GATEWAY TO RESEARCH AND INNOVATION

GTRAPI

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Executive Summary

At the time of writing, the GtR project provides two APIs: GtRAPI and GTR-2. Both produce outputs in XML and JSON formats. The GtRAPI is the same API that is used by the web portal and there is a direct correlation between the visible information on the web portal screens and the output from the API.

Contents

API Common Features

In this section we detail some of the common elements between the APIs, such as available parameters that can be used against some resources and how pagination within result sets.

Request Parameter Summary

Both APIs utilise some or all of the request parameters below as part of the URL. The following request summary provides details and examples:

Request Parameter Defaults	Description	Example
term ***No default – mandatory parameter.***	Only used with the Search Resource. The term or phrase to be searched for. Search terms must be URL encoded (UTF-8). For more about search terms and the search engine vocabulary see About Searching.	To search for the phrase: "Oxford University" encoded term=%22Oxford%20University%22
fetchSize ***Default: 25 – not mandatory.***	Only used on paged requests. Can have a value from 25 to 100. See How PaginatIon Works.	fetchSize=50
page ***Default: 1 – not mandatory.***	Only used on paged requests. Which page of the current paged result set to fetch. See How PaginatIon Works.	page=2
selectedSortOrder ***Default: DESC – not mandatory. GTRAPI Only***	Can have the value ASC or DESC. See How PaginatIon Works.	selectedSortOrder=ASC
selectedSortableField ***No default – not mandatory. GTRAPI***	Value depends on the Resource utilised. Initial request to the Resource will include a	selectedSortableField=<x> Where <x> is a field provided in the

Request Parameter Defaults	Description	Example
Only	listing of sortable fields in the response. See How Paginatlon Works.	gtr:sortableFields list from the initial response.
selectedFacets *No default – not* *mandatory*	Only used with the Search Resource. Comma separated list of facet Ids that are to be applied to the Search.	selectedFacets=cmVnaW9ufFNvdXRoI EVhc3R8c3RyaW5n Facet IDs can be found from the facets returned in the gtr:facetGroup list provided from the initial response
fields *No default – mandatory parameter.*	Only used with the Search Resource Common delimited list of fields to be searched for the provided term	fields=<x> where <x> is a common delimited list of fields in the gtr:searcheableFields list from the the initial response

How Pagination Works

Paginated resources will be limited to 25 items by default. You can specify further pages with the page parameter. You can also set a custom page size up to 100 with the fetchSize parameter. For example:

https://gtr.ukri.org/search/person?term=paul&page=1&fetchSize=25

The pagination details are contained within three HTTP response headers:

1. **Link Header**. (As defined by RFC 5988: https://tools.ietf.org/html/rfc5988).

   For the search above the link header value is shown below:

   <https://gtr.ukri.org/search/person?term=paul&fields=pro.id,pro.t,pro.a,per.fn,per.on,per.sn,pe r.org.n,per.prot,per.pro.abs,pub.t,pub.a,org.n&page=1&fetchSize=25&selectedSortableField= score&selectedSortOrder=DESC>;rel=first,
   <https://gtr.ukri.org/search/person?term=paul&fields=pro.id,pro.t,pro.a,per.fn,per.on,per.sn,pe r.org.n,per.prot,per.pro.abs,pub.t,pub.a,org.n&page=37&fetchSize=25&selectedSortableField =score&selectedSortOrder=DESC>; rel=last,
   <https://gtr.ukri.org/search/person?term=paul&fields=pro.id,pro.t,pro.a,per.fn,per.on,per.sn,pe r.org.n,per.prot,per.pro.abs,pub.t,pub.a,org.n&page=2&fetchSize=25&selectedSortableField= score&selectedSortOrder=DESC>; rel=next
   rel=next

   The possible rel values are:
   a. **next**: Shows the URL of the next page of results.
   b. **last**: Shows the URL of the last page of results.
   c. **first**: Shows the URL of the first page of results.
   d. **previous**: Shows the URL of the previous page of results.

   If no 'next' or 'previous' relationship exists, then these will be omitted from the Link header. The 'first' and 'last' relationships will always be present for paged requests that return an HTTP 200.

2. **Link-Pages**. An integer defining the total number of pages: Link-Pages. At the time of writing the above search returns the integer: 37

3. **Link-Records**. An integer defining the total number of records: Link-Records : At the time of writing the above search returns the integer: 911

GTRAPI

GTRAPI Overview

Refer to the GtRAPI XML Schema for details on Response Entities detailed below. The XML schema for this interface can be found at: https://gtr.ukri.org/api

The GtRAPI exposes the following Resources:

GtR Resource	Description	Details
search	Search projects, publications, people or organisations with a specific search term.	GtR Search Resource
organisation	Retrieve all organisations or a specific organisation by its identifier.	Organisation Resource
person	Retrieve all people or a specific person by their identifier.	Person Resource
project	Retrieve all projects or a specific project by its identifier.	Project Resource
publication	Retrieve all publications or a specific publication by its identifier.	Publication Resource

GTR Search Resource

The Search Resource can search through the four GTR Resource Entities. These are Project, Person, Publication and Organisation.

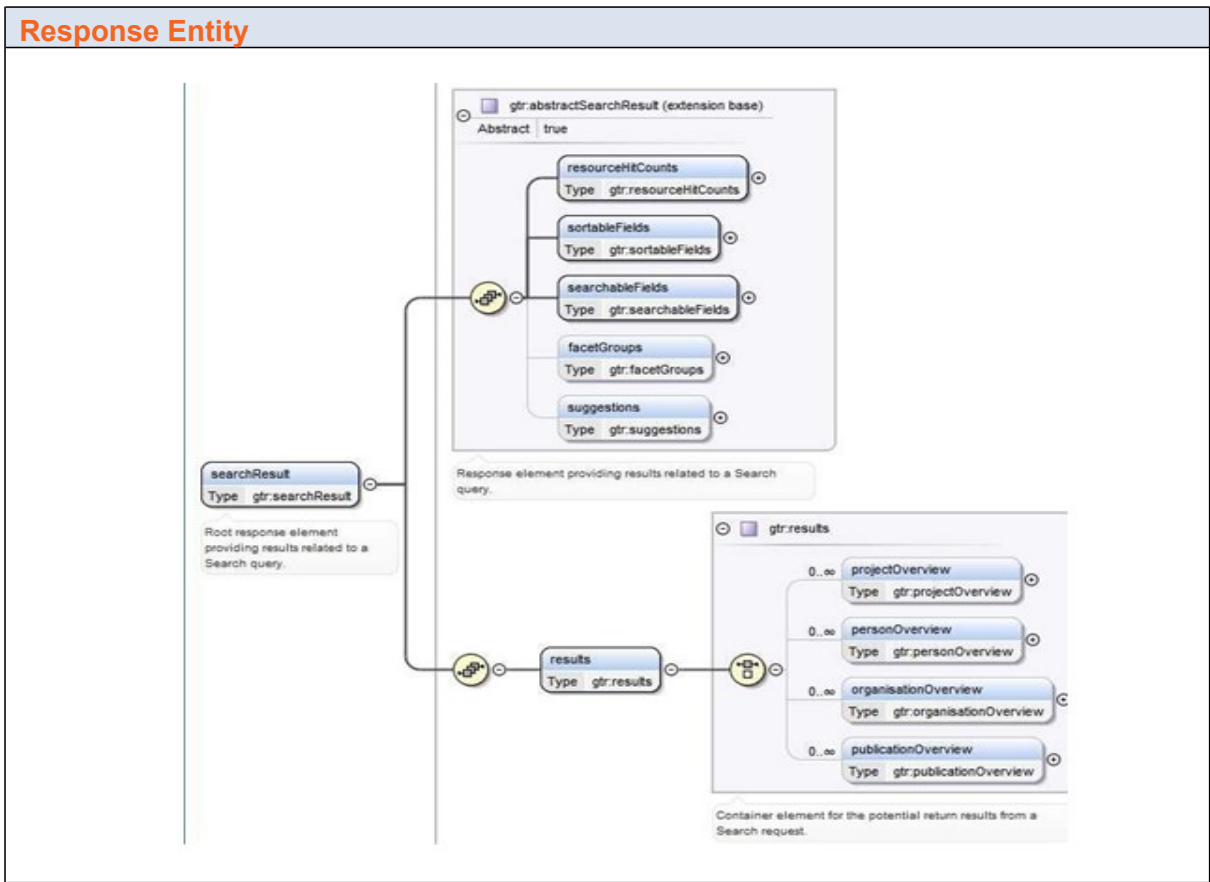The base URL for the search interfaces follows the following standard:

https://host:port/search/{resource   entity}

where the resource entity is one of the following:
- project
- person
- publication
- prganisation

PLEASE NOTE: the service is case sensitive so all resources must be in lowercase.

GTR Search Resource

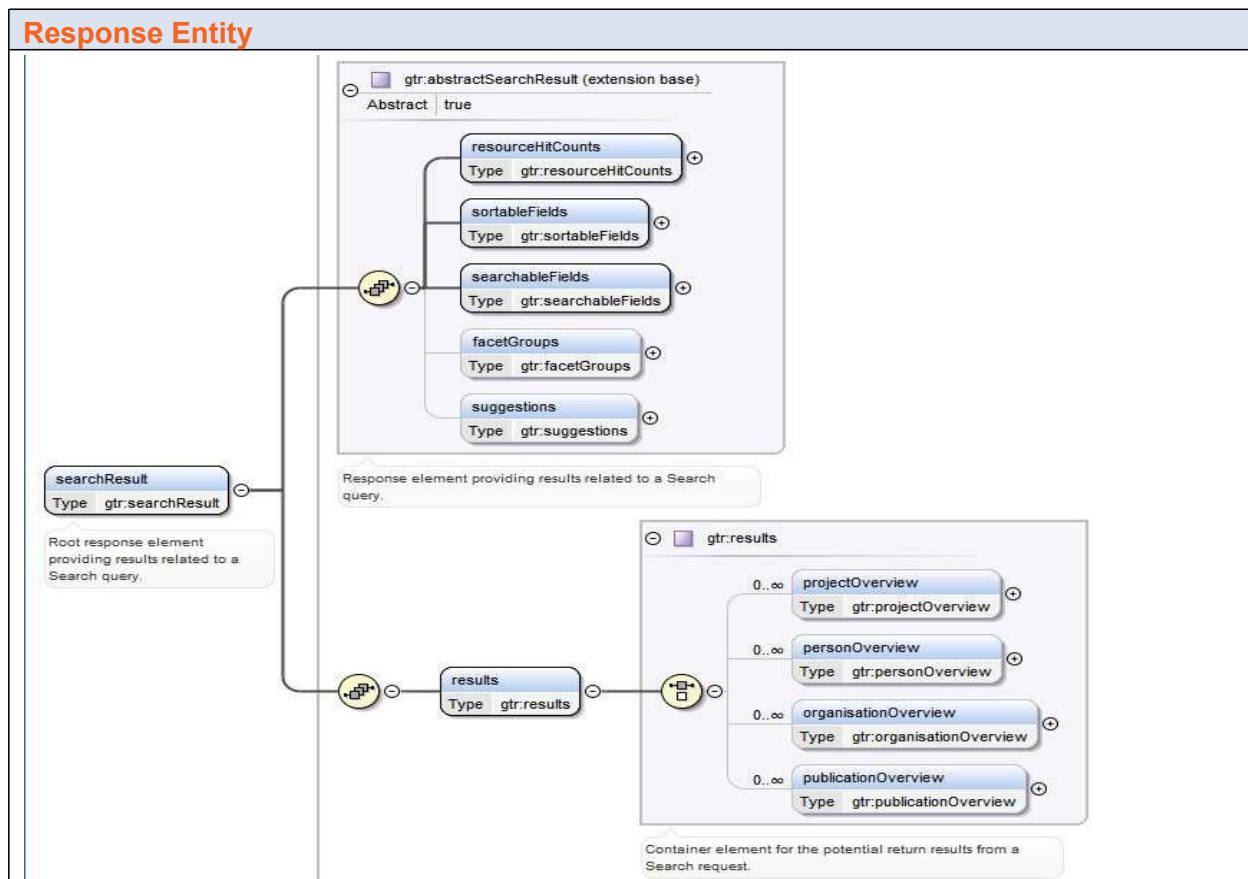| Search Projects	
Description	Search all projects for a specific term
Paged?	YES
URL can be viewed in Web Portal?	YES
Base URL	https://host:port/search/project
HTTP Method	GET
Request Parameters	term [mandatory] fetchSize page selectedSortOrder selectedSortableField selectedFacets fields See Request Parameters Summary.
Example	https://gtr.rcuk.c.uk/search/project?term=mouse&page=2&fetchSize=25&selectedSortableField=_score&selectedSortOrder=DESC&selectedFacets=YW1vdW50fC05MjIzMzcyMDM2ODU0Nzc1ODA4XzEwMDAwMHxyYW5nZQ==&fields=project.abs

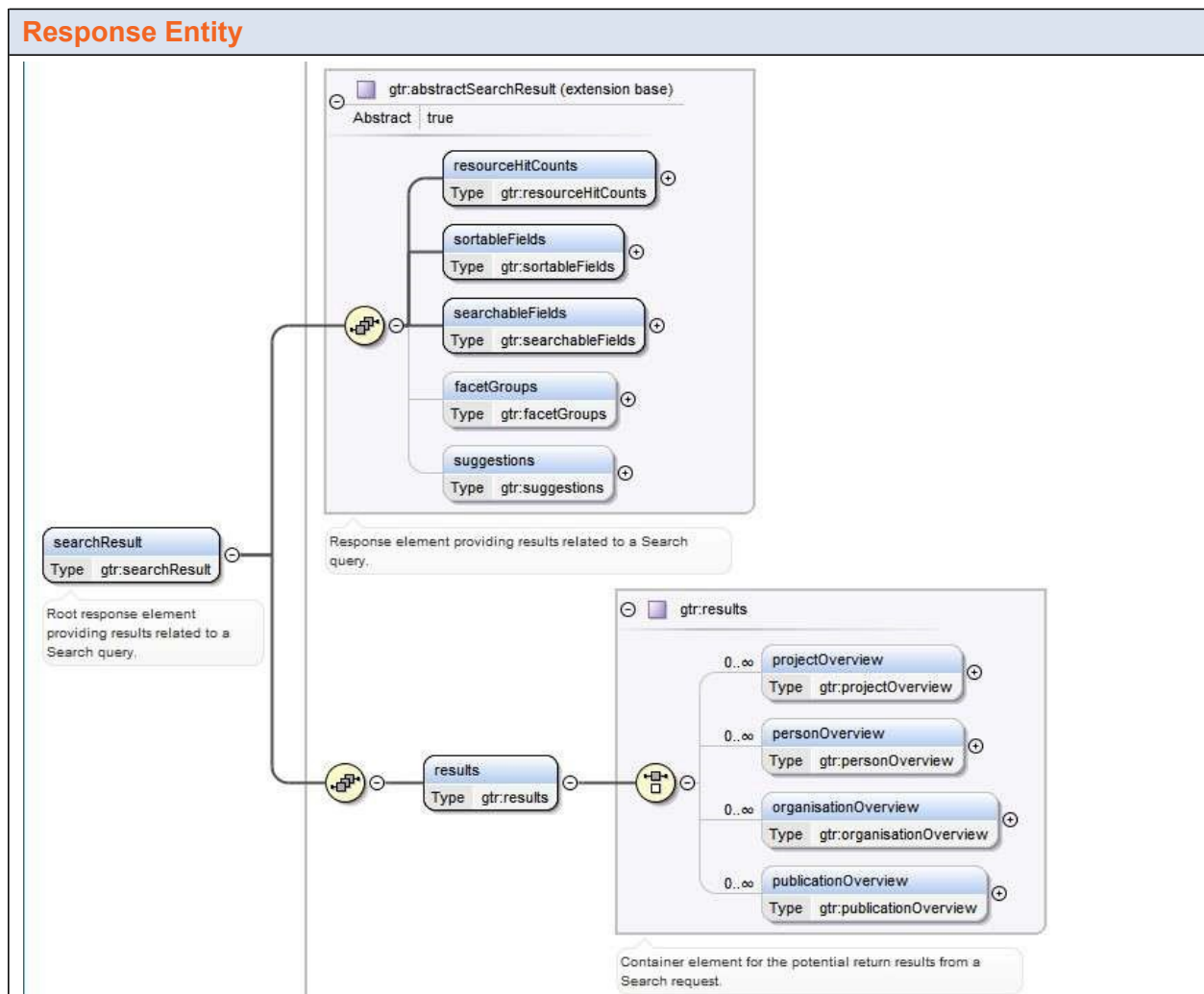**Response Entity**

Important:

- The gtr:project response elements contained within gtr:projectOverview will only have the following elements/attributes populated:

    - url
    - gtr:id
    - gtr:title
    - gtr:fund

- The gtr:personRoles response elements within the gtr:projectOverview will only contain data for the PRINCIPAL_INVESTIGATOR role.

Search Person	
Description	Search all people for a specific term
Paged?	YES
URL can be viewed in Web?	YES
Base URL	https://host:port/search/person
HTTP Method	GET
Request Parameters	term [mandatory] fetchSize page selectedSortOrder selectedSortableFie ld selectedFacets fields See Request Parameters Summary.
Example	https://gtr.ukri.org/search/person?term=mouse&selectedFacets= c 3VybmFtZXxqb2huc29ufHN0cmluZw==&page=1&fetchSize=25 &selec tedSortableField=per.sn&selectedSortOrder=DESC&fields=per.o n,per.fn,per.sn,per.org.n,per.pro.abs,per.pro.t

Response Entity

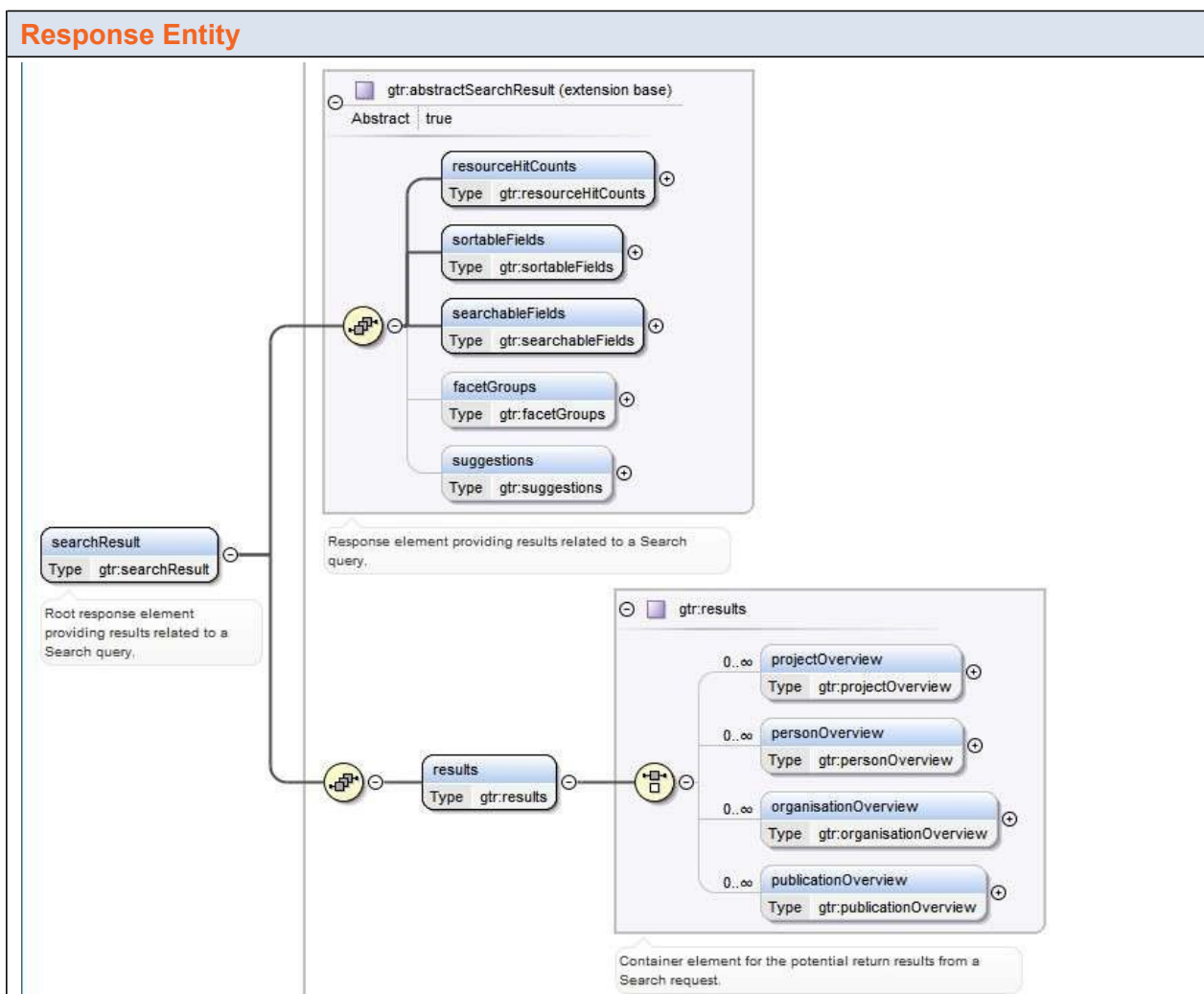| **Search Publications**	
Description	Search all publications for a specific term
Paged?	YES
URL can be viewed in Web Portal?	YES
Base URL	https://host:port/search/publication
HTTP Method	GET
Request Parameters	term [mandatory] fetchsize [page] selectedSortOrder selectedSortableField fields See Request Parameters Summary.
Example	https://gtr.ukri.org/search/publication?term=mouse&page=1&fetchSize=25&selectedSortableFiel d=&selectedSortOrder=&fields=per.pro.abs

Response Entity

Important:

- The gtr:project response elements contained within gtr:publicationOverviewwill only have the following elements/attributes populated:

  - url
  - gtr:id
  - gtr:title
  - gtr:grantCategory
  - gtr:fund

Note: a Placeholder for an abstract snippet exists in the publicationOverviewschema but is currently not populated.
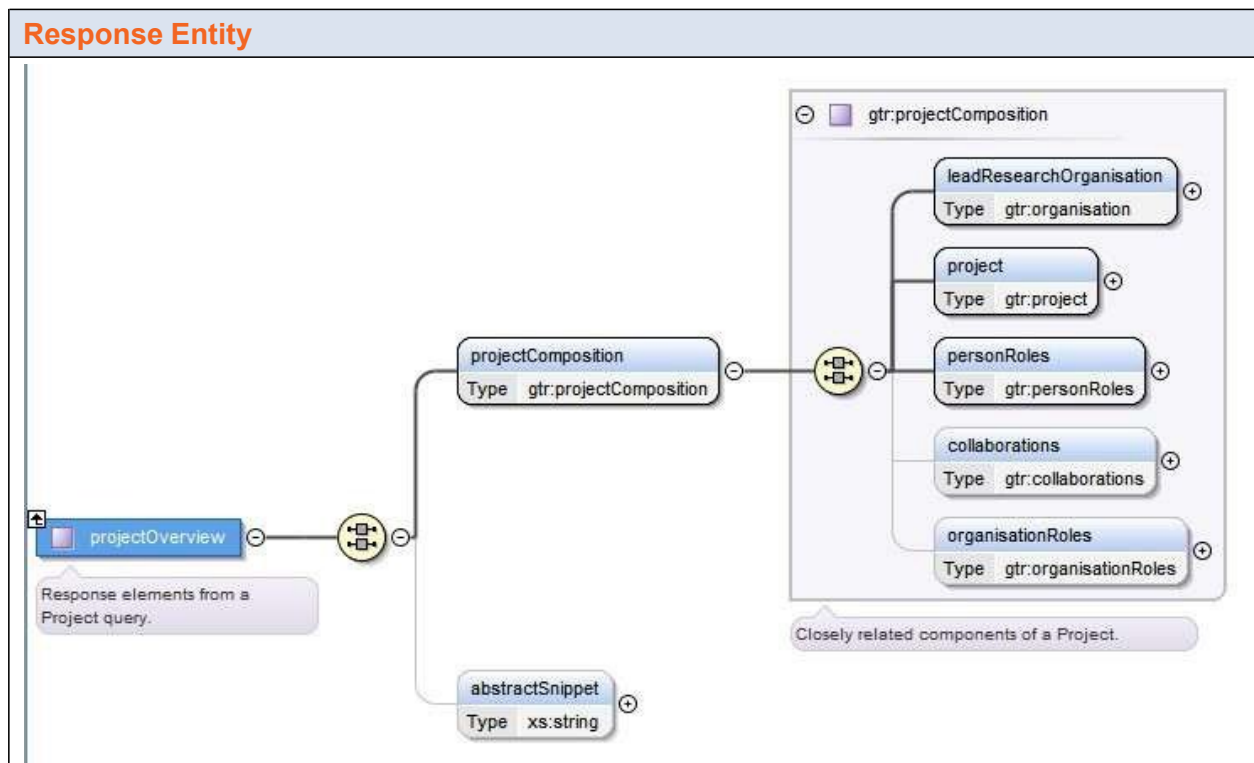
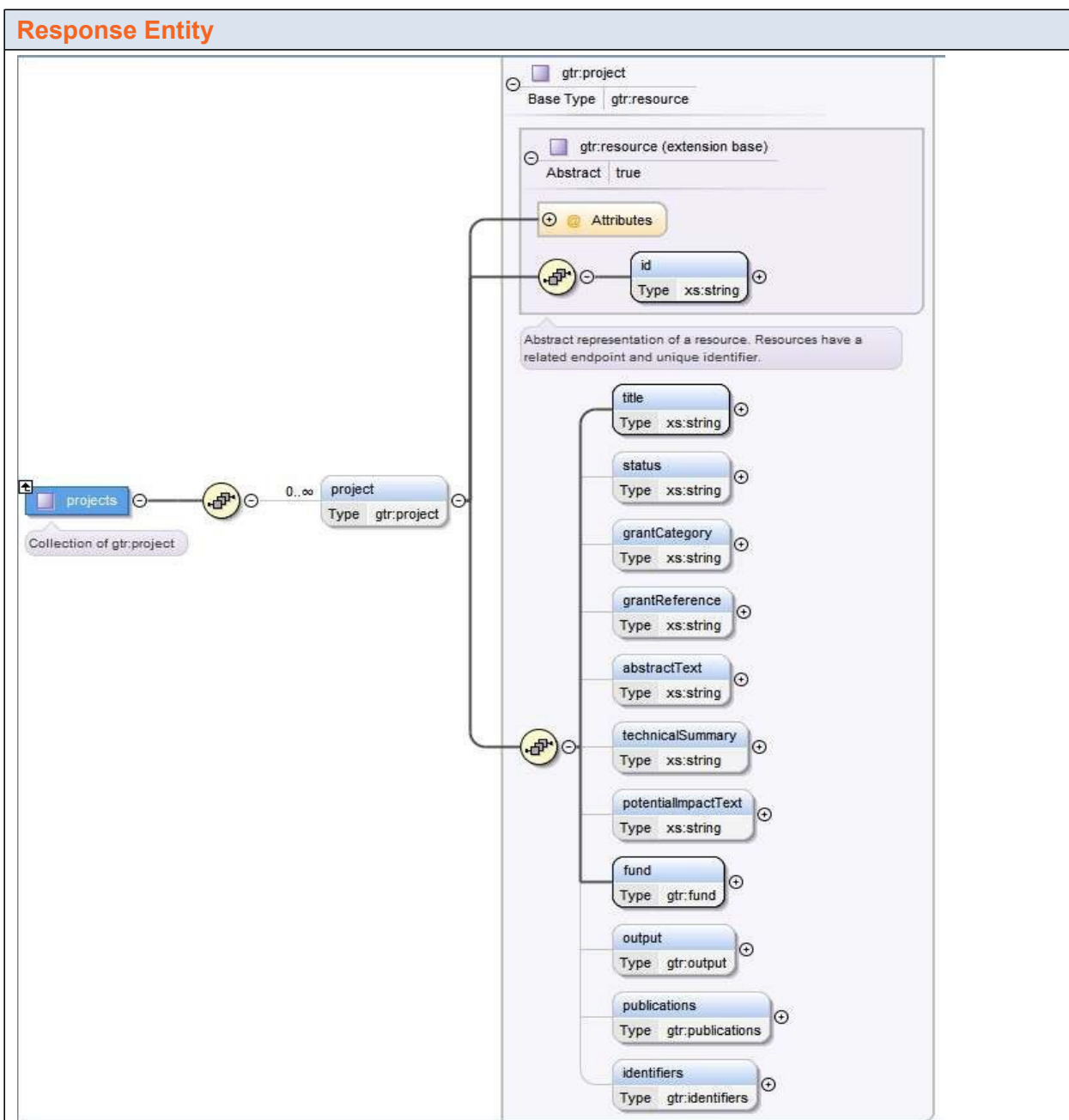| *Search Organisation*	
Description	Search all organisations for a specific term
Paged?	YES
URL can be viewed in Web?	YES
Base URL	https://host:port/search/organisation
HTTP Method	GET
Request Parameters	term fetchSize page selectedSortableField fields See Request Parameters Summary.
Example	https://gtr.ukri.org/search/organisation?term=mouse&page=1&fetchSize=25&selectedSortableField=&selectedSortOrder=&fields=org.n

Response Entity

Project Resource

The Project Resource allows you to fetch a specific project by id, or a paged listing of all projects.

Project By ID	
Description	Retrieve a project by its ID
Paged?	NO
URL can be viewed in Web	YES
Base URL	https://host:port/projects/<id>
HTTP Method	GET
Example	https://gtr.ukri.org/projects?ref=EP/F029624/1

Response Entity

Project Listing

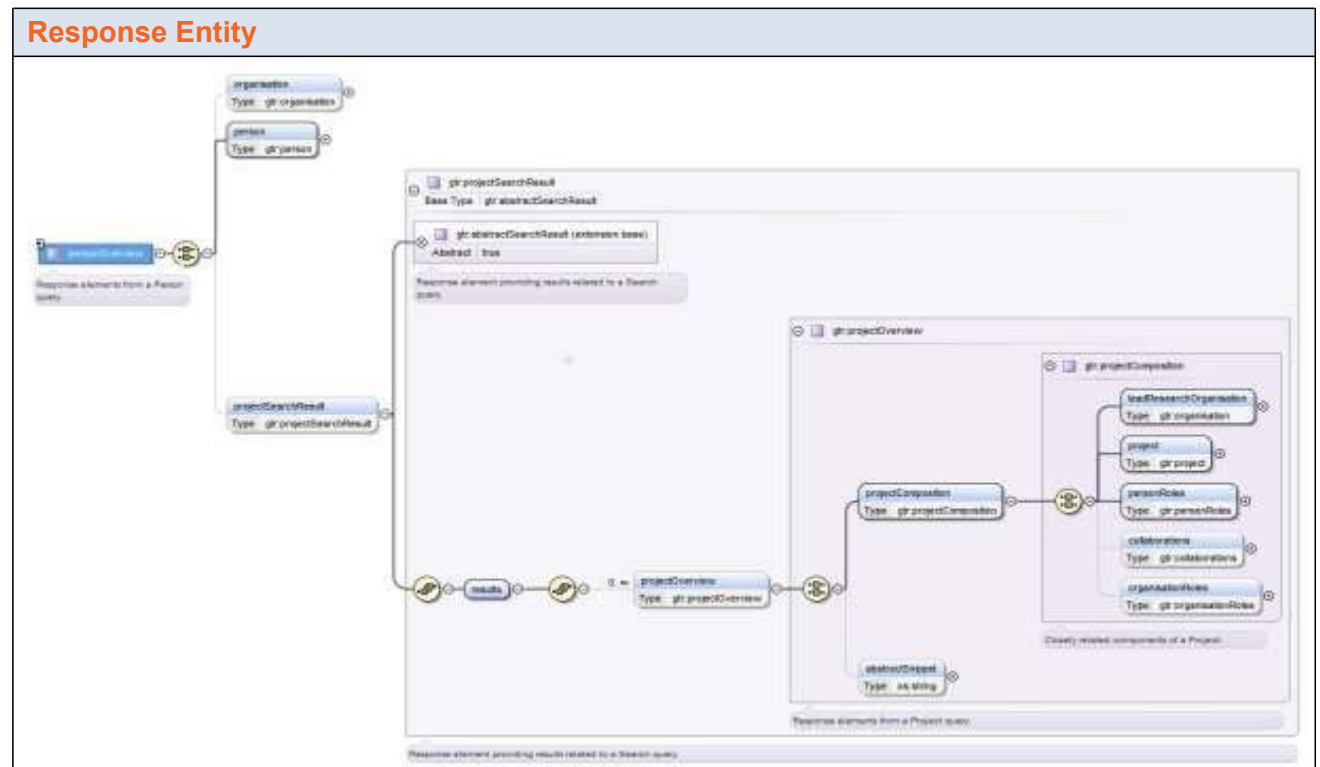| Project Listing	
Description	Retrieve all projects
Paged?	YES
URL can be viewed in Web?	NO
Base URL	https://host:port/project
HTTP Method	GET
Request Parameters	fetchSize page See Request Parameters Summary.
Example	https://gtr.ukri.org/projects?page=2&fetchSize=25

Response Entity

Person Resource

The Person Resource allows you to fetch a specific person by id, or a paged listing of all people. Within a specific person resource it is possible to search the projects related to a specific person by using the same syntax used to for search projects (see Search Projects)
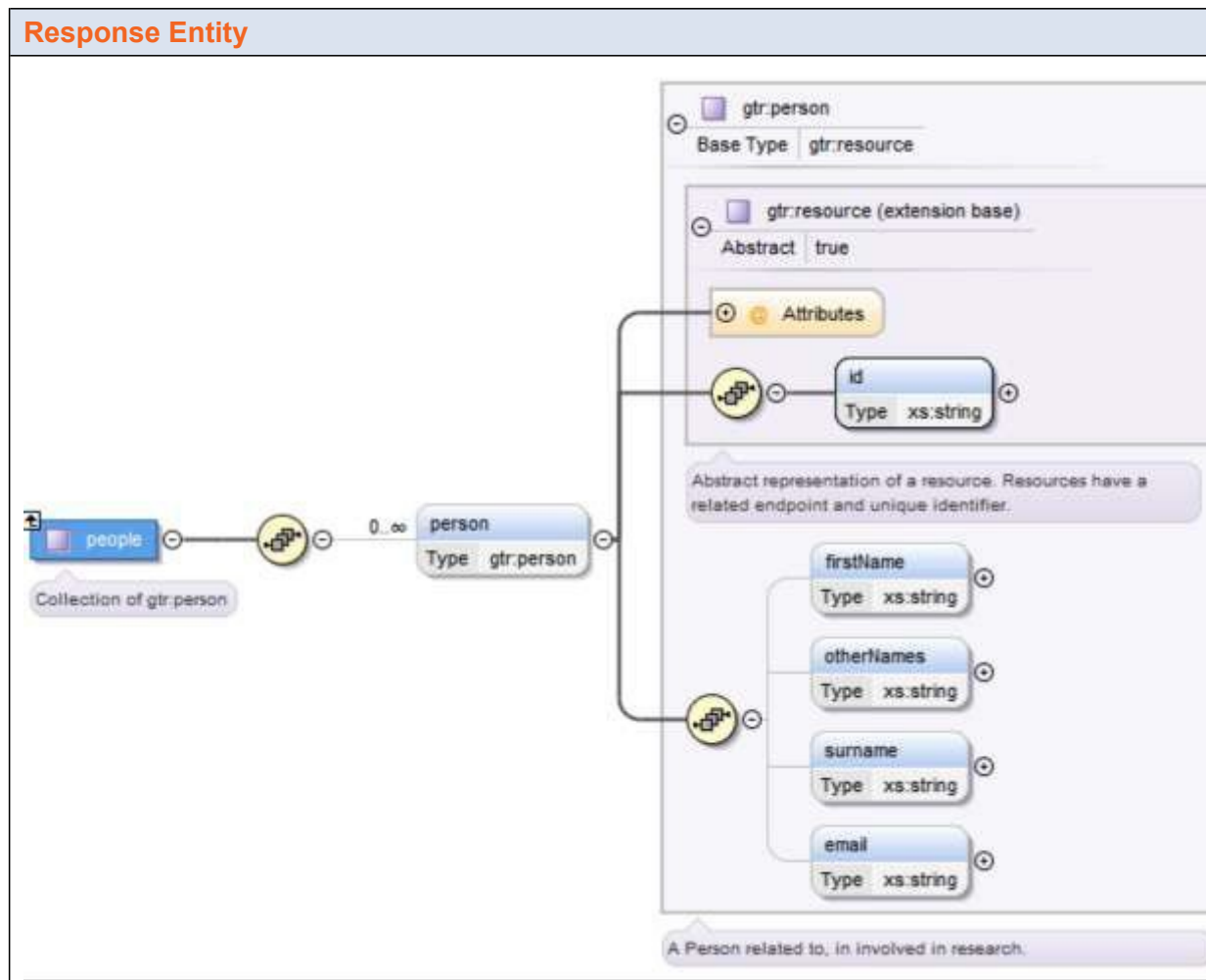
Person By ID	
Description	Retrieve a person by their ID
Paged?	NO
URL can be viewed in Web Portal?	YES
Base URL	https://host:port/person/<id>
Request Parameters	term fetchSize [page] selectedSortOrder selectedSortableField selectedFacets fields See Request Parameters Summary.
HTTP Method	GET
Example	https://gtr.ukri.org/person/E878C1F3-5057-4935-8DA3-AC625C55A7CF?term=&selectedFacets=c3RhcnR8MTMyNTM3NjAwMDAwMF8xMzU2OTk4Mzk5MDU5fHJhbmdl&page=1&fetchSize=25 &selectedSortableField=&selectedSortOrder=&fields=

Important: The gtr:projectresponse elements contained within gtr:personOverview will only have the following elements/attributes populated:

Response Entity

- url
- gtr:id
- gtr:title
- gtr:fund

Person Listing	
Description	Retrieve all people
Paged?	YES
URL can be viewed in Web?	NO
Base URL	https://host:port/person
HTTP Method	GET
Request Parameters	fetchSize page See Request Parameters Summary.
Example	https://gtr.ukri.org/person?page=2&fetchSize=25

Response Entity

Publication Resource

The Publication Resource allows you to fetch a specific publication by id, or a paged listing of all publications.

Publication By ID	
Description	Retrieve a publication by its ID
Paged?	NO
URL can be viewed in Web Portal?	YES
Base URL	https://host:port/publication/<id>
HTTP Method	GET
Example	https://gtr.ukri.org/publication/21B244B7-6C82-4F92-9DFC-577C1E7831A8

Response Entity

Important: The gtr:projectresponse elements contained within gtr:publicationOverviewwill only have the following elements/attributes populated:
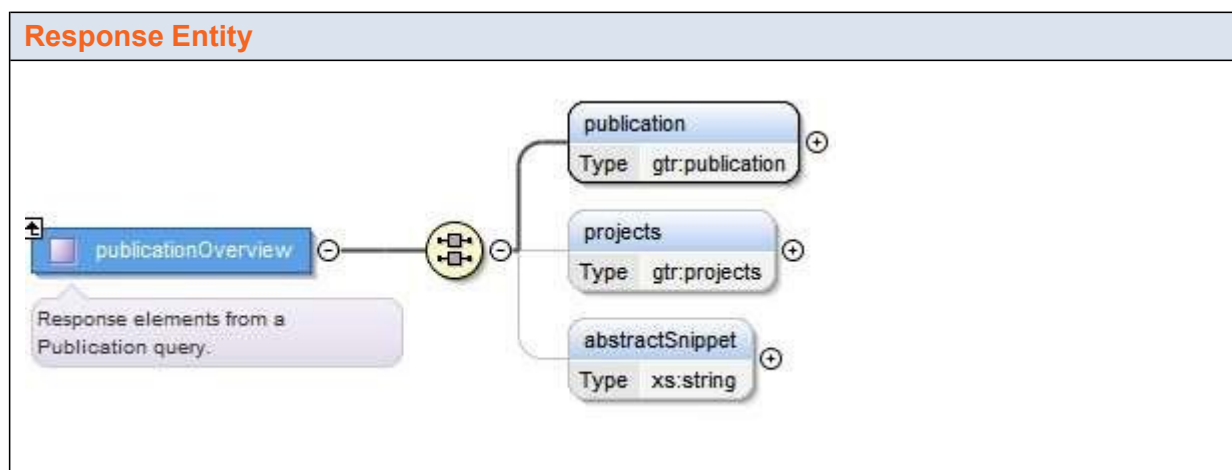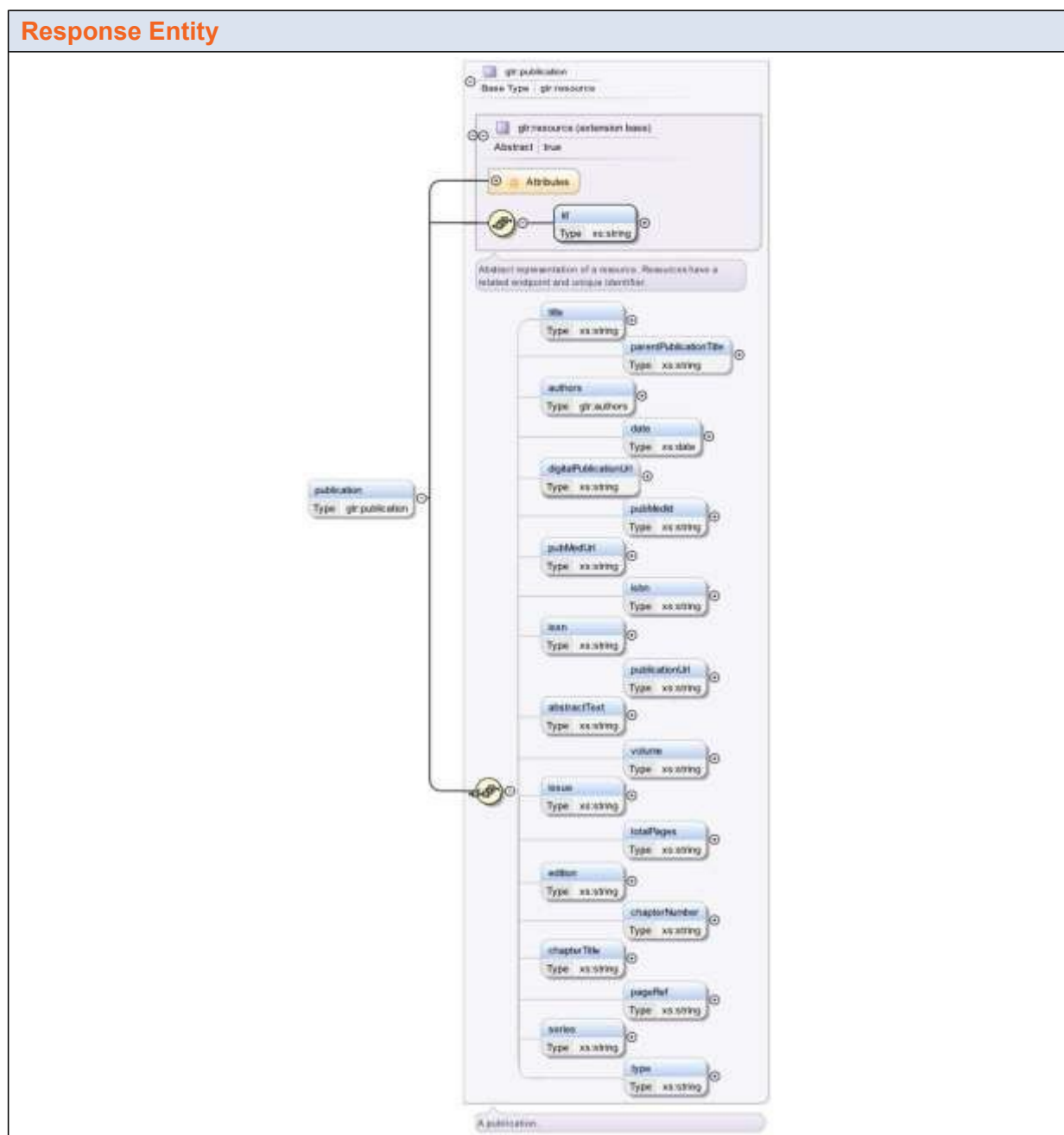
- url
- gtr:id
- gtr:title
- gtr:fund

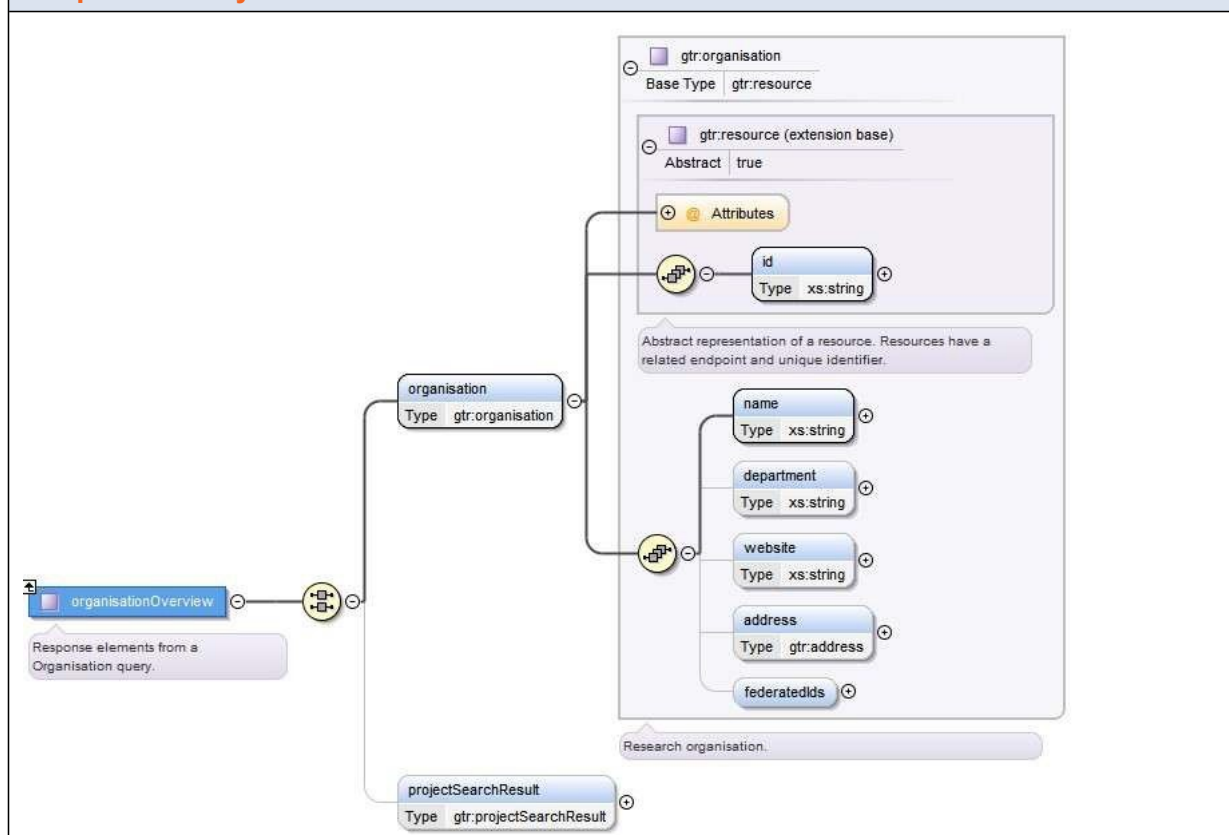| Publication Listing	
Description	Retrieve all publications
Paged?	YES
URL can be viewed in Web Portal?	NO
Base URL	https://host:port/publication
HTTP Method	GET
Request Parameters	fetchSize page See Request Parameters Summary.
Example	https://gtr.ukri.org/publication?page=2&fetchSize=25

Response Entity

Organisation Resource

The Organisation Resource allows you to fetch a specific organisation by id, or a paged listing of all organisations. Within a specific organisation resource it is possible to search the projects related to a specific person by using the same syntax used to for search projects (see **Search Projects)**

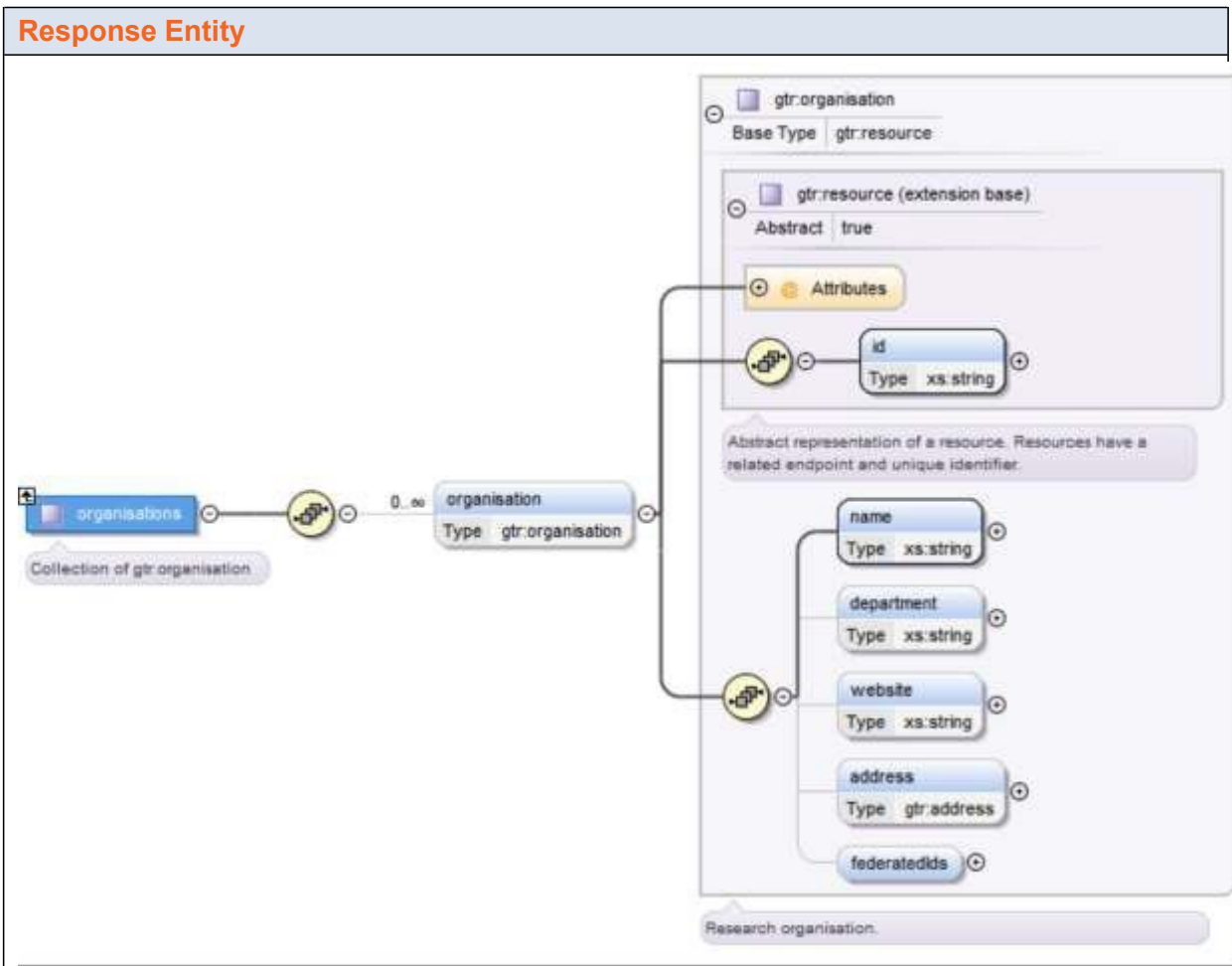| Organisation By ID	
Description	Retrieve a organisation by its ID
Paged?	NO
URL can be viewed in Web	YES
Base URL	https://host:port/organisation/<id>
Request Parameters	term fetchSize page selectedSortOrder selectedSortableFi eld selectedFacets fields See Request Parameters Summary.
HTTP Method	GET
Example	https://gtr.ukri.org/organisation/30A429E3-83B7-4E41-99C0-14A144F07DFE/?term=&selectedFacets=c3RhdHVzfENsb3NlZHxzdHJJpbmc=&fields=&fetchSize=25&page=1&selectedSortableField=projec t.endDate&selectedSortOrder=DESC

Response Entity

Important: The gtr:projectresponse elements contained within gtr:publicationOverviewwill only have the following elements/attributes populated:

- url
- gtr:id
- gtr:title
- gtr:fund

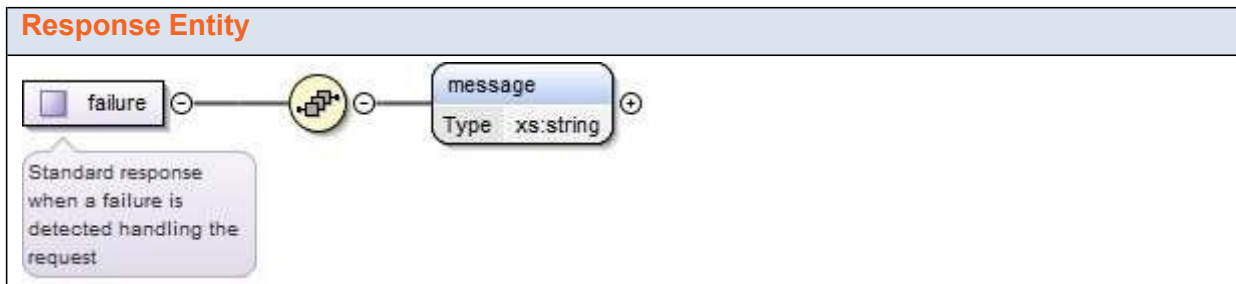| Organisation Listing	
Description	Retrieve all organisations
Paged?	YES
URL can be viewed in Web	NO
Base URL	https://host:port/publication
HTTP Method	GET
Request Parameters	fetchSize page See Request Parameters Summary.
Example	https://gtr.ukri.org/organisation?page=2&fetchSize=25

Response Entity

Failure Scenarios

Any requests that fail due to client or server errors will return a HTTP Status Code relevant to the type of error encountered.

The following errors are returned by the GtR application:

Code	Meaning	Description
400	Bad Request	The client provided invalid data or parameters
404	Not Found	The requested resource does not exist
500	Internal Server Error	An unexpected error has occurred on the server

Other HTTP Status Codes maybe returned, but are not specifically in use by the GtR application.

Response Entity

About Searching

Searching Overview

In this topic you can find out about how Search Terms work to help with custom searches and some help understanding how searching operates.

A Search term is a query that can be single or multiple words or phrases that may use operators (e.g. Wild Cards, Boolean Operators etc.) to perform simple or complex searches.

The Lucene tool is used to provide information retrieval services from the GtR database. Lucene enables complex searches known as queries.

For more information see https://en.wikipedia.org/wiki/Lucene or https://lucene.apache.org/ or download a PDF from https://lucene.apache.org/core/old_versioned_docs/versions/2_9_1/queryparsersyntax.pdf.

Search Terms in a Nutshell

The following table provides a summary of Lucene syntax and indicates which are implemented:

	Description	Example	Return
Term	A single word Not case sensitive	Test	All documents containing test or "Test" or "TEST" or TeST" etc.
Phrase	A set of terms Not case sensitive	Test Blood	All documents with "test" or "TEST" containing "blood" or "BlOod" etc
Quoted Phrase	A phrase enclosed with speech marks to indicate matching a phrase rather than the individual terms.	"Blood Test"	All documents containing the two words together
Case	Lucene is not case sensitive except Boolean terms (UPPER CASE).	N/A	N/A
Wildcards * or ?	? Single character wildcard	T?nt	All documents containing "Tent", "tint", "TNT" etc
	* Multiple character wildcard	T*nt	All document containing "Tent", "tint", "TNT", "taint", "taunt", "talent" etc
	Note: You cannot use * or ? as the first character of a search.		
Field Search	Not currently supported in GtR (see GtR-2 API).	N/A	N/A
Fuzzy Search~	Performs a likeness search for a single term.(Levenshtein Distance, or Edit Distance). For example, **"term"~"<similarity>"** where "term" is the search string and (optional) similarity is a number between 0 and 1. The default value is 0.5 and the higher the number the nearer the returned items will be to the search term.	Test~0.8	Documents containing one or more words quite similar to "test".
		Test~0.1	Documents containing one or more words quite similar to "test"

	Description	**Example**	**Return**
	See https://en.wikipedia.org/wiki/Fuzzy_search.		but less similar to "test" than 0.8.
Proximity Search~	Looksfor terms within a certain number of words from each other. For example, "test blood" ~10 returns any instances of test and blood within 10 words of each other in a document.	"test blood"~10	Documents with "test" and "blood" within 10 words of each other.
Range Search	Not currently supported in GtR.	N/A	N/A
Boosting Terms^	You can provide a weighted relevance factor to a term or phrase using the caret character ^. The higher the boost value the more relevant the term or phrase is. Values are from greater than zero e.g. 0.1, 1, 10.	"test blood"^3 "test sugar"^0.5.	Documents related to "test blood" or "test sugar" with "test blood" matches given a higher priority.
Boolean	These perform logic operations. Note: Words are capitalised		
	OR: returns documents where either terms/phrase exist. (OR is the default)	Test OR research	Returns documents containing either "test" or "research".
	AND: returns documents where both terms exist	Test AND "Blood Sugar"	Documentsthat contain both "test" and either "blood" or "sugar".
	NOT: excludes documentsthat contain the specified term/phrase.	test AND blood" NOT "test AND sugar"	Documentsthat contain "test" and "blood" but does not return documents that contain "test" AND "sugar".
	+: returns documentsthat contain this term or phrase	+test blood	Returns all documents with test and these documents may contain blood.
	-: excludes documentsthat contain this term or phrase.	"blood test" - "sugar test"	Returns documents that contain "blood test" but not "sugar test".
Grouping	You can use parenthesesto enclose terms or phrases	(blood or sugar or insulin) AND test	Returns documents that must contain results and either blood or sugar or insulin.
Field Grouping	Not currently supported in GtR	N/A	N/A
Escape Characters	These are used to include special characters such as + - && || ! ( ) { } [ ] ^ " ~ * ? : \ in search terms and phrases.	If you wish to search for the phrase (A+B):C use \(A\+B\)\:C	Returns documents containing "(A+B):C"