
title: o2r web API v1.0

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o2r web API v1.0

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About

The o2r web API acts as the interface between the [o2r microservices](#) and the [web interface](#).

The API provides services around the executable research compendium (ERC), or "compendium" for short, which is documented [in the ERC spec](#).

A good starting point for understanding the different parts of the API is the [compendium life-cycle](#).

The API is implemented as a [RESTful](#) API. The endpoint for the current version is `/api/v1`.

Unless specified otherwise, responses are always in JSON format. Body parameters in `POST` requests are expected in `multipart/form-data` format. Requests to the API should always be made with a secure connection using `HTTPS`. Some requests require [authentication](#) with a specific [user level](#).

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Compendium lifecycle

An authorized user (see [user levels](#)) can create compendia from different sources, i.e. [direct API upload](#) or [via a public share](#).

The uploaded workspace is then treated as a [candidate compendium](#) until all required [metadata](#) is provided.

A candidate must be [saved](#) to become publicly available, and then may not become a candidate again.

A published compendium can be [executed](#) and the whole compendium can be [shipped](#) to repositories for preservation purposes.

A user can combine data and workflow of multiple compendia with [substitution](#).

[Specific users](#) can (i) create [public links](#) for candidates so these can be inspected by third parties without logging in, and (ii) manage [users](#)).

The API provides a generic [search](#) endpoint for finding compendia and jobs and uses [ORCID and OAuth for authentication](#).

Base URLs:

- <https://o2r.uni-muenster.de/api/v1>

Email: [o2r project](#) Web: [o2r project](#)

License: [Creative Commons CC0 1.0 Universal License](#)

Authentication

- API Key (cookie_authentication)
 - Parameter Name: **connect.sid**, in: cookie.

Compendium

Candidate process

After uploading a compendium is *not* instantly publicly available.

It is merely a **candidate**, because metadata still must be completed for the compendium to be valid.

Users with sufficient rights can create [public links](#) for a candidate compendium.

The following process models this intermediate state of a compendium.

Creation and view

Candidates can be identified by the property `candidate`.

It is set to `true` after creating a new compendium by [upload](#) or [public share submission](#) and the authoring user having reviewed the metadata.

⚠ Note

It is not possible to circumvent the metadata review. Only a successful [metadata update](#) can set `candidate: true`.

Example:

```
{
  "id": "12345",
  "metadata": ... ,
  "created": "2016-08-01T13:57:40.760Z",
  "files": ...,
  "candidate": true
}
```

Only the creating user and users with [required level](#) can view a candidate and see the `candidate` property while it is `true` .

When accessing a [list of compendia](#) for a specific user *as that user*, then this list is extended by available candidates.

The candidates may be added to the response independently from any pagination settings, i.e. if a client requests the first 10 compendia for a user having two candidates, the client should be prepared to handle 12 items in the response.

Metadata review and saving

After the user has reviewed and potentially updated the metadata as required and [saved them](#) successfully, then the candidate status is changed (`candidate: false`) and the compendium is publicly available.

The `candidate` property is not exposed any more if it is `false` .

It is *not* possible to save invalid metadata or to manually change the `candidate` property, therefore a compendium cannot become a candidate again after successful completion of the creation.

Deletion

Unlike published compendia, a candidate can be deleted by a the authoring user, see [delete compendium](#).

upload_compendium

POST /compendium

Upload via API

Upload a research workspace or full compendium as a compressed `.zip` archive with an HTTP `POST` request using `multipart/form-data` .

The upload is only allowed for logged in users. Upon successful extraction of archive and processing of the contents, the `id` for the new compendium is returned.

⚠ Required user level and authentication

The user creating a new compendium must have the required [user level](#). Requests must be authenticated with a cookie `connect.sid` , see [user authentication](#).

```
curl -F "compendium=@compendium.zip;type=application/zip" \
  -F content_type=compendium \
  --cookie "connect.sid=<cookie string here>" \
  https://.../api/v1/compendium
```

```
curl -F "compendium=@path/to/workspace.zip;type=application/zip" \
  -F content_type=workspace \
  --cookie "connect.sid=<cookie string here>" \
  https://.../api/v1/compendium
```

⚠ Important

After successful upload the [candidate process](#) must be completed for workspaces.

For local testing you can quickly upload some of the example compendia and workspaces from the [erc-examples](#) project.

Public share

Load a research compendium by submitting a link to a cloud resource using an HTTP `POST` request using `multipart/form-data`.

Currently, the following repositories are supported:

- [Sciebo](#)
- [Zenodo](#)
- [Zenodo Sandbox](#)

Common

All repositories use the same API endpoint `https://.../api/v1/compendium`, but with different required/optional parameters.

The upload is only allowed for logged in users.

⚠ Required user level and authentication

The user creating a new compendium must have the required [user level](#). Requests must be authenticated with a cookie ``connect.sid``, see [user authentication](#).

To run the load from the command line, login on the website and open you browser cookies.

Find a cookie issued by `o2r.uni-muenster.de` with the name `connect.sid`.

Copy the contents of the cookie into the request example below.

Upon successful download from the public share, the `id` for the new compendium is returned.

```
curl -F "content_type=compendium" \  
-F "share_url=https://uni-muenster.sciebo.de/index.php/s/G8vxQ1h50V4HpuA" \  
--cookie "connect.sid=<code string here>" \  
https://.../api/v1/compendium
```

⚠ Warning "Important"

After successful load from a public share, the [candidate process](#) applies.

Sciebo

[Sciebo](#) is a cloud storage service at North Rhine-Westphalian universities.

Although it builds on ownCloud and the implementation might be able to handle any ownCloud link, only Sciebo's publish shares are supported by this API.

File selection

Depending on the public share contents different processes are triggered:

1. If a file named `bagit.txt` is found, the directory is checked for Bagit validity

2. If a single zip file is found, the file is extracted, if multiple zip files are found, the filename has to be specified, otherwise an error is returned
3. If a single subdirectory is found, the loader uses that subdirectory as the base directory for loading
4. Depending on the value of `content_type` (see below), the public share contents are treated as a complete compendium or as a workspace

Example data

For testing purposes you can use the following public share, which contains a few ready-to-use compendia:

Example data

For testing purposes you can use the following public shares.
They contain the a compendium with metadata.

- Sciebo: <https://uni-muenster.sciebo.de/index.php/s/G8vxQ1h50V4HpuA>
- Zenodo: <https://sandbox.zenodo.org/record/69114>

Body parameter

```
content_type: compendium
compendium: string
path: string
doi: string
zenodo_record_id: string
filename: string
```

Parameters

| Name | In | Type | Required | Description |
|------|------|--------------------------------|----------|--------------------------------|
| body | body | new_compendium | true | The Compendium to be uploaded. |

Detailed descriptions

body: The Compendium to be uploaded.

Example responses

upload response

```
{
  "id": "a4Nd1"
}
```

Bad Request due to not supported content_type

```
{
  "error": "provided content_type not implemented"
}
```

Unauthorized due to user not being logged in.

```
{
  "error": "user is not authenticated"
}
```

Forbidden due to user level not allowing upload

```
{
  "error": "user level does not allow compendium creation"
}
```

```
{
  "error": "host is not allowed"
}
```

Unprocessable Entity

```
{
  "error": "public share URL is invalid"
}
```

```
{
  "error": "DOI is invalid"
}
```

```
{
  "error": "files with unsupported encoding detected: [{ 'file': '/tmp/o2r/compendium/ejpmi/data/test.txt', 'enc"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|--------------------------------------|-------------------------------------------------|-------------------------------------|
| 200 | OK | upload response | upload_response |
| 400 | Bad Request | Bad Request due to not supported content_type | general_error_model |
| 401 | Unauthorized | Unauthorized due to user not being logged in. | general_error_model |
| 403 | Forbidden | Forbidden due to user level not allowing upload | general_error_model |
| 422 | Unprocessable Entity | Unprocessable Entity | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: [cookie_authentication](#)

list_compendium

GET /compendium

List compendium

Returns up to 100 results by default.

Parameters

| Name | In | Type | Required | Description |
|--------|-------|---------|----------|-------------------------------------------------------------------------------------------------------------|
| job_id | query | string | false | Comma-separated list of related job ids to filter by. |
| user | query | string | false | Public user identifier to filter by. |
| doi | query | string | false | A DOI to filter by. |
| start | query | integer | false | Starting point of the result list. <code>start - 1</code> results are skipped. Defaults to <code>1</code> . |
| limit | query | integer | false | Limits the number of results in the response. Defaults to <code>100</code> . |

Example responses

Returns all the matching compendia as an array

```
{
  "results": [
    "nkm4b",
    "nb2sm",
    "... "
  ]
}
```

If there is no compendium found, the service returns an empty list.\

`GET /api/v1/compendium?doi=not_a_doi`

```
{
  "results": []
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-----------------------------------------|-------------------------------|
| 200 | OK | A json Array with the matching results. | list_response |

This operation does not require authentication

view_compendium

`GET /compendium/{compendium_id}`

View a single compendium and metadata

This includes the complete metadata set, related job ids and a tree representation of the included files. The created timestamp refers to the upload of the compendium. It is formatted as [RFC-3339](#).

`curl https://.../api/v1/$ID`

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |

Example responses

Returns a object with informations about the matching compendium.

```
{
  "id": "comid",
  "metadata": "...",
  "created": "2016-08-01T13:57:40.760Z",
  "user": "0000-0001-0273-7906",
  "files": "...",
  "bag": true,
  "compendium": true,
  "supstituted": true
}
```

The metadata for an example compendium

```
{
  "id": "12345",
  "metadata": {
    "raw": {
      "title": "Programming with Data. Springer, New York, 1998. ISBN 978-0-387-98503-9.",
      "author": "John M. Chambers",
      "more content": "..."
    },
    "o2r": {
      "title": "Programming with Data",
      "creators": [
        {
          "name": "John M. Chambers"
        }
      ],
      "publication_date": 1998,
      "more content": "..."
    },
    "zenodo": {}
  },
  "created": "...",
  "files": "..."
}
```

Returns an error

```
{
  "error": "no compendium with this id"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|----------------------------------|-------------------------------|
| 200 | OK | Returns the matching Compendium. | view_response |

| Status | Meaning | Description | Schema |
|--------|-----------|----------------------------------------|-------------------------------------|
| 404 | Not Found | No compendium with the given id found. | general_error_model |

This operation does not require authentication

delete_compendium

```
DELETE /compendium/{compendium_id}
```

Delete compendium

To delete a compendium **candidate**, an HTTP `DELETE` request can be send to the compendium endpoint.

⚠ Important

Once a compendium is not a candidate anymore, it can only be deleted by admins with the required [user level](#). The compendium contents should be moved to a specific location to the server as a backup.

⚠ Required user level for candidate deletion

The user deleting a candidate must be the author or have the required [user level](#).

Request

The following request deletes the compendium with the identifier 12345, including metadata and files.

```
curl -X DELETE https://.../api/v1/compendium/12345 \
--cookie "connect.sid=<code string here>"
```

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |

Example responses

Unauthorized due to user not being logged in.

```
{
  "error": "user is not authenticated"
}
```

Returns an error

```
{
  "error": "user level not sufficient to delete compendium"
}
```

```
{
  "error": "compendium not found"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------|
| 204 | No Content | The response has an HTTP status of <code>204</code> and an empty body for successful deletion. | None |
| 401 | Unauthorized | Unauthorized due to user not being logged in. | general_error_model |
| 403 | Forbidden | Forbidden due to userlevel not being high enough. | general_error_model |
| 404 | Not Found | No compendium with the given id found. | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: `cookie_authentication`

download_compendium

```
GET /compendium/{compendium_id}.{file_extension}
```

Download compendium

Download compendium files as an archive.

Warning

This download feature does *not* provide access to complete and valid compendia, because it does not comprise an update of the [packaging](#), while it does include [brokered metadata files](#). To download a valid compendium, create a [shipment](#) with the appropriate recipient.

Supported formats are as follows:

- `zip`
- `tar`
- `tar.gz`

Request

```
GET /api/v1/compendium/$ID.zip
```

```
GET /api/v1/compendium/:id.zip
GET /api/v1/compendium/:id.tar
GET /api/v1/compendium/:id.tar.gz
GET /api/v1/compendium/:id.tar?gzip
GET /api/v1/compendium/:id.zip?image=false
```

Parameters

| Name | In | Type | Required | Description |
|------|----|------|----------|-------------|
|------|----|------|----------|-------------|

| Name | In | Type | Required | Description |
|----------------|-------|---------|----------|------------------------------------------------------------------------------------------------|
| gzip | query | string | false | <i>only for .tar endpoint</i> - compress tarball with gzip |
| image | query | boolean | false | ?image=true or ?image=false - include tarball of Docker image in the archive , default is true |
| compendium_id | path | string | true | Id of the compendium |
| file_extension | path | string | true | File Extension for Compendium Download |

Detailed descriptions

gzip: *only for .tar endpoint* - compress tarball with gzip

image: ?image=true or ?image=false - include tarball of Docker image in the archive , default is true

Enumerated Values

| Parameter | Value |
|----------------|--------|
| file_extension | zip |
| file_extension | tar |
| file_extension | tar.gz |

Example responses

A successfull download of a compendium as a .zip file.

The zip file contains a comment with the original URL.

```
$ unzip -z CXE1c.zip
Archive:  CXE1c.zip
Created by o2r [https://.../api/v1/compendium/CXE1c.zip]
```

Returns an error

```
{
  "error": "no job found for this compendium, run a job before downloading with image"
}
```

```
{
  "error": "no compendium with this id"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-------------|--------|
|--------|---------|-------------|--------|

| Status | Meaning | Description | Schema |
|--------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 200 | OK | The response is a file attachment. The suggested file name is available in the HTTP header content-disposition using the respective file extension for a file named with the compendium identifier (e.g. <code>wdpV9.zip</code> , <code>Uh1o0.tar</code> , or <code>LBit1.tar.gz</code>). | None |
| 400 | Bad Request | A bad request. | general_error_model |
| 404 | Not Found | No compendium with the given id found. | general_error_model |

Response Schema

This operation does not require authentication

upload_link

PUT `/compendium/{compendium_id}/link`

Create link

The following request creates a link for the candidate compendium with the identifier 12345.

```
curl -X PUT https://.../api/v1/compendium/12345/link \
  --cookie "connect.sid=<code string here>"
```

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |

Example responses

The response has an HTTP status of `200` if the public link was created.
The response body provides the public link `id` , which can be used for subsequent requests to:

- view the candidate compendium
- download candidate compendium files
- start jobs for the candidate compendium

Only **1 public link** is created per candidate compendium.
Subsequent requests will return the same link.

```
{
  "id": "1Sa0CqxmNE080g42a00NVRyUVoDWeBLr",
  "compendium_id": "xkjkzY",
  "user": "0000-0002-1701-2564"
}
```

Returns an error, due to not being authorized

```
{
  "error": "not authorized"
}
```

Returns an error

```
{
  "error": "compendium not found"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|--------------|-----------------------------------------------|-------------------------------------|
| 200 | OK | Link creation response | link_response |
| 401 | Unauthorized | Bad Request due to not supported content_type | general_error_model |
| 404 | Not Found | Unauthorized due to user not being logged in. | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: [cookie_authentication](#)

delete_link

DELETE /compendium/{compendium_id}/link

Create link

The following request deletes a link for the candidate compendium with the identifier 12345.

```
curl -X DELETE https://.../api/v1/compendium/12345/link \
  --cookie "connect.sid=<code string here>"
```

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |

Example responses

Returns an error, due to not being authorized

```
{
  "error": "not authorized"
}
```

Returns an error

```
{
  "error": "user level not sufficient to delete compendium"
}
```

```
{
  "error": "compendium not found"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|------------------------------|-------------------------------------------------|-------------------------------------|
| 204 | No Content | Link deletion successfull | None |
| 401 | Unauthorized | Bad Request due to not supported content_type | general_error_model |
| 403 | Forbidden | Forbidden due to user level not allowing upload | general_error_model |
| 404 | Not Found | Unauthorized due to user not being logged in. | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: `cookie_authentication`

get__shipment_{shipment_id}_publishment

```
GET /shipment/{shipment_id}/publishment
```

List deposition files

You can request a list of all files in a deposition and their properties with the sub-resource `/publishment`.

```
GET api/v1/shipment/<shipment_id>/publishment
```

You can find the `id` of the file you want to interact with in this json list object at `files[n].id`, where `n` is the position of that file in the array.

Files can be identified in this response by either their id in the depot, their filename or their checksum.

Parameters

| Name | In | Type | Required | Description |
|-------------|------|--------|----------|--------------------|
| shipment_id | path | string | true | Id of the shipment |

Example responses

Returns a JSON object with all the deposition files of this shipment.

```
{
  "files": [
    {
      "filesize": 393320,
      "id": "bae2a60c-bd59-47e1-a443-b34bb7d0a981",
      "filename": "4XgD9.zip",
      "checksum": "702f4db3e53b22176d1d5ddcda462a27",
      "links": {
```

```
    "self": "https://sandbox.zenodo.org/api/deposit/depositions/71552/files/bae2a60c-bd59-47e1-a443-b34bb",
    "download": "https://sandbox.zenodo.org/api/files/31dc8f3d-df00-4d8a-bd99-64ef341372b3/4XgD9.zip"
  }
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-----------------------------------------------------------------------|-----------------------------------------|
| 200 | OK | Returns a JSON object with all the deposition files of this shipment. | shipment_files_response |

This operation does not require authentication

delete__shipment_{shipment_id}files{file_id}

```
DELETE /shipment/{shipment_id}/files/{file_id}
```

Delete a specific file from a deposition

You can delete files from a `shipped` shipment's deposition. You must state a file's identifier, which can be retrieved from the shipment's deposition files property `id`, as the `file_id` path parameter. Files for a `published` shipment usually cannot be deleted.

```
DELETE api/v1/shipment/<shipment_id>/files/<file_id>
```

Parameters

| Name | In | Type | Required | Description |
|-------------|------|--------|----------|--------------------|
| shipment_id | path | string | true | Id of the shipment |
| file_id | path | string | true | Id of the File |

Responses

| Status | Meaning | Description | Schema |
|--------|------------|----------------------|--------|
| 204 | No Content | Deletion successfull | None |

This operation does not require authentication

upload_substitution

```
POST /substitution
```

Create substitution

`Create substitution` produces a new compendium with its own files in the storage and metadata in the database. A substitution can be created with an HTTP `POST` request using `multipart/form-data` and content-type `JSON`. Required content of the request are the identifiers of the base and overlay compendia and at least one pair of *substitution files*, consisting of a base file and an overlay file.

⚠ Note

A substitution process removes potentially existing packaging information, i.e. if the base compendium was a BagIt bag, the substitution will only contain the payload directory contents (`/data` directory). The overlay file is stripped of all paths and is copied directly into the substitution's root directory.

POST `/api/v1/substitution`

⚠ Required user level

The user creating a new substitution must have the required [user level](#).

You can view the newly substituted Compendium with the standard get Request for compendium view `GET /api/v1/compendium/:id` . The response will include extra metadata on the substitution.

Body parameter

```
base: G92NL
overlay: 9fCTR
substitutionFiles:
  - base: climate-timeseries.csv
    overlay: mytimeseries_data.csv
metadataHandling: keepBase
```

Parameters

| Name | In | Type | Required | Description |
|------|------|----------------------------------|----------|--------------------------------|
| body | body | new_substitution | true | The Compendium to be uploaded. |

Detailed descriptions

body: The Compendium to be uploaded.

Example responses

Creation response

```
{
  "id": "oMMFn"
}
```

Unauthorized due to user level not being sufficient.

```
{
  "error": "not authenticated"
}
```

```
{
  "error": "not allowed"
}
```

Not found


```
{
  "error": "base compendium not found"
}
```

```
{
  "error": "overlay compendium not found"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|------------------------------|------------------------------------------------------|-------------------------------------|
| 201 | Created | Creation response | upload_response |
| 401 | Unauthorized | Unauthorized due to user level not being sufficient. | general_error_model |
| 404 | Not Found | Not found | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: [cookie_authentication](#)

view_substitution

GET /substitution

List substituted Compenium

```
curl https://.../api/v1/substitution
```

GET /api/v1/substitution

Parameters

| Name | In | Type | Required | Description |
|---------|-------|--------|----------|--------------------------------------------------------------------|
| overlay | query | string | false | id of the overlay compendium that the results should be related to |
| base | query | string | false | id of the base compendium that the results should be related to |

Example responses

The result is a list of compendia ids which were created by a substitution process.

```
{
  "results": [
    "oMMFn",
    "asdi5",
    "nb2sg",
    "..."
  ]
}
```

If there are no substitutions yet, the returned list is empty.

```
{
  "results": []
}
```

```
curl https://.../api/v1/substitution?base=jfL3w
```

```
GET /api/v1/substitution?base=jfL3w
```

Result is a list of substituted compendia based on the given base compendium.

```
{
  "results": [
    "wGmFn",
    "...",
  ]
}
```

```
curl https://.../api/v1/substitution?overlay=as4Kj
```

```
GET /api/v1/substitution?overlay=as4Kj
```

Result is a list of substituted compendia based on the given overlay compendium.

```
{
  "results": [
    "9pQ34",
    "1Tnd3",
    "...",
  ]
}
```

```
curl https://.../api/v1/substitution?base=l03Td&overlay=as4Kj
```

```
GET /api/v1/substitution?base=l03Td&overlay=as4Kj
```

Result is a list of substituted compendia based on the given base and overlay compendium.

```
{
  "results": [
    "9pQ34",
    "1Tnd3",
    "...",
  ]
}
```

Not found

```
{
  "error": "base compendium undefined"
}
```

```
{
  "error": "Overlay compendium undefined"
}
```

The successfull Listing of all the substitutions as JSON object

```
{
  "error": "not authenticated"
}
```

```
{
  "error": "not allowed"
}
```

Not found

```
{
  "error": "base compendium not found"
}
```

```
{
  "error": "overlay compendium not found"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|------------------------------|-----------------------------------------------------------------|-------------------------------------|
| 200 | OK | The successfull Listing of all the substitutions as JSON object | list_response |
| 400 | Bad Request | Not found | general_error_model |
| 401 | Unauthorized | The successfull Listing of all the substitutions as JSON object | general_error_model |
| 404 | Not Found | Not found | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: [cookie_authentication](#)

list_link

GET /link

List links

```
curl -X GET http://localhost/api/v1/link
--cookie "connect.sid=s%3AVU61x4E<rest of cookie>"
```

Example responses

Link listing response

```
{
  "results": [
```

```
{
  "id": "b56Cy5EG7oiCBPCZMjXIPXoSyPVxiGVA",
  "compendium_id": "eENFZ",
  "user": "0000-0002-1701-2564"
},
{
  "id": "p6s3GGn6EaDoZXM8j0WuNd5E1lHKPVrt",
  "compendium_id": "xkjlzY",
  "user": "0000-0002-1701-2564"
}
]
```

Returns an error, due to not being authorized

```
{
  "error": "not authorized"
}
```


Responses

| Status | Meaning | Description | Schema |
|--------|--------------|-----------------------------------------------|-------------------------------------|
| 200 | OK | Link listing response | link_list_response |
| 401 | Unauthorized | Bad Request due to not supported content_type | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: `cookie_authentication`

simple_search

GET /search

* Simple Search
*

 This endpoint is *not* available on the public demo server. 

The search uses a document database to provide high speed and powerful search capabilities for compendia, including spatial and temporal properties.

The search structure is based on [Elasticsearch](#) and thereby eases an implementation, because the requests and responses shown here can be directly mapped to respectively from [Elasticsearch's API](#).

Indexed information:

- compendium *metadata* (including harvested and user-edited metadata such as temporal ranges and spatial extents)
- full texts* of text files in a compendium

Simple search

A simple search allows searching for search terms using an `HTTP GET` request accepting `application/json` content type.

```
curl -H 'Content-Type: application/json' https://.../api/v1/search?q=$SEARCHTERM
```

Example requests

- [http://o2r.uni-muenster.de/api/v1/search?q=*](http://o2r.uni-muenster.de/api/v1/search?q=)
- <http://o2r.uni-muenster.de/api/v1/search?q=europe%20temperature%20data%20analysis>
- <http://o2r.uni-muenster.de/api/v1/search?q=10.5555%2F12345678>
- <http://o2r.uni-muenster.de/api/v1/search?q=geo&resources=compedia>
- <http://o2r.uni-muenster.de/api/v1/search?q=failure&resources=jobs>

Parameters

| Name | In | Type | Required | Description |
|-----------|-------|--------|----------|---------------------------------------------------------------|
| q | query | string | true | search term(s), must be URL-encoded |
| resources | query | string | false | a comma-separated list of resources to include in the search; |

Detailed descriptions

q: search term(s), must be [URL-encoded](#)

resources: a comma-separated list of resources to include in the search;

Enumerated Values

| Parameter | Value |
|-----------|----------|
| resources | compedia |
| resources | jobs |
| resources | all |

Example responses

Note

The available metadata is a synced clone of the compendium metadata stored in the main database. For more information on the mapping from the main database to the search database, take a look at the [o2r-finder microservice](#)

```
{
  "hits": {
    "total": 1,
    "max_score": 1.0586987,
    "hits": [
      {
        "_score": 1.0586987,
        "_source": {
          "metadata": {
            "o2r": "... "
          }
        }
      }
    ]
  }
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 200 | OK | The response is <code>JSON</code> with the root element is <code>hits</code> , which has the same as the <code>hits</code> element from an Elasticsearch response but does not include internal fields such as <code>_index</code> , <code>_type</code> , and <code>_id</code> . | simple_search_response |

This operation does not require authentication

complex_search

POST /search

 Complex Search

*

Complex Search

A complex search is enabled via `POST` requests with a `JSON` payload as `HTTP POST` data (not `multipart/form-data`) accepting an `application/json` content type as response.
Queries can include filters, aggregation and spatio-temporal operations as defined in the [Elasticsearch Query DSL](#).

```
curl -X POST -H 'Content-Type: application/json' 'https://.../api/v1/search' -d '$QUERY_DSL'
```

The **response** structure is the same as for [simple search](#).

Note

Use the index names `compendia` and `jobs` in a terms query to only retrieve one resource type.

Body parameter

In this example a filter has been nested within a [boolean/must match](#) query.
The filter has been applied to the `metadata.o2r.spatial.geometry` field of the dataset with a `within` relation so that only compendia with a spatial extent completely contained in the provided shape are fetched.

Parameters

| Name | In | Type | Required | Description |
|------|------|----------------------------|----------|----------------------------------------------------------------|
| body | body | new_search | true | The following fields are especially relevant to build queries. |

Detailed descriptions

body: The following fields are especially relevant to build queries.

- `metadata.o2r.temporal.begin` and `metadata.o2r.temporal.end` provide a compendium's temporal extent
- `metadata.o2r.spatial.geometry` has the compendium's spatial extent

Besides these fields, all metadata of the [o2r metadata format](#) can be used.

Example responses

Note

The available metadata is a synced clone of the compendium metadata stored in the main database. For more information on the mapping from the main database to the search database, take a look at the `o2r-finder` [microservice](#)

```
{
  "hits": {
    "total": 1,
    "max_score": 1.0586987,
    "hits": [
      {
        "_score": 1.0586987,
        "_source": {
          "metadata": {
            "o2r": "... "
          }
        }
      }
    ]
  }
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 200 | OK | The response is <code>JSON</code> with the root element is <code>hits</code> , which has the same as the <code>hits</code> element from an Elasticsearch response but does not include internal fields such as <code>_index</code> , <code>_type</code> , and <code>_id</code> . | simple_search_response |

This operation does not require authentication

Metadata

Basics

Metadata in a compendium is stored in a directory `.erc` . This directory contains the normative metadata documents using a file naming scheme `<PREFIX>_<MODEL>_<VERSION>.<FORMAT>` filled via each metadata mapping file found in the broker tool of the `o2r` metadata tool suite, the default prefix is `metadata` , e.g. `metadata_o2r_1.json` , `metadata_zenodo_1.json` , or `metadata_datacite_41.xml` . The filename of the extracted raw metadata has no versioning and is constantly found as `metadata_raw.json` .

A copy of the files in this directory is kept in database for easier access, so every compendium returned by the API can contain different sub-properties in the metadata property.

This API always returns the database copy of the metadata elements.

You can download the respective files to access the normative metadata documents.

Metadata formats

The files are available on demand, but metadata variants are created after each metadata update.

The sub-properties of the `metadata` and their content are

- `raw` contains raw metadata extracted automatically
- `o2r` holds the **main information for display** and is modelled according the the `o2r` metadata model. This metadata is reviewed by the user and the basis for translating to other metadata formats and also for [search](#).
- `zenodo` holds [Zenodo](#) metadata for shipments made to Zenodo and is brokered from `o2r` metadata

- `zenodo_sandbox` holds [Zenodo](#) metadata for shipments made to Zenodo Sandbox, i.e. a clone of `zenodo` metadata

⚠ Note

The information in each sub-property are subject to independent workflows and may differ from one another. The term **brokering** is used for translation from one metadata format into another.

Metadata validation

Only valid metadata can be saved to a compendium.

The `o2r` metadata element is validated against a [JSON Schema](#) using the `validate` tool of [o2r-meta](#).

The schema file is included in the `o2r-meta` repository: <https://raw.githubusercontent.com/o2r-project/o2r-meta/master/schema/json/o2r-meta-schema.json>.

get_metadata

```
GET /compendium/{compendium_id}/metadata
```

Get the compendium metadata

The following endpoint allows to access only the normative o2r-metadata element:

```
curl https://.../api/v1/$ID/metadata
```

```
GET /api/v1/compendium/:id/metadata
```

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |

Example responses

Returns a json object with the metadata

```
{
  "id": "compendium_id",
  "metadata": {
    "o2r": {
      "...": "..."
    }
  }
}
```

For discovery purposes, the metadata includes extracted GeoJSON bounding boxes based on data files in a workspace.

Currently supported spatial data sources:

- shapefiles

The following structure is made available per file.

The `spatial` key has a `union` bounding box, that wraps all extracted bounding boxes.


```

{
  "spatial": {
    "files": [
      {
        "geojson": {
          "bbox": [
            -2.362060546875,
            52.0862573323384,
            -1.285400390625,
            52.649729197309426
          ],
          "geometry": {
            "coordinates": [
              [
                [
                  -2.362060546875,
                  52.0862573323384
                ],
                [
                  -1.285400390625,
                  52.649729197309426
                ]
              ]
            ],
            "type": "Polygon"
          },
          "type": "Feature"
        },
        "source_file": "path/to/file1.geojson"
      },
      {
        "geojson": {
          "bbox": [
            7.595369517803192,
            51.96245837645124,
            7.62162297964096,
            51.96966694957956
          ],
          "geometry": {
            "coordinates": [
              [
                [
                  7.595369517803192,
                  51.96245837645124
                ],
                [
                  7.62162297964096,
                  51.96966694957956
                ]
              ]
            ],
            "type": "Polygon"
          },
          "type": "Feature"
        },
        "source_file": "path/to/file2.shp"
      }
    ],
    "union": {
      "geojson": {
        "bbox": [
          -2.362060546875,
          51.96245837645124,
          7.62162297964096,
          51.96245837645124
        ],
        "geometry": {
          "coordinates": [
            [
              [
                -2.362060546875,
                51.96245837645124
              ],
              [

```

```
    7.62162297964096,
    51.96245837645124
  ],
  [
    7.62162297964096,
    52.649729197309426
  ],
  [
    -2.362060546875,
    52.649729197309426
  ]
],
"type": "Polygon"
},
"type": "Feature"
}
}
}
```

Returns an error

```
{
  "error": "no compendium with this id"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|-----------|-----------------------------------------------------|-------------------------------------|
| 200 | OK | The o2r-metadata object of the specified compendium | metadata_response |
| 404 | Not Found | No compendium with the given id found. | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: [cookie_authentication](#)

update_metadata

```
PUT /compendium/{compendium_id}/metadata
```

Update the compendium metadata

The following endpoint can be used to update the `o2r` metadata elements.

All other metadata sub-properties are only updated by the service itself, i.e. brokered metadata.

After creation the metadata is persisted to both files and database, so updating the metadata via this endpoint allows to trigger a brokering process and to retrieve different metadata formats either via this metadata API or via downloading the respective file using the [download endpoint](#).

⚠ Metadata update rights

Only authors of a compendium or users with the required [user level](#) can update a compendium's metadata.

Metadata update request

```
curl -H 'Content-Type: application/json' \
-X PUT \
--cookie "connect.sid=<code string here>" \
```

```
-d '{ "o2r": { "title": "Blue Book" } }' \
/api/v1/compendium/:id/metadata
```

The request overwrites the existing metadata properties, so the full o2r metadata must be put with a JSON object called `o2r` at the root, even if only specific fields are changed.

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |

Example responses

Returns a json object with the updated excerpt.

```
{
  "id": "compendium_id",
  "metadata": {
    "o2r": {
      "title": "Blue Book"
    }
  }
}
```

Returns an error due to missing metadata in the request (e.g. description property missing)

```
{
  "error": "Error updating metadata file, see log for details",
  "log": "[o2rmeta] 20180302.085940 received arguments: {'debug': True, 'tool': 'validate', 'schema': 'schema'}
```

Bad Request

```
"SyntaxError [...]"
```

Returns an error, due to not being authorized

```
{
  "error": "not authorized"
}
```

The JSON doesnt meet the requirements.

```
{
  "error": "JSON with root element 'o2r' required"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|----------------------|----------------------------|-------------------------------------|
| 200 | OK | Successfull metdata update | metadata_response |
| 400 | Bad Request | Bad Request | None |
| 401 | Unauthorized | Unauthorized | general_error_model |
| 422 | Unprocessable Entity | Unprocessable Enitity | general_error_model |

Response Schema

To perform this operation, you must be authenticated by means of one of the following methods: `cookie_authentication`

Execution

Execute a compendium

Execution jobs are used to run the analysis in a compendium.

When a new execution job is started, the contents of the research compendium are cloned to create a trackable execution (see [Job files](#)).

The status information, logs and final working directory data are saved in their final state, so that they can be reviewed later on.

All execution jobs are tied to a single research compendium and reflect the execution history of that research compendium.

A trivial execution job would be a completely unmodified compendium, to test the executability and thus basic reproducibility of the contained workflow.

Job files

All files except the following are copied to a separate storage for each job:

- existing image tarballs, e.g. `image.tar` to reduce size of copied files and because jobs use images from the local image repository anyway
- the [display file](#) to make sure the check does not wrongly work on the original display file

Job status

The property `job.status` shows the **overall status** of a job.

The overall status can be one of following:

- `success` - if status of all steps is `success` .
- `failure` - if status of at least one step is `failure` .
- `running` - if status of at least one step is `running` and no status is `failure` .

More information about `steps` can be found in subsection `Steps` of section `View single job` .

Steps of a job

One job consists of a series of steps.

The are executed in order.

- **validate_bag**
Validate the BagIt bag using the npm library [bagit](#); may be skipped if compendium is not a bag, will usually fail because of added metadata files during upload.
- **generate_configuration**
Create a compendium configuration file; may be skipped if configuration file is already present.
- **validate_compendium**
Parses and validates the bagtainer configuration file.
- **generate_manifest**
Executes the given analysis to create a container manifest; may be skipped if manifest file is already present.
- **image_prepare**
Create an archive of the payload (i.e. the workspace, or the data in a BagIt bag), which allows to build and run the image also on remote hosts.
- **image_build**
Build an image and tag it `erc:<job_id>`.
- **image_execute**
Run the container and return based on status code of program that ran inside the container.
- **check**
Run a check on the contents of the container. Validate the results of the executed calculations. The check provides either a list of errors or a reference to displayable content in the property `display.diff`.
- **image_save**
Export the image to a file within the compendium directory (potentially a large file!). This is skipped if the check failed.
- **cleanup**
Remove image or job files (depending on server-side settings).

Job status updates

You can subscribe to real time status updates on jobs using [WebSockets](#).

The implementation is based on [socket.io](#) and using their client is recommended.

The job log is available at `https://o2r.uni-muenster.de` under the namespace `api/v1/logs/job`.

```
# create a socket.io client:
var socket = io('https://o2r.uni-muenster.de/api/v1/logs/job');
```

compendium_list_job

GET /compendium/{compendium_id}/jobs

List related execution jobs

```
curl https://.../api/v1/compendium/$ID/jobs
```

```
GET /api/v1/compendium/:id/jobs
```

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |

Example responses

Returns a JSON object with the jobs related to the compendium

```
{
  "results": [
    "nkm4L",
    "asdi5",
    "nb2sg",
    "..."
  ]
}
```

If there are no jobs, the returned list is empty.

```
{
  "results": []
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|---------------------------------------------------------------|--------|
| 200 | OK | Returns a JSON object with the jobs related to the compendium | None |

Response Schema

This operation does not require authentication

create_job

POST /job

Create a new job

Create and run a new execution job with an HTTP POST request using multipart/form-data. Requires a compendium_id.

⚠ Required user level and authentication

The user creating a new compendium must have the required [user level](#). Requests must be authenticated with a cookie `connect.sid`, see [user authentication](#).

```
curl -F compendium_id=$ID https://.../api/v1/job
```

POST /api/v1/job

Body parameter

```
compendium_id: string
```

Parameters

| Name | In | Type | Required | Description |
|------|------|-------------------------|----------|--------------------------------|
| body | body | new_job | true | The Compendium to be uploaded. |

Detailed descriptions

body: The Compendium to be uploaded.

Example responses

Returns the id of the new job

```
{
  "job_id": "ngK4m"
}
```

Returns an error

```
{
  "error": "no compendium with this id"
}
```

```
{
  "error": "could not create job"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|-----------------------|------------------------------|-------------------------------------|
| 200 | OK | A successfull job creation | job_response |
| 404 | Not Found | No matching compendium found | general_error_model |
| 500 | Internal Server Error | Internal server Error | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: cookie_authentication

list_job

GET /job

List Jobs

Lists jobs with filtering and pagination, returning up to 100 results by default.

Results are be sorted by descending date of last change. The content of the response can be limited to certain properties of each result by providing a list of fields, i.e. the parameter `fields` .

Results can be filtered:

- by `compendium_id` i.e. `compendium_id=a4Dnm` ,
- by `status` i.e. `status=success` or
- by `user` i.e. `user=0000-0000-0000-0001`

```
curl https://.../api/v1/job?limit=100&start=2&compendium_id=$ID&status=success&fields=status
```

Parameters

| Name | In | Type | Required | Description |
|---------------|-------|---------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| compendium_id | query | string | false | Comma-separated list of related compendium ids to filter by. |
| start | query | integer | false | Starting point of the result list. <code>start - 1</code> results are skipped. Defaults to <code>1</code> . |
| limit | query | integer | false | Limits the number of results in the response. Defaults to <code>100</code> . |
| user | query | string | false | Public user identifier to filter by. |
| fields | query | any | false | Specify which additional attributes results list should contain. Can contain following fields: <code>status</code> , <code>user</code> . Defaults to none. |

Detailed descriptions

fields: Specify which additional attributes results list should contain. Can contain following fields: `status`, `user`. Defaults to none.

Enumerated Values

| Parameter | Value |
|-----------|--------------|
| fields | status |
| fields | user |
| fields | status, user |

Example responses

`GET /api/v1/job?limit=100&start=2&compendium_id=a4Dnm&status=success`

```
{
  "results": [
    "nkm4L",
    "asdi5",
    "nb2sg",
    "..."
  ]
}
```

The overall job state can be added to the job list response:

`GET /api/v1/job?limit=100&start=2&compendium_id=a4Dnm&status=success&fields=status`

```
{
  "results": [
    {
      "id": "nkm4L",
      "status": "failure"
    },
    {
      "id": "asdi5",
      "status": "success"
    }
  ]
}
```



```
    },
    {
      "id": "nb2sg",
      "status": "running"
    },
    "...
  ]
}
```

If there are no jobs, the returned list is empty.

```
{
  "results": []
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|----------------------------------------------|--------|
| 200 | OK | Returns a JSON object with the matching jobs | None |

Response Schema

This operation does not require authentication

view_job

GET /job/{job_id}

View single job

View details for a single job. The file listing format is described in compendium files.

Step metadata

Additional explanations on steps' status will be transmitted in the `text` property.

`text` is an array, with the latest element holding the newest information.

During long running steps, the `text` element is updated by appending new information when available.

The `start` and `end` timestamps indicate the start and end time of the step. They are formatted as [RFC-3339](#).

Specific steps may carry more information in additional properties.

Step Status

All steps can have one of the following status:

- `queued` : step is not yet started
- `running` : step is currently running
- `success` : step is completed successfully - positive result
- `failure` : step is completed unsuccessfully - negative result
- `skipped` : step does not fit the given input or results of previous steps, e.g. bag validation is not done for non-bag workspaces - neutral result

Parameters

| Name | In | Type | Required | Description |
|--------|-------|--------|----------|---------------------------------------------------------------------------------------------------------------------------------------|
| steps | query | string | false | The properties <code>status</code> , <code>start</code> and <code>end</code> of <i>all steps</i> are always included in the response. |
| job_id | path | string | true | Id of the job |

Detailed descriptions

steps: The properties `status`, `start` and `end` of *all steps* are always included in the response.

Supported values for `steps` are `all` or a comma separated list of one or more step names, e.g. `generate_configuration,check`.

The response will contain the default properties for all steps but other properties only for the selected ones.

Any other values for `steps` or not providing the parameter at all will return the default (e.g. `steps=no`).

Example responses

! This is an abbreviated example

```
{
  "id": "UMmJ7",
  "compendium_id": "BSgxj",
  "steps": {
    "validate_bag": {
      "status": "skipped",
      "text": [
        "Not a bag"
      ],
      "end": "2017-11-17T13:22:48.105Z",
      "start": "2017-11-17T13:22:48.105Z"
    },
    "generate_configuration": {
      "status": "success",
      "text": [
        "configuration file not found, generating it...",
        "Saved configuration file to job and compendium"
      ],
      "end": "2017-11-17T13:22:48.119Z",
      "start": "2017-11-17T13:22:48.113Z"
    },
    "validate_compendium": {
      "status": "success",
      "text": [
        "all checks passed"
      ],
      "end": "2017-11-17T13:22:48.127Z",
      "start": "2017-11-17T13:22:48.125Z"
    },
    "generate_manifest": {
      "status": "success",
      "text": [
        "INFO [2017-11-17 13:22:56] Going online? TRUE ... to retrieve system dependencies (sysreq-api)",
        "INFO [2017-11-17 13:22:56] Trying to determine system requirements for the package(s) 'knitr, backpo",
        "INFO [2017-11-17 13:22:58] Adding CRAN packages: backports, digest, evaluate, htmltools, knitr, magr",
        "INFO [2017-11-17 13:22:58] Created Dockerfile-Object based on /erc/main.Rmd",
        "INFO [2017-11-17 13:22:58] Writing dockerfile to /erc/Dockerfile",
        "generated manifest"
      ],
      "manifest": "Dockerfile",
      "end": "2017-11-17T13:22:58.865Z",
      "start": "2017-11-17T13:22:48.129Z"
    },
    "image_prepare": {
      "status": "success",
      "text": [
        "payload with 756224 total bytes created"
      ]
    }
  }
}
```

```

    ],
    "end": "2017-11-17T13:22:58.906Z",
    "start": "2017-11-17T13:22:58.875Z"
  },
  "image_build": {
    "status": "success",
    "text": [
      "Step 1/6 : FROM rocker/r-ver:3.4.2",
      "---> 3cf05960bf30",
      "---> Running in eb7ccd432592",
      "---> 84db129215f6",
      "Removing intermediate container eb7ccd432592",
      "Successfully built 84db129215f6",
      "Successfully tagged erc:UMmJ7"
    ],
    "end": "2017-11-17T13:22:59.899Z",
    "start": "2017-11-17T13:22:58.912Z"
  },
  "image_execute": {
    "status": "success",
    "text": [
      "[started image execution]",
      "Output created: display.html\r\n> \r\n>",
      "[finished image execution]"
    ],
    "statusCode": 0,
    "start": "2017-11-17T13:22:59.904Z"
  },
  "check": {
    "status": "failure",
    "text": [
      "Check failed"
    ],
    "images": [
      {
        "imageIndex": 0,
        "resizeOperationCode": 0,
        "compareResults": {
          "differences": 204786,
          "dimension": 1290240
        }
      }
    ],
    "display": {
      "diff": "/api/v1/job/UMmJ7/data/check.html"
    },
    "errors": [],
    "checkSuccessful": false,
    "end": "2017-11-17T13:23:04.439Z",
    "start": "2017-11-17T13:23:03.479Z"
  },
  "image_save": {
    "status": "success",
    "text": [
      "[Saving image tarball file]",
      "[Saved image tarball to file (size: 875.14 MB)]"
    ],
    "start": "2018-01-29T17:38:55.111Z",
    "file": "image.tar",
    "end": "2018-01-29T17:39:36.845Z"
  },
  "cleanup": {
    "status": "success",
    "text": [
      "Running regular cleanup",
      "Removed image with tag erc:UMmJ7: [{\"Untagged\": \"erc:UMmJ7\"}, {\"Deleted\": \"sha256:84db129215f60f\"}]",
      "Deleted temporary payload file."
    ],
    "end": "2017-11-17T13:23:05.592Z",
    "start": "2017-11-17T13:23:04.575Z"
  }
},
"status": "failure",

```

```
"files": {}  
}
```

Returns an error

```
{  
  "error": "no compendium with this id"  
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|-----------|-----------------------------------------|-------------------------------------|
| 200 | OK | Returns a JSON object with job details. | view_job_response |
| 404 | Not Found | No matching compendium found | general_error_model |

This operation does not require authentication

Shipment

Ship compendia and metadata

Shipments are used to deliver compendia and their metadata to third party repositories or archives. This section covers shipment related requests, including repository file management.

Packaging

The packaging of a compendium ensures a recipient can verify the integrity of the transported data. Currently, the shipment process always creates [BagIt](#) bags to package a compendium.

list_recipients

GET /recipient

Supported recipients

Use the *recipient* endpoint to find out, which repositories are available and configured.

The response is list of tuples with `id` and `label` of each repository.

The `id` is the repository identifier to be used in requests to the `/shipment` endpoint, e.g. to define the recipient, while `label` is a human-readable text string suitable for display in user interfaces.

An implementation may support one or more of the following repositories:

- `b2share` - [Eudat b2share](#)
- `b2share_sandbox` - [Eudat b2share Sandbox](#)
- `zenodo` - [Zenodo Sandbox](#)
- `zenodo_sandbox` - [Zenodo Sandbox](#)

The `download` recipient is a surrogate to enable shipping to the user's local storage.

Example responses

Retruns A JSON object with all supported recipients.

```
{
  "recipients": [
    {
      "id": "download",
      "label": "Download"
    },
    {
      "id": "b2share_sandbox",
      "label": "Eudat b2share Sandbox"
    },
    {
      "id": "zenodo_sandbox",
      "label": "Zenodo Sandbox"
    }
  ]
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|------------------------------------------------------|------------------------------------|
| 200 | OK | Retruns A JSON object with all supported recipients. | recipient_response |

This operation does not require authentication

list_shipment

GET /shipment

List shipments

This is a basic request to list all shipments identifiers.

GET /api/v1/shipment

You can also get only the shipment identifiers belonging to a compendium id (e.g. 4XgD97).

GET /api/v1/shipment?compendium_id=4XgD97

Parameters

| Name | In | Type | Required | Description |
|---------------|-------|--------|----------|-----------------------------------------|
| compendium_id | query | string | false | The identifier of a specific compendium |

Example responses

Returns a JSON array with all shipment ids

```
[
  "dc351fc6-314f-4947-a235-734ab5971eff",
  "...",
]
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-----------------------------|-----------------------------------|
| 200 | OK | A list of all shipment ids. | shipment_response |

This operation does not require authentication

view_shipment

GET /shipment/{shipment_id}

Get a single shipment

Example request:

GET /api/v1/shipment/dc351fc6-314f-4947-a235-734ab5971eff

Parameters

| Name | In | Type | Required | Description |
|-------------|------|--------|----------|--------------------|
| shipment_id | path | string | true | Id of the shipment |

Example responses

Retruns a JSON object with information on the specified shipment.

⚠ Note

Returned deposition URLs (property `deposition_url`) from Zenodo as well as Eudat b2share (records) will only be functional after publishing.

```
{
  "last_modified": "2016-12-12 10:34:32.001475",
  "recipient": "zenodo",
  "id": "dc351fc6-314f-4947-a235-734ab5971eff",
  "deposition_id": "63179",
  "user": "0000-0002-1825-0097",
  "status": "shipped",
  "compendium_id": "4XgD97",
  "deposition_url": "https://zenodo.org/record/63179"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|------------------------------------------|----------------------------------------|
| 200 | OK | A json object with the matching results. | view_shipment_response |

This operation does not require authentication

upload_shipment

POST /shipment/{shipment_id}

Create a new shipment

You can start a initial creation of a shipment, leading to transmission to a repository and creation of a deposition, using a `POST` request.

`POST /api/v1/shipment`

⚠ Required user level

The user sending the request to create a shipment must have the required [user level](user/levels.md).

Body parameter

```
compendium_id: string
recipient: string
update_packaging: false
cookie: string
shipment_id: string
```

Parameters

| Name | In | Type | Required | Description |
|-------------|------|------------------------------|----------|------------------------------|
| body | body | new_shipment | true | The shipment to be uploaded. |
| shipment_id | path | string | true | Id of the shipment |

Detailed descriptions

body: The shipment to be uploaded.

Example responses

The response contains the shipment document, see [Get a single shipment](#). Some of the fields are not available (have value `null`) until after [publishing](#), e.g. `deposition_url` .

```
{
  "id": "9ff3d75e-23dc-423e-a6c6-6987ac5ffc3e",
  "recipient": "zenodo",
  "status": "shipped",
  "deposition_id": "79102"
}
```

If the recipient is the download surrogate, the response will be `202` and a zip stream with the Content type `application/zip` . The download zip stream is also available under the url of the shipment plus `/dl`, once it has been created, e.g.:

`http://localhost:8087/api/v1/shipment/22e7b17c-0047-4cb9-9041-bb87f30de388/dl`

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-------------|--------|
|--------|---------|-------------|--------|

| Status | Meaning | Description | Schema |
|--------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 201 | Created | The response contains the shipment document, see Get a single shipment . Some of the fields are not available (have value <code>null</code>) until after publishing , e.g. <code>deposition_url</code> . | upload_shipment_response |
| 202 | Accepted | If the recipient is the download surrogate, the response will be <code>202</code> and a zip stream with the Content type <code>application/zip</code> . The download zip stream is also available under the url of the shipment plus <code>/dl</code> , once it has been created, e.g.: | |

`http://localhost:8087/api/v1/shipment/22e7b17c-0047-4cb9-9041-bb87f30de388/dl |None|`

Response Schema

To perform this operation, you must be authenticated by means of one of the following methods: `cookie_authentication`

shipment_status

`GET /shipment/{shipment_id}/status`

Shipment status

A shipment can have three possible status:

- `shipped` - a deposition has been created at a repository and completed the necessary metadata for publication.
- `published` - the contents of the shipment are published on the repository, in which case the publishment can not be undone.
- `error` - an error occurred during shipment or publishing.

To get only a shipment's current status you may use the sub-resource `/status` .

Parameters

| Name | In | Type | Required | Description |
|-------------|------|--------|----------|--------------------|
| shipment_id | path | string | true | Id of the shipment |

Example responses

Retruns A JSON object with the shipment id and status.

```
{
  "id": "9ff3d75e-23dc-423e-a6c6-6987ac5ffc3e",
  "status": "shipped"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-------------|--------|
|--------|---------|-------------|--------|

| Status | Meaning | Description | Schema |
|--------|---------|--------------------------------------------------------|------------------------------------------|
| 200 | OK | Retruns A JSON object with the shipment id and status. | shipment_status_response |

This operation does not require authentication

publish_deposition

PUT /shipment/{shipment_id}/publishment

Publish in a deposition

The publishment is supposed to have completed the status shipped where metadata requirements for publication have been checked.

⚠ Note

Once published, a deposition can no longer be deleted on the supported repositories.

PUT api/v1/shipment/<shipment_id>/publishment

Note that a publishment is not possible if the recipient is the download surrogate which immediately results in a zip stream as a response.

Parameters

| Name | In | Type | Required | Description |
|-------------|------|--------|----------|--------------------|
| shipment_id | path | string | true | Id of the shipment |

Example responses

Returns a JSON object with the id and status of the shipment

```
{
  "id": "9ff3d75e-23dc-423e-a6c6-6987ac5ffc3e",
  "status": "published"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|--------------------------------------------------------------|------------------------------------------|
| 200 | OK | Returns a JSON object with the id and status of the shipment | shipment_status_response |

This operation does not require authentication

Bindings

Bindings

A binding is an optional component of an Executable Research Compendium. It can be used to make static figures interactive, for example, to show how different parameter settings affect the result shown in the figure. A bindings stores information on the code lines needed to generate the corresponding figure, the parameter that should be made interactive, the data subset required for the figure, and the user interface (UI) widget (e.g. a slider or radio buttons). The resulting JSON object including the binding is stored in the metadata tag `interaction`. For this reason, the compendium must be at least a `candidate` where the metadata extraction is completed.

upload_binding

POST `/bindings/binding`

Create new binding

Body parameter

```
{
  "id": "rDdFN",
  "computationalResult": {
    "type": "figure",
    "result": "Figure 3"
  },
  "sourcecode": {
    "file": "main.Rmd",
    "codelines": [
      {
        "first_line": 101,
        "last_line": 503
      }
    ],
    "parameter": [
      {
        "text": "duration <- 24",
        "name": "duration",
        "val": 24,
        "uiWidget": {
          "minValue": 1,
          "type": "slider",
          "maxValue": 24,
          "stepSize": 1,
          "caption": "The duration parameter specifies the duration of the flood event in hours."
        }
      }
    ]
  }
}
```

Parameters

| Name | In | Type | Required | Description |
|------|------|-----------------------------|----------|-----------------------------|
| body | body | new_binding | true | The Binding to be uploaded. |

Detailed descriptions

body: The Binding to be uploaded.

Example responses

Binding Upload response

```
{
  "callback": "ok",
  "data": "binding"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-------------------------|-----------------------------------------|
| 200 | OK | Binding Upload response | upload_binding_response |

This operation does not require authentication

proxy_binding

GET /compendium/{compendium_id}/binding/{binding_id}

Proxy for binding

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |
| binding_id | path | string | true | Id of the binding |

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-------------------|--------|
| 200 | OK | Successfull Proxy | None |

This operation does not require authentication

run_binding

POST /compendium/{compendium_id}/binding/{binding_id}

Run binding

Parameters

| Name | In | Type | Required | Description |
|---------------|------|--------|----------|----------------------|
| compendium_id | path | string | true | Id of the compendium |
| binding_id | path | string | true | Id of the binding |

Responses

| Status | Meaning | Description | Schema |
|--------|---------|----------------------------|--------|
| 200 | OK | Successfull run of binding | None |

This operation does not require authentication

search_binding

POST /bindings/searchBinding

Search for a binding

Body parameter

```
{
  "term": "processData(input)",
  "metadata": "{o2r.metadata}"
}
```

Parameters

| Name | In | Type | Required | Description |
|------|------|--------------------------------|----------|------------------------------------------------------------------------|
| body | body | search_binding | true | Request body for finding bindings that include a certain code snippet. |

Detailed descriptions

body: Request body for finding bindings that include a certain code snippet.

Example responses

Search Binding response

```
{
  "callback": "ok",
  "data": [
    "result"
  ]
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-------------------------|-----------------------------------------|
| 200 | OK | Search Binding response | search_binding_response |

This operation does not require authentication

Users

User levels

Users are authenticated via OAuth and the actions on the website are limited by the `level` associated with an account. On registration, each account is assigned a level `0`. Only admin users and the user herself can read the level of a user.

The following is a list of actions and the corresponding required *minimum* user level.

- `0` *Users* (everybody)
 - Create new jobs
 - View compendia, jobs, user details
- `100` *Known users*
 - Create new compendium
 - Create shipments
 - Create substitutions
 - Delete own candidates
- `500` *Editors*
 - Edit user levels up to own level
 - Edit compendium metadata
 - Delete candidates
 - Manage [public links](#) for candidates
- `1000` *Admins*
 - Edit user levels up to own level
 - Delete compendia and candidates
 - View status pages of microservices

User authentication

User authentication is done via authenticated sessions, which are referenced with a cookie called `connect.sid`. For every endpoint that needs user authentication, a cookie with an authenticated session is required.

Client authentication

To execute restricted operations of the API, such as `[compendium upload]()` or `[job execution]()`, a client must provide an authentication token via a cookie.

A client must first login on the website to access a browser cookie issued by `o2r.uni-muenster.de` with the name `connect.sid`.

Provide the content of the cookie when making requests to the API as shown in the request example below.

Access authentication information for direct API access

To run commands which require authentication from the command line, a user must login on the website first. Then open your browser cookies and find a cookie issued by `o2r.uni-muenster.de` with the name `connect.sid`. Use the contents of the cookie for your requests, for example as shown below when using curl.

```
curl [...] --cookie "connect.sid=<code string here>" \  
https://.../api/v1/endpoint
```

Authentication within microservices

Attention: The authentication process *requires* a secured connection, i.e. `HTTPS`.

Authentication provider

Session authentication is done using the OAuth 2.0 protocol.

Currently [ORCID](#) is the only available authentication provider, therefore users need to be registered with ORCID. Because of its nature, the authentication workflow is not a RESTful service.

Users must follow the redirection to the login endpoint with their web browser and grant access to the o2r reproducibility service for their ORCID account.

They are then sent back to our authentication service, which verifies the authentication request and enriches the user session with the verified ORCID for this user.

list_user

```
GET /user
```

List users

Return a list of user ids. [Pagination \(including defaults\) as described for compendia](#) is available for users.

```
curl https://.../api/v1/user
```

```
GET /api/v1/user
```

Parameters

| Name | In | Type | Required | Description |
|-------|-------|---------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| start | query | integer | false | <code>start</code> is the index of the first list item in the response, defaults to <code>1</code> . It must be numeric and larger than <code>0</code> . |
| limit | query | integer | false | <code>limit</code> is the number of results in the response, defaults to <code>100</code> . It numeric and larger than <code>0</code> . |

Detailed descriptions

start: `start` is the index of the first list item in the response, defaults to `1` . It must be numeric and larger than `0` .

limit: `limit` is the number of results in the response, defaults to `100` . It numeric and larger than `0` .

Example responses

Returns a JSON object with user ids.

```
{
  "results": [
    "0000-0002-1825-0097",
    "0000-0002-1825-0097"
  ]
}
```

If there are no users, the returned list is empty.

```
{
  "results": []
}
```

Bad Request

```
{
  "error": "limit must be larger than 0"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|-----------------------------|-----------------------|-------------------------------------|
| 200 | OK | User listing response | list_response |
| 400 | Bad Request | Bad Request | general_error_model |

This operation does not require authentication

view_user

```
GET /user/{user_id}
```

View a single user

Show the details of a user.

```
curl https://.../api/v1/user/$ID
```

```
GET /api/v1/user/:id
```

Parameters

| Name | In | Type | Required | Description |
|---------|------|--------|----------|----------------|
| user_id | path | string | true | Id of the user |

Example responses

View user response

```
{
  "id": "0000-0002-1825-0097",
  "name": "o2r"
}
```

The content of the response depends on the state and level of the user that requests the resource. The above response only contains the id and the publicly visible name. The following response contains more details and requires a certain user level of the authenticated user making the request:

```
curl --cookie "connect.sid=<session cookie here>" https://.../api/v1/user/0000-0002-1825-0097
```

```
{
  "id": "0000-0002-1825-0097",
  "name": "o2r",
  "level": 0,
}
```

```
"lastseen": "2016-08-15T12:32:23.972Z"
}
```

Not found

```
{
  "error": "no user with this id"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|-----------|--------------------|-------------------------------------|
| 200 | OK | View user response | user_view_response |
| 404 | Not Found | Not found | general_error_model |

This operation does not require authentication

edit_user

```
PATCH /user/{user_id}
```

Edit user

You can update information of an existing user using the `HTTP` operation `PATCH`.
Change user level request

The user level can be changed with an `HTTP PATCH` request. The new level is passed to the API via a query parameter, i.e. `...?level=`. The value must be an int (integer). The response is the full user document with the updated value.

⚠ Required user level

The user sending the request to change the level must have the required [user level](#)

Parameters

| Name | In | Type | Required | Description |
|---------|-------|---------|----------|----------------|
| level | query | integer | false | none |
| user_id | path | string | true | Id of the user |

Example responses

```
curl --request PATCH --cookie "connect.sid=<session cookie here>" \
https://.../api/v1/user/0000-0002-1825-0097?level=42
```

```
{
  "id": "0000-0002-1825-0097",
  "name": "o2r",
  "level": 42,
  "lastseen": "2016-08-15T12:32:23.972Z"
}
```


Bad request

```
{
  "error": "parameter 'level' could not be parsed as an integer"
}
```

Unauthorized

```
{
  "error": "user is not authenticated"
}
```

User

```
{
  "error": "user level does not allow edit"
}
```

Not found

```
{
  "error": "no user with this id"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|--------------|--------------------|-------------------------------------|
| 200 | OK | Edit user response | user_view_response |
| 400 | Bad Request | Bad request | general_error_model |
| 401 | Unauthorized | Unauthorized | general_error_model |
| 403 | Forbidden | User | general_error_model |
| 404 | Not Found | Not found | general_error_model |

This operation does not require authentication

login_user

GET /auth/login

Start OAuth login

Navigate the web browser (e.g. via a HTML `<a>` link) to `/api/v1/auth/login` , which then redirects the user and request access to your ORCID profile. After granting access, ORCID redirects the user back to the `/api/v1/auth/login` endpoint with a unique `code` param that is used to verify the request.

If the verification was successful, the endpoint returns a session cookie named `connect.sid`, which is tied to a authenticated session. The server answers with a `302 redirect`, which redirects the user back to `/`, the start page of the o2r website.

If the login is unsuccessful, the user is not redirected back to the site and no further redirects are configured.

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-----------------------------------------------------------------------------------------|--------|
| 302 | Found | Access request for ORCID profile then it will redirect to the Main Page | None |

This operation does not require authentication

whoami_user

GET /auth/whoami

Request authentication status

As the cookie is present in both authenticated and unauthenticated sessions, clients (e.g. web browser user interfaces) must know if their session is authenticated, and if so, as which ORCID user. For this, send a `GET` request to the `/api/v1/auth/whoami` endpoint, including your session cookie.

```
curl https://.../api/v1/auth/whoami --cookie "connect.sid=..."
```

GET /api/v1/auth/whoami

Example responses

Returns orcid id and user name as a JSON object

```
{
  "orcid": "0000-0002-1825-0097",
  "name": "o2r"
}
```

Unauthorized

```
{
  "error": "user is not authenticated"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|--------------|-------------------------------------------------|--------------------------------------|
| 200 | OK | Returns orcid id and user name as a JSON object | user_whoami_response |
| 401 | Unauthorized | Unauthorized | general_error_model |

To perform this operation, you must be authenticated by means of one of the following methods: `cookie_authenification`

API Info

Get technical info from the api

get_api_info

GET /api

Get api info

Example responses

Returns JSON object with some api info

```
{
  "about": "https://o2r.info",
  "versions": {
    "current": "/api/v1",
    "v1": "/api/v1"
  },
  "quote": "There's always a bigger fish."
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|----------------------------------------|-----------------------------------|
| 200 | OK | Returns JSON object with some api info | api_info_response |

This operation does not require authentication

get_api_list

GET /api/v1

List api endpoints

Example responses

Returns JSON object with the currently available endpoints.

```
{
  "auth": "/api/v1/auth",
  "compendia": "/api/v1/compendium",
  "jobs": "/api/v1/job",
  "users": "/api/v1/user",
  "search": "/api/v1/search",
  "shipments": "/api/v1/shipment",
  "recipients": "/api/v1/recipient",
  "substitutions": "/api/v1/substitution",
  "links": "/api/v1/link"
}
```

Responses

| Status | Meaning | Description | Schema |
|--------|---------|-------------------------------------------------------------|-----------------------------------|
| 200 | OK | Returns JSON object with the currently available endpoints. | api_list_response |

This operation does not require authentication

Schemas

new_compendium

```
{
  "content_type": "compendium",
  "compendium": "string",
  "path": "string",
  "doi": "string",
  "zenodo_record_id": "string",
  "filename": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|--------------|----------------|----------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| content_type | string | true | none | <p>The Type of archive that is to be uploaded. Can be <code>compendium</code> or <code>workspace</code> .</p> <ul style="list-style-type: none"> - <code>compendium</code> - compendium, which is expected to be complete and valid, for <i>examination</i> of a compendium - <code>workspace</code> - formless workspace, for <i>creation</i> of a compendium <p>⚠ Warning</p> <p>If a complete ERC is submitted as a workspace, it may result in an error, or the contained metadata and other files may be overwritten by the creation process.</p> |
| compendium | string(binary) | false | none | The archive file as a compressed .zip |

| Name | Type | Required | Restrictions | Description |
|------------------|--------|----------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| path | string | false | none | Path to a subdirectory or a zip file in the public share (optional) - default is <code>/</code> - the leading <code>/</code> is optional, the loader supports both ways - when a directory has multiple zip files, the path can be used to specify which file is used, e.g. <code>path=/metatainer.zip</code> |
| doi | string | false | none | A DOI resolving to the zenodo record |
| zenodo_record_id | string | false | none | The ID of the zenodo record |
| filename | string | false | none | Filename of your compendium. For now, only zip-files are supported. - if no <code>filename</code> is provided the first zip file is selected - multiple files are currently not supported |

Enumerated Values

| Property | Value |
|--------------|------------|
| content_type | compendium |
| content_type | workspace |

new_job

```
{
  "compendium_id": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|---------------|--------|----------|--------------|-------------------------------------------------------|
| compendium_id | string | true | none | The identifier of the compendium to base this job on. |

new_shipment

```
{
  "compendium_id": "string",
  "recipient": "string",
  "update_packaging": false,
  "cookie": "string",
  "shipment_id": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|------------------|---------|----------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| compendium_id | string | true | none | The id of the compendium |
| recipient | string | true | none | The id of the compendium |
| update_packaging | boolean | false | none | The shipment creation only succeeds if a valid package is already present under the provided compendium identifier, or if no packaging is present at all and a new package can be created. In case a partial or invalid package is given, this parameter can control the shipment creation process: If it is set to <code>true</code> , the shipment package is updated during the shipment creation in order to make it valid, if set to <code>false</code> the shipment creation results in an error. |
| cookie | string | false | none | An authentication cookie must be set in the request header, but it may also be provided via a <code>cookie</code> form parameter as a fallback |
| shipment_id | string | false | none | A user-defined identifier for the shipment (see id in response) |

new_substitution

```
{
  "base": "string",
  "overlay": "string",
  "substitutionFiles": [
    {
      "base": "string",
      "overlay": "string"
    }
  ],
  "metadataHandling": "keepBase"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|------|------|----------|--------------|-------------|
|------|------|----------|--------------|-------------|

| Name | Type | Required | Restrictions | Description |
|-------------------|----------|----------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| base | string | false | none | id of the base compendium |
| overlay | string | false | none | id of the overlay compendium |
| substitutionFiles | [object] | false | none | Array of file substitutions specified by <code>base</code> and <code>overlay</code> |
| » base | string | false | none | name of the file from base compendium |
| » overlay | string | false | none | name of the overlay compendium that is exchanged for the original file |
| metadataHandling | string | false | none | property to specify, if the metadata of the base ERC will be adopted (<code>keepBase</code> = keep metadata of base ERC) or there will be a new extraction of metadata, that will be merged into the metadata of the base ERC (<code>extractAndMerge</code> = extract and merge metadata for new ERC) or that will not be merged (<code>extract</code> = extract metadata of new ERC) |

Enumerated Values

| Property | Value |
|------------------|-----------------|
| metadataHandling | keepBase |
| metadataHandling | extractAndMerge |
| metadataHandling | extract |

new_search

```
{
  "query": {
    "bool": {
      "must": {},
      "filter": {}
    }
  },
  "from": 0,
  "size": 0
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|-------|--------|----------|--------------|-------------|
| query | object | false | none | none |

| Name | Type | Required | Restrictions | Description |
|-----------|---------|----------|--------------|-------------|
| » bool | object | false | none | none |
| »» must | object | false | none | none |
| »» filter | object | false | none | none |
| from | number | false | none | none |
| size | integer | false | none | none |

new_binding

```
{
  "id": "string",
  "computationalResult": {
    "type": "string",
    "result": "string"
  },
  "sourcecode": {
    "file": "string",
    "codelines": [
      {
        "first_line": 0,
        "last_line": 0
      }
    ],
    "parameter": [
      {
        "text": "string",
        "name": "string",
        "val": 0,
        "uiWidget": {
          "type": "string",
          "minValue": 0,
          "maxValue": 0,
          "stepSize": 0,
          "caption": "string"
        }
      }
    ]
  }
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|---------------------|--------|----------|--------------|---------------------------------------------------------------------------|
| id | string | false | none | ID of the compendium for which the bindings should be created |
| computationalResult | object | false | none | specification of the computational result that should be made interactive |
| » type | string | false | none | type of the computational result, e.g. a figure or a table |

| Name | Type | Required | Restrictions | Description |
|---------------|----------|----------|--------------|------------------------------------------------------------------------------------|
| » result | string | false | none | the actual result as it is referred to in the text |
| sourcecode | object | false | none | all code-related information needed to create a binding for result specified above |
| » file | string | false | none | main file of the research compendium containing the R code |
| » codelines | [object] | false | none | array of code chunks including the code needed to generate the result |
| »» first_line | integer | false | none | start of the code chunk |
| »» last_line | integer | false | none | end of the code chunk |
| » parameter | [object] | false | none | array of parameters that should be made interactive |
| »» text | string | false | none | parameter as it is initialized in the code |
| »» name | string | false | none | the name of the parameter without the value |
| »» val | integer | false | none | the value of the parameter without the name |
| »» uiWidget | object | false | none | specification of the UI widget, one per parameter, here exemplified with a slider |
| »»» type | string | false | none | widget type, e.g. a slider or radio buttons |
| »»» minValue | integer | false | none | minimum value of the slider |
| »»» maxValue | integer | false | none | maximum value of the slider |
| »»» stepSize | integer | false | none | step size when moving the slider |
| »»» caption | string | false | none | caption for the result |

extract_binding

```
{
  "id": "string",
  "file": "string",
  "plot": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|------|--------|----------|--------------|---------------------------------------------------------------|
| id | string | false | none | ID of the compendium for which the bindings should be created |
| file | string | false | none | main file of the research compendium containing the R code |

| Name | Type | Required | Restrictions | Description |
|------|--------|----------|--------------|----------------------------------------------------------------------------------------|
| plot | string | false | none | function that outputs the result used as starting point for the backtracking algorithm |

search_binding

```
{
  "term": "string",
  "metadata": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|----------|--------|----------|--------------|-------------------------------------------------------|
| term | string | false | none | search for bindings including this code snippet |
| metadata | string | false | none | whole metadata object of the corresponding compendium |

upload_response

```
{
  "id": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|------|--------|----------|--------------|-------------|
| id | string | false | none | none |

list_response

```
{
  "results": [
    "string"
  ]
}
```

```
]
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|---------|----------|----------|--------------|-------------|
| results | [string] | false | none | none |

view_response

```
{
  "id": "string",
  "metadata": {},
  "created": "string",
  "user": "string",
  "bag": true,
  "compendium": true,
  "substituted": true,
  "files": {}
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|-------------|-------------------------|----------|--------------|-------------|
| id | user_id | false | none | none |
| metadata | object | false | none | none |
| created | string(date-string) | false | none | none |
| user | string | false | none | none |
| bag | boolean | false | none | none |
| compendium | boolean | false | none | none |
| substituted | boolean | false | none | none |
| files | object | false | none | none |

metadata_response

```
{
  "id": "string",
  "metadata": {
```

```
"o2r": {}  
}  
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|----------|--------|----------|--------------|-------------|
| id | string | false | none | none |
| metadata | object | false | none | none |
| » o2r | object | false | none | none |

job_response

```
{  
  "job_id": "string"  
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|--------|--------|----------|--------------|-------------|
| job_id | string | false | none | none |

view_job_response

```
{  
  "id": "string",  
  "compendium_id": "string",  
  "steps": {},  
  "status": "success",  
  "files": {}  
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|---------------|--------|----------|--------------|-------------|
| id | string | false | none | none |
| compendium_id | string | false | none | none |

| Name | Type | Required | Restrictions | Description |
|--------|--------|----------|--------------|-------------|
| steps: | object | false | none | none |
| status | string | false | none | none |
| files | object | false | none | none |

Enumerated Values

| Property | Value |
|----------|---------|
| status | success |
| status | failure |
| status | running |

recipient_response

```
{
  "recipients": [
    {
      "id": "string",
      "label": "string"
    }
  ]
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|------------|----------|----------|--------------|-------------|
| recipients | [object] | false | none | none |
| » id | string | false | none | none |
| » label | string | false | none | none |

shipment_response

```
[
  "string"
]
```

Properties

None

view_shipment_response

```
{
  "id": "string",
  "compendium_id": "string",
  "deposition_id": "string",
  "deposition_url": "string",
  "update_packaging": "string",
  "recipient": "string",
  "last_modified": "2019-08-24T14:15:22Z",
  "user": "string",
  "status": "shipped",
  "md": {}
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|------------------|-------------------|----------|--------------|-------------|
| id | string | false | none | none |
| compendium_id | string | false | none | none |
| deposition_id | string | false | none | none |
| deposition_url | string | false | none | none |
| update_packaging | string | false | none | none |
| recipient | string | false | none | none |
| last_modified | string(date-time) | false | none | none |
| user | string | false | none | none |
| status | string | false | none | none |
| md | object | false | none | none |

Enumerated Values

| Property | Value |
|----------|-----------|
| status | shipped |
| status | published |
| status | error |

upload_shipment_response

```
{
  "id": "string",
  "deposition_id": "string",
  "recipient": "string",
  "status": "shipped"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|---------------|--------|----------|--------------|-------------|
| id | string | false | none | none |
| deposition_id | string | false | none | none |
| recipient | string | false | none | none |
| status | string | false | none | none |

Enumerated Values

| Property | Value |
|----------|-----------|
| status | shipped |
| status | published |
| status | error |

shipment_status_response

```
{
  "id": "string",
  "status": "shipped"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|--------|--------|----------|--------------|-------------|
| id | string | false | none | none |
| status | string | false | none | none |

Enumerated Values

| Property | Value |
|----------|-----------|
| status | shipped |
| status | published |
| status | error |

shipment_files_response

```
{
  "files": [
    {}
  ]
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|-------|----------|----------|--------------|-------------|
| files | [object] | false | none | none |

link_response

```
{
  "id": "string",
  "compendium_id": "string",
  "user": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|---------------|-----------------|----------|--------------|-------------|
| id | string | false | none | none |
| compendium_id | string | false | none | none |
| user | string(user_id) | false | none | none |

link_list_response

```
{
  "results": [
    {
      "id": "string",
      "compendium_id": "string",
      "user": "string"
    }
  ]
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|-----------------|-----------------|----------|--------------|-------------|
| results | [object] | false | none | none |
| » id | string | false | none | none |
| » compendium_id | string | false | none | none |
| » user | string(user_id) | false | none | none |

upload_binding_response

```
{
  "callback": "string",
  "data": null
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|----------|--------|----------|--------------|-------------|
| callback | string | false | none | none |
| data | any | false | none | binding |

search_binding_response

```
{
  "callback": "string",
  "data": [
```

```
    "string"
  ]
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|----------|----------|----------|--------------|---------------------------------------------------------------------------------------|
| callback | string | false | none | none |
| data | [string] | false | none | array of results for which bindings exist that include the corresponding code snippet |

user_view_response

```
{
  "id": "string",
  "name": "string",
  "level": 0,
  "lastseen": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|----------|------------------|----------|--------------|-------------|
| id | string(user_id) | true | none | none |
| name | string | true | none | none |
| level | integer | false | none | none |
| lastseen | string(datetime) | false | none | none |

user_whoami_response

```
{
  "ocrid": "string",
  "name": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|------|------|----------|--------------|-------------|
|------|------|----------|--------------|-------------|

| Name | Type | Required | Restrictions | Description |
|-------|--------|----------|--------------|-------------|
| ocrid | string | false | none | none |
| name | string | false | none | none |

api_info_response

```
{
  "about": "string",
  "versions": {},
  "quote": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|----------|--------|----------|--------------|-------------|
| about | string | false | none | none |
| versions | object | false | none | none |
| quote | string | false | none | none |

api_list_response

```
{}
```

Properties

None

simple_search_response

```
{
  "hits": {
    "total": 0,
    "max_score": 0,
    "hits": [
      {}
    ]
  }
}
```

```
}
  }
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|-------------|----------|----------|--------------|-------------|
| hits | object | false | none | none |
| » total | integer | false | none | none |
| » max_score | number | false | none | none |
| » hits | [object] | false | none | none |

general_error_model

```
{
  "error": "string"
}
```

Properties

| Name | Type | Required | Restrictions | Description |
|-------|--------|----------|--------------|-------------|
| error | string | false | none | none |

user_id

```
"string"
```

Properties

| Name | Type | Required | Restrictions | Description |
|------------------|--------|----------|--------------|-------------|
| <i>anonymous</i> | string | false | none | none |