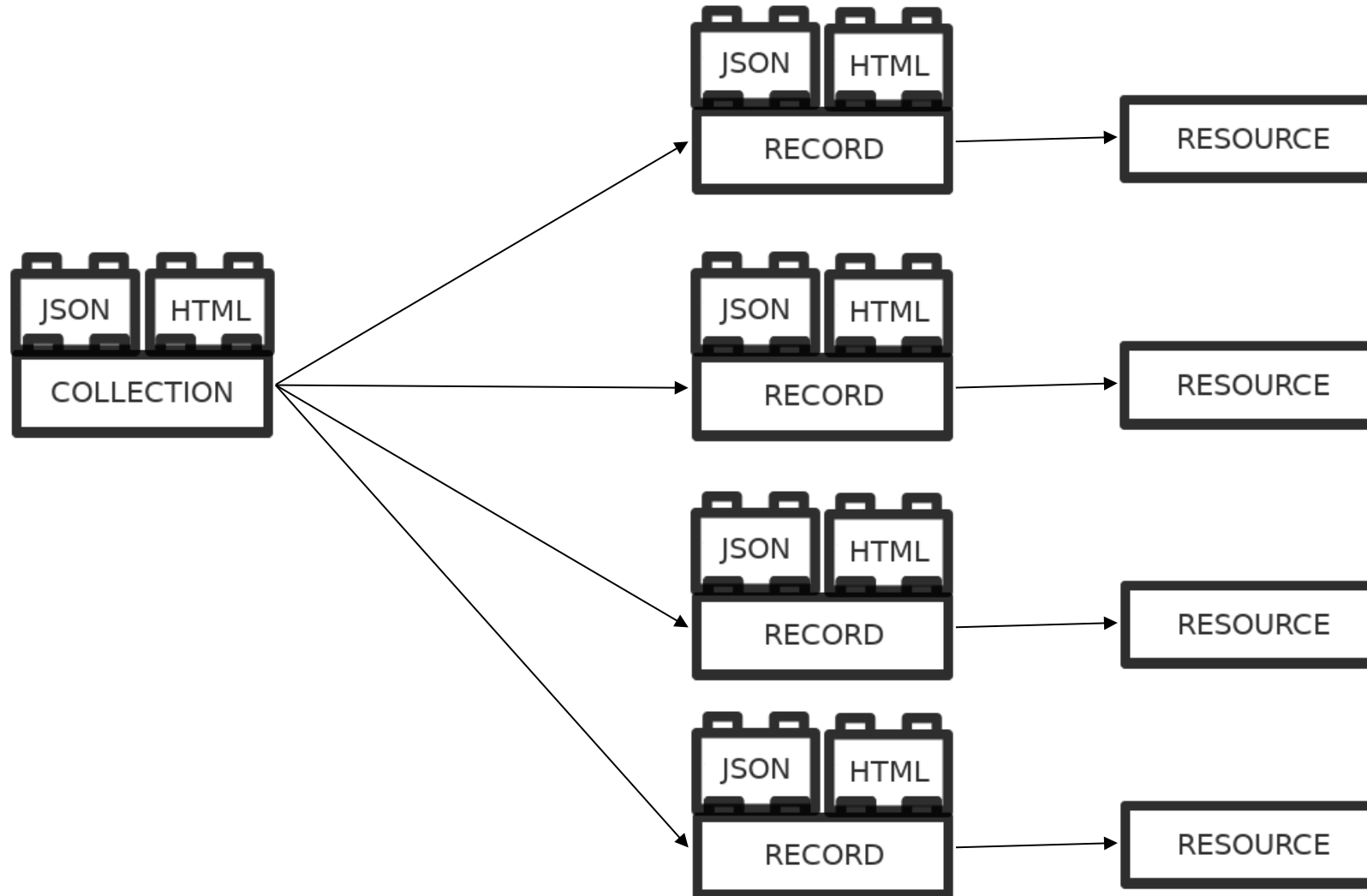 - OpenAPI: Specification on how to describe a REST API

- W3C [Spatial Data On The Web Best Practices](#)
- Developer friendly
- Modular specification development
- Development on [GitHub](#) (closer to Open Source development)
- [OGC API Roadmap](#)
- [OGC API Features](#) Part 1: Core ([standard](#))
- INSPIRE [Best Practice Document](#)
- [OGC API Records](#) Part 1: Core ([draft](#))

- ~~/ows?request=GetFeature&typename=roads&featureid=5~~
- /api/collections/roads/items/5

OGC API Records: Building Blocks

OGC

Query parameters (q, type, etc.) → **Query Params**

Feat API+ → Search API (/items of OGC API Features)

SORT → Sorting of Response.

Advanced filtering. → **CQL**

RECORD as GeoJSON → **JSON**

COLLECTION → Description of a related collection of RECORDs (i.e. a catalogue).

RECORD → Core Queryables (extensible)

RECORD as ATOM → **ATOM**

Open Srch → OpenSearch API

RECORD as HTML → **HTML**

Searchable Catalogue
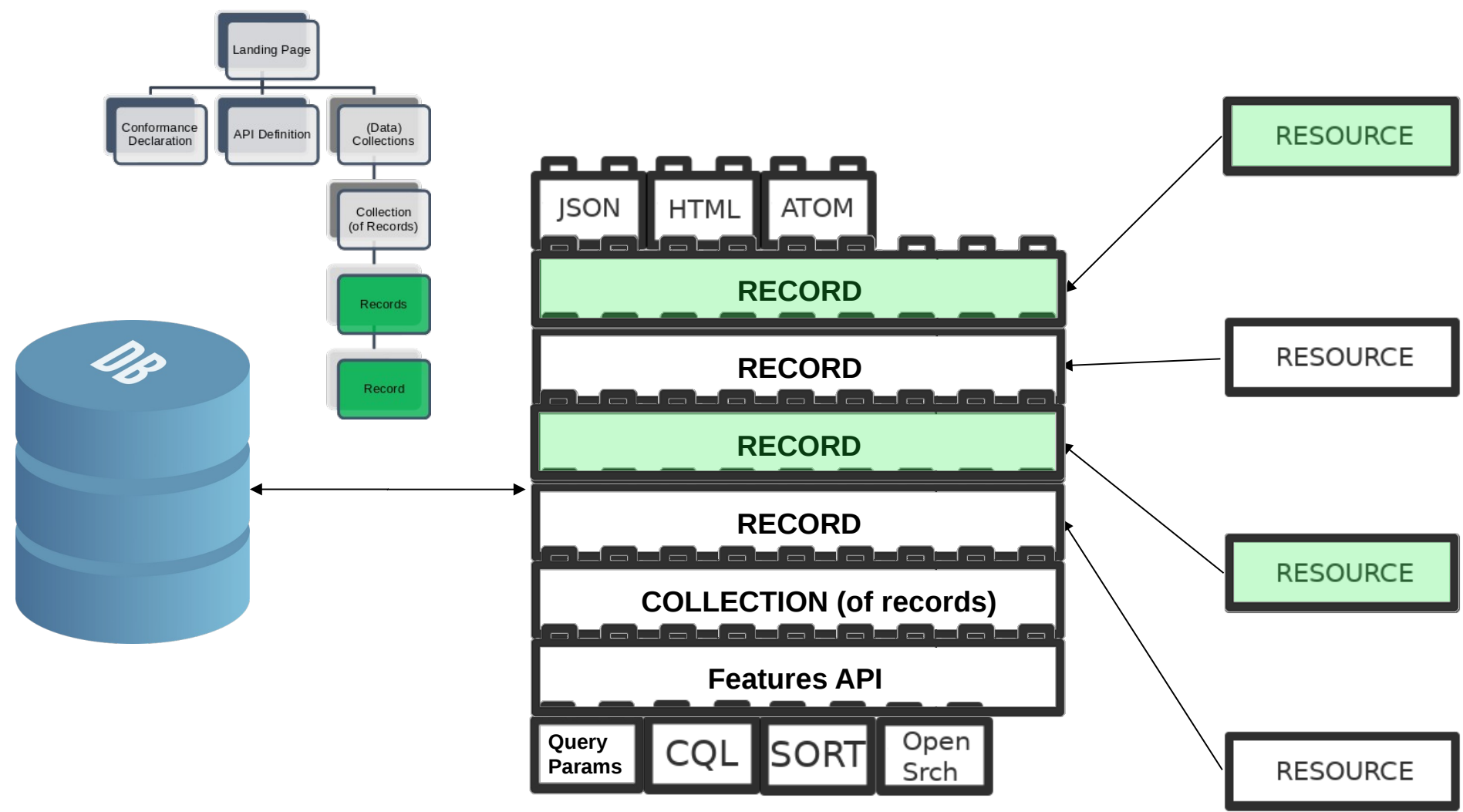
GET /collections/MyCat/items?bbox=-69.64,37.76,-56.12,46.63&datetime=2020-01-11T00:00:00/2020-01-12T00:00:00

API endpoints (searchable catalogue)

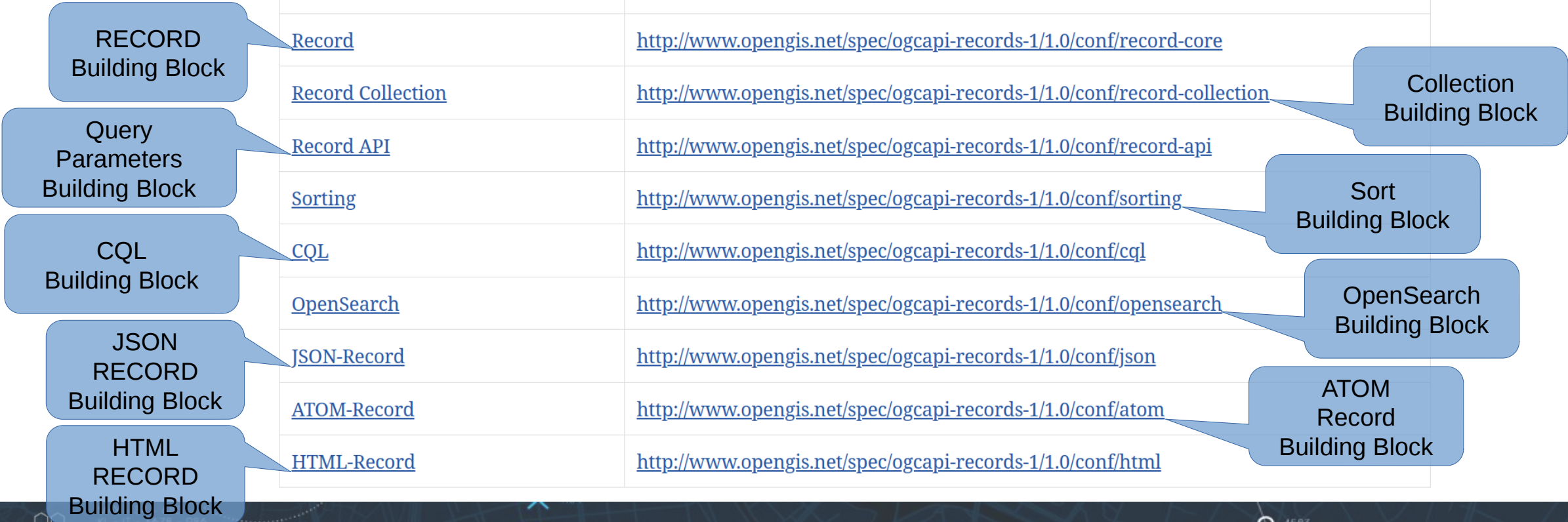| ACCESS PATH	DESCRIPTION
/	GET: Landing page
/api	GET: Service or API description document (OpenAPI)
/conformance	GET: conformance statement
/collections	GET: list of catalogue identifiers with hypermedia controls to each catalogue
/collections/{catalogueId}	GET: Metadata about the specific catalogue including hypermedia controls to other resources POST: create a new catalogue
/collections/{catalogueId}/item	GET: query the catalogue (simple) POST: create a new record
/collections/{catalogueId}/items/{recordId}	GET: get the record PUT: update the record DELETE: remove the record
/collections/{catalogueId}/queryables	GET: list of queryables that can be used in a filter

Conformance Classes

Table 2. Conformance class URIs

Conformance class	URI
Crawlable Catalogue	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/crawlable-catalogue
Searchable Catalogue	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/searchable-catalogue
Local Resources Catalogue	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/local-resources-catalogue
Record	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/record-core
Record Collection	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/record-collection
Record API	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/record-api
Sorting	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/sorting
CQL	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/cql
OpenSearch	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/opensearch
JSON-Record	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/json
ATOM-Record	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/atom
HTML-Record	http://www.opengis.net/spec/ogcapi-records-1/1.0/conf/html

RECORD Building Block

Query Parameters Building Block

CQL Building Block

JSON RECORD Building Block

HTML RECORD Building Block

Collection Building Block

Sort Building Block

OpenSearch Building Block

ATOM Record Building Block

pycsw

- [pycsw](#) is an OARec and OGC CSW server implementation written in Python.
- Early implementation of OGC API Records along many other open source [implementations](#)
- [Demonstration](#)

pycsw Geospatial Catalogue gisdata demo
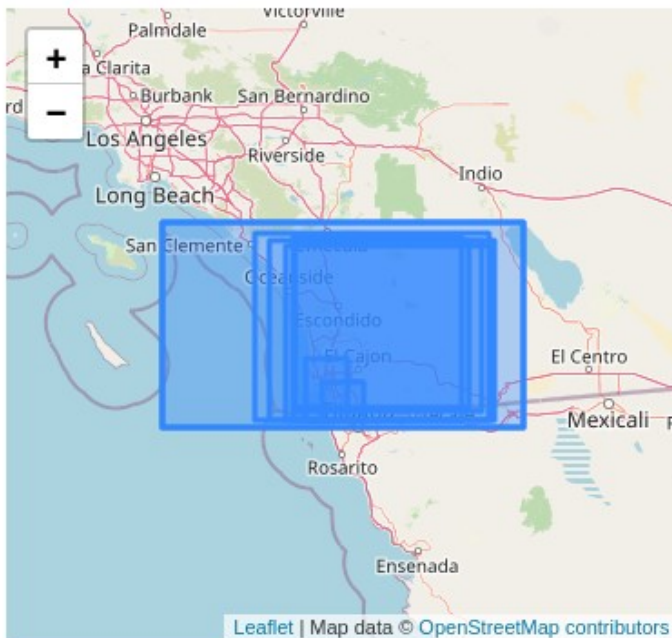
Home   JSON | Contact

pycsw is an OARec and OGC CSW server implementation written in Python

Collections

OpenAPI

Swagger

JSON

Conformance

CSW 3.0.0

CSW 2.0.2

OpenSearch

STAC API

OAI-PMH

SRU

JSON Raw Data Headers

Save Copy Collapse All Expand All ▽ Filter JSON

```
type:                    "FeatureCollection"
▼ features:
  ▼ 0:
      id:                "urn:uuid:dc9b6d52-932a-11ea-ad6f-823cf448c401"
      type:              "Feature"
    ▼ geometry:
        type:            "Polygon"
      ▼ coordinates:
        ▼ 0:
          ▼ 0:
              0:         -117.35
              1:         32.58
          ▼ 1:
              0:         -117.35
              1:         33.45
          ▼ 2:
              0:         -116.21
              1:         33.45
          ▼ 3:
              0:         -116.21
              1:         32.58
          ▼ 4:
              0:         -117.35
              1:         32.58
    ▼ properties:
        datetime:        "20070911"
        start_datetime:  null
        end_datetime:    null
        externalId:      "urn:uuid:dc9b6d52-932a-11ea-ad6f-823cf448c401"
        recordUpdated:   "2020-05-10T21:58:08Z"
        type:            "vector digital data"
        language:        "en-US"
        title:           "AG_PRESERVE"
      ▼ description:
                         "Agriculture Preserve Lands\nThe California Land Conservation Act, better known as the Williamson Act, has been the state's premier
                         its enactment in 1965. More than 16 million of the state's 30 million acres of farm and ranch land are currently protected under th
                         Legislature passed the Williamson Act in 1965 to preserve agricultural and open space lands by discouraging premature and unnecessa
                         an arrangement whereby private landowners contract with counties and cities to voluntarily restrict their land to agricultural and
                         these agreements is a rolling term 10-year contract (i.e., unless either party files a \"notice of nonrenewal,\" the contract is au
                         year.). In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather the
                         preserve defines the boundary of an area within which a city or county will enter into contracts with landowners. The boundary is d
                         supervisors (board) or city council (council) having jurisdiction. Only land located within an agricultural preserve is eligible fo
                         regulated by rules and restrictions designated in the resolution to ensure that the land within the preserve is maintained for agri
      ▼ formats:
          0:             "vector digital data"
      ▼ keywords:
          0:             "Agriculture Preserver"
```
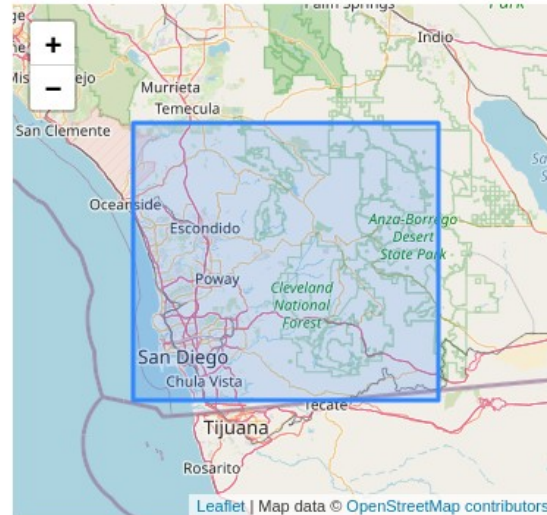
JSON   Raw Data   Headers

Save Copy Collapse All Expand All ▽ Filter JSON

```
id:                "urn:uuid:dc9b6d52-932a-11ea-ad6f-823cf448c401"
type:              "Feature"
▼ geometry:
    type:          "Polygon"
    ▼ coordinates:
        ▼ 0:
            ▼ 0:
                0:         -117.35
                1:         32.58
            ▼ 1:
                0:         -117.35
                1:         33.45
            ▼ 2:
                0:         -116.21
                1:         33.45
            ▼ 3:
                0:         -116.21
                1:         32.58
            ▼ 4:
                0:         -117.35
                1:         32.58
▼ properties:
    datetime:          "20070911"
    start_datetime:    null
    end_datetime:      null
    externalId:        "urn:uuid:dc9b6d52-932a-11ea-ad6f-823cf448c401"
    recordUpdated:     "2020-05-10T21:58:08Z"
    type:              "vector digital data"
    language:          "en-US"
    title:             "AG_PRESERVE"
    ▼ description:     "Agriculture Preserve Lands\nThe California Land Conservation Act, better known as the Williamson Act, has been the state's premier agri
                       enactment in 1965. More than 16 million of the state's 30 million acres of farm and ranch land are currently protected under the William
                       passed the Williamson Act in 1965 to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to
                       whereby private landowners contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-spac
                       a rolling term 10-year contract (i.e., unless either party files a \"notice of nonrenewal,\" the contract is automatically renewed for a
                       parcels are assessed for property tax purposes at a rate consistent with their actual use, rather then potential market value.\nAn agric
                       area within which a city or county will enter into contracts with landowners. The boundary is designated by resolution of the board of s
                       having jurisdiction. Only land located within an agricultural preserve is eligible for a Williamson Act contract. Preserves are regulate
                       the resolution to ensure that the land within the preserve is maintained for agricultural or open space use."
    ▼ formats:
        0:             "vector digital data"
    ▼ keywords:
        0:             "Agriculture Presever"
        1:             "Preserve Lands"
        2:             "Ag Preserve"
    ▼ associations:
```

https://github.com/opengeospatial/ogcapi-records

https://github.com/opengeospatial/ogcapi-records/blob/master/implementations.md

- Thanks to Peter Vretanos (OGC API Records SWG chair) for his slides contributions!

Photo by Javi Lorbada on Unsplash

Thank you!
Welcome to open geospatial

OSGeo