

# OGC API - Processes – Part 1: Core

(Synchronous Execution) – with #217 resolution (1.1 or 2.0)

**POST**

`/processes/{processId}/execution`

<http://www.opengis.net/def/rel/ogc/1.0/execute>



## **Execution Request:**

- single process
- inputs
  - JSON values (incl. BBOX)
  - base64-encoded binary data
  - hrefs (fixed URLs)
- fixed Aol / Rol
- optional selection/configuration of outputs (all of them by default)

## **Server Response (upon completion)**

- Content type based on **Accept:**
- For single output:
  - output itself in negotiated format
- For multiple selected outputs:
  - **JSON:** as inline values and/or links to large outputs
  - **Zip or multipart:** as separate files



# OGC API - Processes – Part 1: Core

(Asynchronous Execution) – with #217 resolution (1.1 or 2.0)



Prefer: respond-async **POST**

/processes/{processId}/**execution**

<http://www.opengis.net/def/rel/ogc/1.0/execute>

## Execution Request:

- single process
- inputs
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## Execution Response (immediate)

- JSON Status Info in response
- **Location:** response header (/jobs/{jobId})
  - **GET** to poll job status (200 Status Info)
  - **DELETE** to cancel job

201

## Results Response (once complete)

/jobs/{jobId}/**results**{resultId}

- output itself in negotiated format
- **JSON:** inline values / links to large outputs
- **Zip** or **Multipart:** as separate files

**GET**

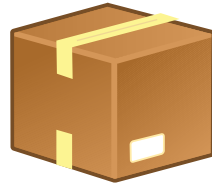
200



# Processes – Part 2: Deploy, Replace, Undeploy



**POST**



**/processes**

<http://www.opengis.net/def/rel/ogc/1.0/processes>

## **Application package:**

- Everything needed to deploy a new process
- Allows to infer process description
- Could be (or reference):
  - OGC Application Package
    - process description (optional?)
    - process definition (CWL, MOAW, or OpenEO?)
  - CWL Workflow
  - Extended execution request (Part 3 / MOAW)
  - OpenEO Workflow
  - Docker Container
  - Jupyter Lab notebook
  - Python Code
  - ...

## **Server Response**

- Process in *Location*:  
response header



**201**

**/processes/{processId}**

**PUT** to replace

**DELETE** to undeploy

# Processes – Part 3: Workflows & Chaining

(Ad-hoc workflows: **Nested / Remote Process**)



**POST**



/processes/{processId}/**execution**

<http://www.opengis.net/def/rel/ogc/1.0/execute>



## **Execution Request:**

- New "**process**" input type
- Schema for process is same as top-level execution request object
- At top level, "**process**" optional / redundant for server, but informs client where to POST
  - e.g., GDAL loads *.moaw* execution request
- **Nested Process:** process local to server
- **Remote Process:** URL of remote process
- Specifies **ad-hoc** processing workflows
  - No need for client to deploy workflow as a process first before executing it
  - Distributed workflows with *Remote Process*

## **Server Response**

- Same for Synchronous / Asynchronous execution mode



# Processes – Part 3: Workflows & Chaining

## (Collection Input / Remote Collection)



POST

/processes/{processId}/**execution**

<http://www.opengis.net/def/rel/ogc/1.0/execute>



### Execution Request:

- New "**collection**" input type
- Local id (**Collection Input**) or URL (**Remote Collection**) for OGC API collection supporting one or more access mechanism (e.g., *Features, Tiles, Coverages*)
- Not tied to specific access mechanism, format
  - No */items*, */coverage*, */tiles*; No *f=*
  - Allows client / server negotiation of best exchange mechanism
- URL not tied to specific AoI / RoI
  - (no *bbox=*, *zoom-level=...*, *subset=*, *scale-factor=...*)
  - Facilitates re-use of workflow, on-demand processing (for *Collection Output*)
- Possibility to add parameter properties (e.g., *filter=*)

### Server Response

- Same for Synchronous / Asynchronous execution mode



# Processes – Part 3: Workflows & Chaining

## (Collection / Landing Page Output)



POST

/processes/{processId}/**execution**

<http://www.opengis.net/def/rel/ogc/1.0/execute>



### Execution Request

- Same as with *Part 1: Core*
- *Part 3: Workflows* extensions (ad-hoc workflows / collection input)
- Avoid inputs tied to specific Aol / Rol

*response=collection*  
*response=landingPage*



### Server Response (ready to execute)

- *landingPage*: OGC API Landing Page
  - from *Common – Part 1: Core*
- *collection*: OGC API Collection description
  - from *Common – Part 2: Geospatial Data*

### OGC API Access Mechanism Requests

(e.g., /items, /coverage, /tiles...)  
for specific Aol / Rol, format

(*bbox=*, *zoom-level=*,  
*subset=*, *scale-factor=*,  
/tiles/{tms}/{z}/{y}/{x}, *Accept: ...*)



*triggers on-demand  
localized processing*

200

**OGC API Access  
Mechanism Response**  
with processing output

# Derived fields, filters, sorting, multi-collections across OGC API access mechanisms (early draft proposal)



GET

/coverage, /items, /tiles...



<http://www.opengis.net/def/rel/ogc/1.0/coverage>  
<http://www.opengis.net/def/rel/ogc/1.0/items>  
<http://www.opengis.net/def/rel/ogc/1.0/tilesets-vector>  
<http://www.opengis.net/def/rel/ogc/1.0/tilesets-coverage>



- properties=** Select specific properties or define new properties derived from existing ones, using CQL2 as a general expression language  
e.g., **properties**=ndvi: (B5-B4) / (B5+B4)
- filter=** Filter data with a CQL2 predicate  
e.g., **filter**=(B5-B4) / (B5+B4)>0.2
- sortby=** Sort data (allow general CQL2 expression?)  
e.g., **sortby**=- (B5-B4) / (B5+B4)
- collections=** Select multiple collections to be used for derived fields, filter, allowing joins (including spatial joins)  
e.g., **collections**=DEM&**filter**=DEM.Elevation<50 and distance(DEM.cells, geometry)<200

- Collections accessed can be virtual, generated from Part 3 – Collection Output.
- These parameters could also be modifiers for Part 3 – Collection Input



## Server Response

- Data with selected / derived fields, filtered, sorted and/or joined accordingly