

Documentation GE API FHIR

Fast Healthcare Interoperability Resources (FHIR, pronounced "Fire") defines a set of "Resources" that represent granular clinical concepts. The resources can be managed in isolation, or aggregated into complex documents. Technically, FHIR is designed for the web; the resources are based on simple XML or JSON structures, with an http-based RESTful protocol where each resource has predictable URL. Where possible, open internet standards are used for data representation.

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1. General information

Technical information

Item	Value
Status	active
Version of FHIR	4.0.0
Name of software	hapi-datahub-server
Version of software	1.0.0-SNAPSHOT

Global information on resources

The following aliases are being used in this document :

Alias	Definition	Example
<fhir_api_url>	The full url of the FHIR API (with port)	http://localhost:8080/
<resource_name>	Name of a resource (upper camel case)	RequestedStudy
<search_include_parameter>	Syntax for a search with inclusion	Appointment:actor

Capability statement

Instance capability statement is available at the following url :

`<fhir_api_url>fhir/metadata`

For example :

<http://localhost:8080/fhir/metadata>

This FHIR resource gives information about capabilities of the API, it might be redundant with this very document.

Job status

User can retrieve information about the last execution of the ETL job behind FHIR API data

```
<fhir_api_url>info/job-status
```

For example :

```
http://localhost:8080/info/job-status
```

Extensions

Attributes available within our API which are not compliant with FHIR standard are stored as extensions. The **Extensions** section of a resource (if the resource has extensions) will be documented thanks to tables :

1. First table details information for each extension attribute
2. Second table gives the path where the attribute can be found. Within the FHIR standard, extensions follow a **key - value** behavior where the **key** is an url. A path must be read as a sequence of **keys** (urls) leading to the desired value.

For example :

```
address.[http://hl7.org/fhir/StructureDefinition/geolocation].[longitude]
```

Corresponds to the following json path :

```
address.extension[where "url" =  
"http://hl7.org/fhir/StructureDefinition/geolocation"].valueDecimal[where "url" =  
"longitude"]
```

Search with inclusion

For search with inclusion, the dedicated parameter should be used as follow :

```
<fhir_api_url>fhir/<resource_name>?_include=<search_include_parameter>
```

For example, in order to retrieve actors related to appointments from a local FHIR API on port 8080, user will do this :

```
http://localhost:8080/fhir/Appointment?\_include=Appointment:actor
```

2. Resources

- [Appointment](#)
- [HealthcareService](#)
- [Location](#)
- [Patient](#)
- [Practitioner](#)
- [ServiceRequest](#)

Appointment

A booking of a healthcare event among patient(s), practitioner(s), related person(s) and/or device(s) for a specific date/time. This may result in one or more Encounter(s).

<http://hl7.org/fhir/StructureDefinition/Appointment>

Available types of interaction : read, search-type

Details

attribute	card	type	definition
id	0..1	id	The logical id of the resource, as used in the URL for the resource. Once assigned, this value never changes.
meta	0..1	Meta	The metadata about the resource. This is content that is maintained by the infrastructure. Changes to the content might not always be associated with version changes to the resource.
extension	0..*	Extension	May be used to represent additional information that is not part of the basic definition of the resource. To make the use of extensions safe and manageable, there is a strict set of governance applied to the definition and use of extensions. Though any implementer can define an extension, there is a set of requirements that SHALL be met as part of the definition of the extension.
identifier	0..*	Identifier	This records identifiers associated with this appointment concern that are defined by business processes and/or used to refer to it when a direct URL reference to the resource itself is not appropriate (e.g. in CDA documents, or in written / printed documentation).
status	1..1	code	The overall status of the Appointment. Each of the participants has their own participation status which indicates their involvement in the process, however this status indicates the shared status.

attribute	card	type	definition
priority	0..1	unsignedInt	The priority of the appointment. Can be used to make informed decisions if needing to re-prioritize appointments. (The iCal Standard specifies 0 as undefined, 1 as highest, 9 as lowest priority).
start	0..1	instant	Date/Time that the appointment is to take place.
minutesDuration	0..1	positiveInt	Number of minutes that the appointment is to take. This can be less than the duration between the start and end times. For example, where the actual time of appointment is only an estimate or if a 30 minute appointment is being requested, but any time would work. Also, if there is, for example, a planned 15 minute break in the middle of a long appointment, the duration may be 15 minutes less than the difference between the start and end.
created	0..1	dateTime	The date that this appointment was initially created. This could be different to the meta.lastModified value on the initial entry, as this could have been before the resource was created on the FHIR server, and should remain unchanged over the lifespan of the appointment.
basedOn	0..*	Reference(ServiceRequest)	The service request this appointment is allocated to assess (e.g. incoming referral or procedure request).
participant	1..*	BackboneElement	List of participants involved in the appointment.

attribute	card	type	definition
participant.actor	0..1	Reference(Patient Practitioner PractitionerRole RelatedPerson Device HealthcareService Location)	A Person, Location/HealthcareService or Device that is participating in the appointment.

Extensions

Details

attribute	definition	cardinality	type
modality	The requested modality	0..1	string

Paths

attribute	path
modality	[http://ge.com/dwetl/fhir#app_modality]

Search with inclusion

Appointment:actor, Appointment:based-on

Search parameters

name	type	documentation
_id	token	The resource identity
_lastUpdated	date	Only return resources which were last updated as specified by the given range
date	date	The date start of the appointment
identifier	token	The resource identity
modality	string	The scheduled modality of the appointment

Json example

```
{
  "resourceType": "Appointment",
  "id": "1",
  "meta": {
    "lastUpdated": "2019-10-31T12:26:06.000+01:00"
  },
  "extension": [
    {
      "url": "http://ge.com/dwetl/fhir#app_modality",
      "valueString": "DS"
    }
  ]
}
```

```

],
"identifier": [
  {
    "value": "RIS-I-1.1002001396"
  }
],
"status": "noshow",
"priority": 1,
"start": "2005-09-02T08:00:00.000+02:00",
"minutesDuration": 54000,
"created": "2005-09-02T08:10:00+02:00",
"basedOn": [
  {
    "reference": "ServiceRequest/1"
  }
],
"participant": [
  {
    "actor": {
      "reference": "Patient/1"
    }
  },
  {
    "actor": {
      "reference": "Location/TEST"
    }
  },
  {
    "actor": {
      "reference": "HealthcareService/1"
    }
  }
]
}

```

HealthcareService

The details of a healthcare service available at a location.

<http://hl7.org/fhir/StructureDefinition/HealthcareService>

Available types of interaction : read, search-type

Details

attribute	card	type	definition
id	0..1	id	The logical id of the resource, as used in the URL for the resource. Once assigned, this value never changes.
meta	0..1	Meta	The metadata about the resource. This is content that is maintained by the infrastructure. Changes to the content might not always be associated with version changes to the resource.

identifier attribute	0..* card	Identifier type	External identifiers for this item. definition
location	0..*	Reference(Location)	The location(s) where this healthcare service may be provided.
name	0..1	string	Further description of the service as it would be presented to a consumer while searching.
telecom	0..*	ContactPoint	List of contacts related to this specific healthcare service.

Search parameters

name	type	documentation
_id	token	The resource identity
_lastUpdated	date	Only return resources which were last updated as specified by the given range
identifier	token	The resource identifier
name	string	A portion of the Healthcare service name

Json example

```
{
  "resourceType": "HealthcareService",
  "id": "1",
  "meta": {
    "lastUpdated": "2019-11-20T11:11:00.000+01:00"
  },
  "identifier": [
    {
      "system": "http://ge.com/dwet1/fhir/api_id",
      "value": "RIS-I-1.1"
    },
    {
      "system": "http://ge.com/dwet1/fhir/short_name",
      "value": "test"
    }
  ],
  "location": [
    {
      "reference": "Location/1"
    }
  ],
  "name": "test_campus",
  "telecom": [
    {
      "system": "phone",
      "value": "+33123456789",
      "use": "work"
    },
    {
      "system": "fax",
```

```

    "value": "fax",
    "use": "work"
  }
]
}

```

Location

Details and position information for a physical place where services are provided and resources and participants may be stored, found, contained, or accommodated.

<http://hl7.org/fhir/StructureDefinition/Location>

Available types of interaction : read, search-type

Details

attribute	card	type	definition
id	0..1	id	The logical id of the resource, as used in the URL for the resource. Once assigned, this value never changes.
meta	0..1	Meta	The metadata about the resource. This is content that is maintained by the infrastructure. Changes to the content might not always be associated with version changes to the resource.
identifier	0..*	Identifier	Unique code or number identifying the location to its users.

attribute	card	type	definition
address	0..1	Address	Physical location.
position	0..1	BackboneElement	The absolute geographic location of the Location, expressed using the WGS84 datum (This is the same coordinate system used in KML).
position.longitude	1..1	decimal	Longitude. The value domain and the interpretation are the same as for the text of the longitude element in KML (see notes below).
position.latitude	1..1	decimal	Latitude. The value domain and the interpretation are the same as for the text of the latitude element in KML (see notes below).

Search parameters

name	type	documentation
_id	token	The resource identity
_lastUpdated	date	Only return resources which were last updated as specified by the given range
address	string	A (part of the) address of the location
address-city	string	A city specified in an address
address-country	string	A country specified in an address
address-postalcode	string	A postal code specified in an address
identifier	token	The resource identifier

Json example

```
{
  "resourceType": "Location",
  "id": "1",
  "meta": {
    "lastUpdated": "2019-11-20T11:11:00.000+01:00"
  },
  "identifier": [
    {
      "system": "http://ge.com/dwet1/fhir/api_id",
      "value": "RIS-I-1.1"
    }
  ],
  "address": {
    "use": "work",
```

```

    "text": "xxx",
    "city": "Strasbourg",
    "postalCode": "67000",
    "country": "FR"
  },
  "position": {
    "longitude": 7.74550000,
    "latitude": 48.58390000
  }
}

```

Patient

Demographics and other administrative information about an individual or animal receiving care or other health-related services.

<http://hl7.org/fhir/StructureDefinition/Patient>

Available types of interaction : read, search-type

Details

attribute	card	type	definition
id	0..1	id	The logical id of the resource, as used in the URL for the resource. Once assigned, this value never changes.
meta	0..1	Meta	The metadata about the resource. This is content that is maintained by the infrastructure. Changes to the content might not always be associated with version changes to the resource.
identifier	0..*	Identifier	An identifier for this patient.
name	0..*	HumanName	A name associated with the individual.
telecom	0..*	ContactPoint	A contact detail (e.g. a telephone number or an email address) by which the individual may be contacted.

attribute	card	type	definition
gender	0..1	code	Administrative Gender - the gender that the patient is considered to have for administration and record keeping purposes.
birthDate	0..1	date	The date of birth for the individual.
address	0..*	Address	An address for the individual.

Extensions

Details

attribute	definition	cardinality	type
address.geolocation.latitude	Latitude. The absolute geographic location of the Patient address, expressed using the WGS84 datum (This is the same co-ordinate system used in KML)	0..1	decimal
address.geolocation.longitude	Longitude. The absolute geographic location of the Patient address, expressed using the WGS84 datum (This is the same co-ordinate system used in KML)	0..1	decimal

Paths

attribute	path
address.geolocation.latitude	address.[http://hl7.org/fhir/StructureDefinition/geolocation].[latitude]
address.geolocation.longitude	address.[http://hl7.org/fhir/StructureDefinition/geolocation].[longitude]

Search with inclusion

Appointment:actor

Search parameters

name	type	documentation
_id	token	The resource identity
_lastUpdated	date	Only return resources which were last updated as specified by the given range
birthdate	date	The patient's date of birth
family	string	A portion of the family name of the patient
identifier	token	The resource identifier

Json example

```
{
  "resourceType": "Patient",
  "id": "1",
  "meta": {
    "lastUpdated": "2019-10-21T12:06:38.000+02:00"
  },
  "identifier": [
    {
      "value": "RIS-I-1.1000003"
    }
  ],
  "name": [
    {
      "text": "Doris",
      "family": "ORM"
    }
  ],
  "telecom": [
    {
      "value": "0298000000",
      "use": "home"
    },
    {
      "value": "0600000000",
      "use": "mobile"
    }
  ],
  "gender": "female",
  "birthDate": "1910-07-20",
  "address": [
    {
      "extension": [
        {
          "url":
            "http://hl7.org/fhir/StructureDefinition/geolocation",
          "extension": [
            {
              "url": "latitude",
              "valueDecimal": 42.58330000
            },
            {
              "url": "longitude",
```

```
    "valueDecimal": 1.66670000
  }
]
},
"postalCode": "89075"
}
]
```

Practitioner

A person who is directly or indirectly involved in the provisioning of healthcare.

<http://hl7.org/fhir/StructureDefinition/Practitioner>

Available types of interaction : read, search-type

Details

attribute	card	type	definition
id	0..1	id	The logical id of the resource, as used in the URL for the resource. Once assigned, this value never changes.
meta	0..1	Meta	The metadata about the resource. This is content that is maintained by the infrastructure. Changes to the content might not always be associated with version changes to the resource.
name	0..*	HumanName	The name(s) associated with the practitioner.

attribute	card	type	definition
address	0..*	Address	Address(es) of the practitioner that are not role specific (typically home address). Work addresses are not typically entered in this property as they are usually role dependent.
qualification	0..*	BackboneElement	The official certifications, training, and licenses that authorize or otherwise pertain to the provision of care by the practitioner. For example, a medical license issued by a medical board authorizing the practitioner to practice medicine within a certian locality.
qualification.code	1..1	CodeableConcept	Coded representation of the qualification.

Extensions

Details

attribute	definition	cardinality	type
address.geolocation.latitude	Latitude. The absolute geographic location of the Practitioner address, expressed using the WGS84 datum (This is the same co-ordinate system used in KML)	0..1	decimal
address.geolocation.longitude	Longitude. The absolute geographic location of the Practitioner address, expressed using the WGS84 datum (This is the same co-ordinate system used in KML)	0..1	decimal

Paths

attribute	path
address.geolocation.latitude	address.[http://hl7.org/fhir/StructureDefinition/geolocation].[latitude]
address.geolocation.longitude	address.[http://hl7.org/fhir/StructureDefinition/geolocation].[longitude]

Search parameters

name	type	documentation
_id	token	The resource identity
_lastUpdated	date	Only return resources which were last updated as specified by the given range

Json example

```
{
  "resourceType": "Practitioner",
  "id": "1",
  "meta": {
    "lastUpdated": "2020-01-08T10:04:18.000+01:00"
  },
  "name": [
    {
      "text": "John Mary Doe",
      "family": "Doe",
      "given": [
        "John",
        "Mary"
      ],
      "prefix": [
        "Mr."
      ],
      "suffix": [
        "Phd"
      ]
    }
  ],
  "address": [
    {
      "extension": [
        {
          "url":
            "http://hl7.org/fhir/StructureDefinition/geolocation",
          "extension": [
            {
              "url": "latitude",
              "valueDecimal": 42.53330000
            },
            {
              "url": "longitude",
              "valueDecimal": 1.63330000
            }
          ]
        }
      ]
    }
  ]
}
```

```
    ]
  },
  "use": "work",
  "line": [
    "10 downing street"
  ],
  "city": "Strasbourg",
  "postalCode": "67000",
  "country": "FR"
}
],
"qualification": [
  {
    "code": {
      "text": "REFERRING"
    }
  }
]
}
```

ServiceRequest

A record of a request for service such as diagnostic investigations, treatments, or operations to be performed.

<http://hl7.org/fhir/StructureDefinition/ServiceRequest>

Available types of interaction : read, search-type

Details

attribute	card	type	definition
id	0..1	id	The logical id of the resource, as used in the URL for the resource. Once assigned, this value never changes.
meta	0..1	Meta	The metadata about the resource. This is content that is maintained by the infrastructure. Changes to the content might not always be associated with version changes to the resource.
extension	0..*	Extension	May be used to represent additional information that is not part of the basic definition of the resource. To make the use of extensions safe and manageable, there is a strict set of governance applied to the definition and use of extensions. Though any implementer can define an extension, there is a set of requirements that SHALL be met as part of the definition of the extension.

attribute	card	type	definition
identifier	0..*	Identifier	Identifiers assigned to this order instance by the orderer and/or the receiver and/or order fulfiller.
priority	0..1	code	Indicates how quickly the ServiceRequest should be addressed with respect to other requests.
code	0..1	CodeableConcept	A code that identifies a particular service (i.e., procedure, diagnostic investigation, or panel of investigations) that have been requested.
authoredOn	0..1	dateTime	When the request transitioned to being actionable.
performer	0..*	Reference(Practitioner PractitionerRole Organization CareTeam HealthcareService Patient Device RelatedPerson)	The desired performer for doing the requested service. For example, the surgeon, dermatopathologist, endoscopist, etc.
patientInstruction	0..1	string	Instructions in terms that are understood by the patient or consumer.

Extensions

Details

attribute	definition	cardinality	type
modality	The requested modality	0..1	string

Paths

attribute	path
modality	[http://ge.com/dwetl/fhir#sr_modality]

Search with inclusion

Appointment:actor

Search parameters

name	type	documentation
_id	token	The resource identity
_lastUpdated	date	Only return resources which were last updated as specified by the given range
code	token	The resource code
identifier	token	The resource identifier
modality	string	The requested modality of the service request

Json example

```
{
  "resourceType": "ServiceRequest",
  "id": "1",
  "meta": {
    "lastUpdated": "2020-01-08T10:20:46.000+01:00"
  },
  "extension": [
    {
      "url": "http://ge.com/dwetl/fhir#sr_modality",
      "valueString": "CT"
    }
  ],
  "identifier": [
    {
      "value": "RIS-I-1.1002001396"
    }
  ],
  "priority": "routine",
  "code": {
    "text": "TEST"
  },
  "authoredOn": "2005-09-02T08:05:00+02:00",
  "performer": [
    {
      "reference": "HealthcareService/1"
    }
  ],
  "patientInstruction": "v"
}
```

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