Smart handoffs: defining spatial and temporal parameters with schema.org

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INTRODUCTION

Smart handoff demo

Image sources: NASA (https://search.earthdata.nasa.gov)
NASA / GSFC (https://giovanni.gsfc.nasa.gov)
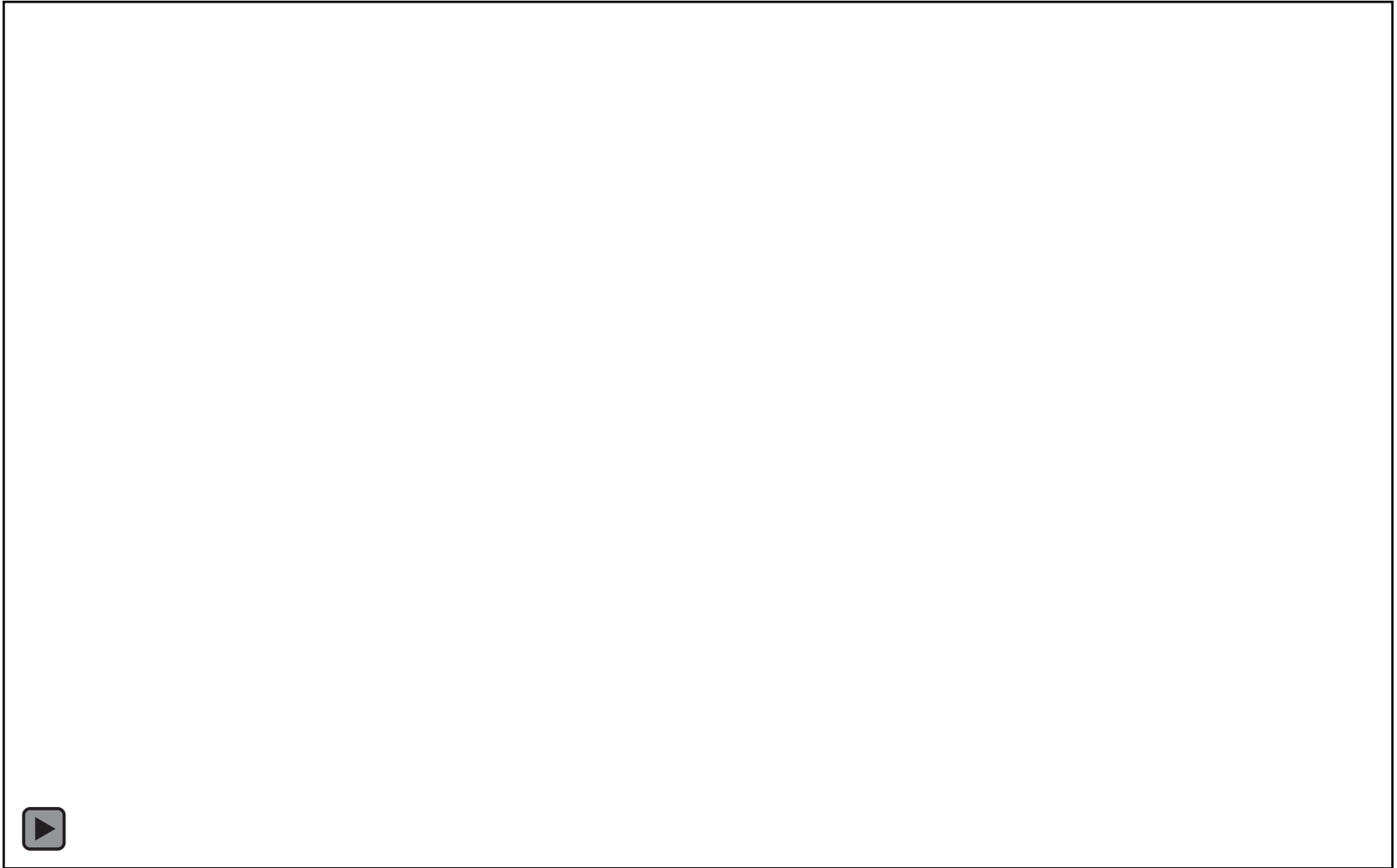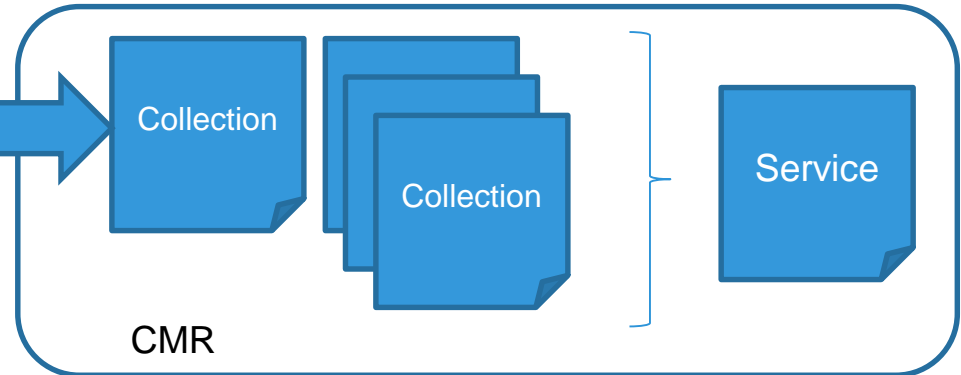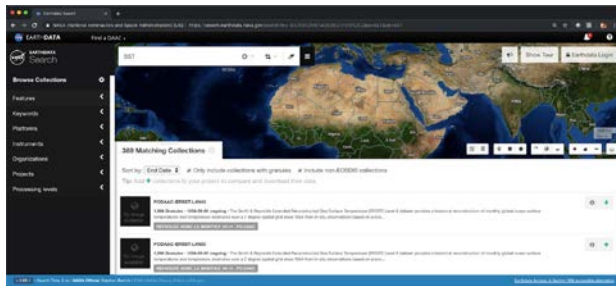
3

How do we do that?

I have the following constraints,
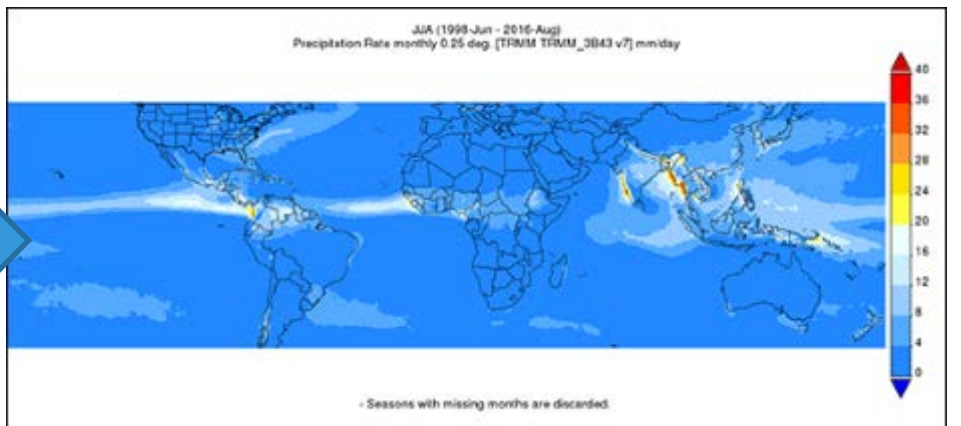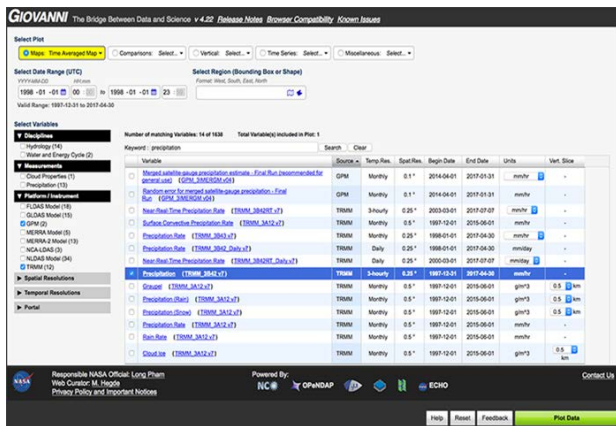- Data Collection
- Spatial
- Temporal

How do I get that context to another tool?

1. I need to be able to describe the API
2. Construct a URL based on that description and my user's current context

Service + collection association

Collection

Collection

Service

CMR

Smart handoff

Standards for API description

Schema.org search actions

- https://schema.org/docs/actions.html
- 'The act of searching for an object'

```
{
  "@context": "http://schema.org",
  "@type": "ServiceChannel",
  "url": "https://giovanni.gsfc.nasa.gov/giovanni",
  "providesService": {
    "@type": "Service",
    "name": "Giovanni",
    "url": "https://giovanni.gsfc.nasa.gov/giovanni",
    "potentialAction": {
        "@type": "SearchAction",
        "target": "https://giovanni.gsfc.nasa.gov/giovanni/#service=TmAvMp&starttime={start}&endtime={end}&bbox={box}&dataKeyword={collection}&data={variables}",
        ...
    }
  }
}
```

TBD

CHALLENGES

Defining a constraint

If the user selects a temporal constraint in tool A, how do I **identify** that same constraint in tool B?

And how do I **manifest** that same constraint in tool B?

TBD

For example…

Earthdata Search , has a user context of

- AIRS/Aqua L3 Daily Standard Physical Retrieval
- Mediterranean Sea
- July 2018

```
https://search.earthdata.nasa.gov/search/granules?p=C12385
17289-GES_DISC&qt=2018-07-01T00:00:00.000Z,2018-07-
31T23:59:59.000Zsb=-28.8,20.4,36.4,39.1
```

Which would be represented in a destination tool, **Giovanni** as;

```
https://giovanni.gsfc.nasa.gov/giovanni/#service=TmAvMp&st
arttime=2018-07-01T00:00:00Z&endtime=2018-07-
31T23:59:59Z&bbox=8.20,28.8,36.4,39.1&dataKeyword=AIRS3STD
```

TBD

Context parameter mapping

Earthdata Search			Giovanni		
Type	Keyword	Format	Type	Keyword	Format
Collection identifier	p	Custom	Free Text	dataKeyword	Custom
Time interval	qt	Custom	Start time	starttime	ISO 8601
Time interval	qt	Custom	End time	Endtime	ISO 8601
Bounding box	sb	ISO 19115	Bounding box	bbox	ISO 19115

How do we describe that?

TBD

Current solution: default values

Each parameter has a *propertyValueSpecification*

Which has a default value.

Which can be described by a type rather than a value.

In action…

```
{
  "@context": "http://schema.org",
  "@type": "ServiceChannel",
  "url": "https://giovanni.gsfc.nasa.gov/giovanni",
  "providesService": {
    "@type": "Service",
    "name": "Giovanni",
    "url": "https://giovanni.gsfc.nasa.gov/giovanni",
    "potentialAction": {
      "@type": "SearchAction",
      "target": "https://giovanni.gsfc.nasa.gov/giovanni/#service=TmAvMp&starttime={start}&endtime={end}&bbox={box}&dataKeyword={collection}&data={variables}",
      "query-input": {
        {
          "@type": "PropertyValueSpecification",
          "valueRequired": false,
          "valueName": "start",
          "defaultValue": {
            "@id": "schema:startDate",
            "@type": "Property"
          }
        }
        {
          "@type": "PropertyValueSpecification",
          "valueRequired": false,
          "valueName": "end",
          "defaultValue": {
            "@id": "schema:endDate",
            "@type": "Property"
          }
        }
      },
      {
        "@type": "PropertyValueSpecification",
        "valueRequired": false,
        "valueName": "box",
        "defaultValue": {
          "@type": "Place",
          "geo": {
            "@type": "GeoShape",
            "box": "-90.0000 180.0000 90.0000 -180.0000"
          }
        }
      },
      {
```

Temporal Constraint

Spatial Constraint

CONCLUSION

Limitations & risks

- Verbose
- No consistency between temporal and spatial
- Feels like a square peg in a round hole
- Limited to defined types in schema.org
- Limited to standard formats*
- Doesn't solve collection constraints

*Use standard formats in your API!

TBD

How do we solve these problems?

- Update schema.org for a square peg, square hole solution?
  - But keep it simple to start with!
- Let's all make a promise to use standard formats!
- Let's all start using known (in CMR) identifiers for our collections!
- Ideas?

Doug said: Leave them on a high!

Did you see that demo at the beginning?

That was real… in Production…

TBD

QUESTIONS

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TBD