Applies to:
SAP NetWeaver Enterprise Search 7.20. For more information, visit the Search homepage.

Summary
This document describes the programming model to integrate non ABAP systems into Enterprise Search. It includes the technical prerequisites, the concepts behind Enterprise Search, a detailed interface description and examples.
This document targets developers, business analysts and consultants who want to integrate new information assets in Enterprise Search.

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Overview

SAP NetWeaver Enterprise Search is a framework that enables enterprises to centralize and integrate their information assets for search and information discovery. This search framework supports technically enterprise systems that are based on the SAP NetWeaver ABAP server and systems that are non ABAP systems.

This document describes the programming model to integrate non ABAP systems into Enterprise Search. It includes the technical prerequisites, the concepts behind Enterprise Search, a detailed interface description and examples.

Readers, who learn by examples, should jump directly to the examples in the appendix to get a feeling for the services.

This document targets developers, business analysts and consultants who want to integrate new information assets in Enterprise Search.

The services to integrate systems in Enterprise Search are called Data Provider Services (referred as DPS in the following).

DPS enables systems to provide search data to become searchable. With this set of services it is possible to describe an information asset for the usage in search and to provide the relevant data to be indexed by Enterprise Search.

The Data Provider Services are hot spot framework services that are called by Enterprise Search according to the Hollywood Principle. A DPS service provider is exposing the services according to a strict service definition.

Prerequisites

The DPS services must be technically exposed as SOAP web services. The technology stack must support SOAP server functionalities or at least the underlying basic technologies as HTTP server, HTTP POST processing and XML parsing and rendering.

Binary file content is requested via the DPS document service. The DPS document service requires HTTP GET to transfer binary file content. Binary file content is not transferred using SOAP or with SOAP attachments as many WS frameworks do not support attachments and due to performance considerations.

The DPS provider must be able to access the data of the system to provide it to Enterprise Search according to a relational schema.

An Enterprise Search system as of version 7.20 is required in the customer system landscape.
**Concept**

**Overview**

1. Enterprise search retrieves the search templates from the Search Data Provider during configuration time. The search templates describe the meta data for search (extraction and query etc.)

2. Enterprise search extracts the search data from the Search Data Provider during indexing time. The extracted data is indexed in the TREX search engine during extraction time.

For further details on the process steps to connect a DPS enabled system to Enterprise Search, please refer to section in the appendix.

**Enterprise Search Framework**

Enterprise Search is a generic framework that uses hot spots to enable application specific functionality for search. These hot spots are exposed by the set of DPS services. Enterprise Search is the client of the DPS services that are exposed by the search data provider system.

Enterprise Search is a model driven framework that operates on active meta data – the search models (no code generation). These search models are also used to deploy and to declare the supported search functionality. The search models are not bound to specific system instance. The models are used as templates to connect the concrete system or service.

The basic ideas is that Enterprise Search discovers the available search models from a search data provider system during development time and uses this information to extract the search data from the search data provider system during indexing time.
The search data provider has to expose these search models. The search models are imported by Enterprise Search. This is carried out during configuration time.

During the extraction and indexing phase, Enterprise Search invokes the data services to extract the data that is used for search from the search data provider.

Enterprise Search is the service client in all scenarios that invokes the services on search data provider side. This invocation direction has been selected to centralize the maintenance of connectivity information (logical ports and HTTP destinations) on Enterprise Search to reduce TCO. The second reason is caused by security considerations.
Basic Concepts
This section explains the basic concepts of Enterprise Search.

Search Data Provider
A search data provider is a system or a service that provides services for data description and data extraction. The search data provider exposes the DPS services and provides the data that is indexed in Enterprise Search.

Search Namespace
The set of all model elements of an enterprise search model are clustered in a search namespace. All elements within a namespace and in hierarchically dependent namespaces must be consistent. The namespace is also used as a partition to deploy the consistent set of templates, data types and categories among a system landscape.

Note: The search namespace is labeled as Software Component in the enterprise search modeling user interface.
Search Template

Enterprise Search assumes that data structures are different and that a schema has to be defined upfront – schema first approach.

A search template describes a complex data type or business object in the domain of search. The definition of a template is on conceptual level for searching an object and on a more physical - technical level for data extraction. The business template contains information on the search access, the search data structure for data extraction, the search authorizations and its business context.

The search templates are used to separate the different schemas of information. They serve as templates for creating concrete connections to concrete system instances. Templates are not bound to a specific system or service.

Templates are describing the technical interfaces to extract data for a specific kind of information. The extraction information of a template must fit to the extraction interface.

Templates may also contain information on attributes that should be used for issuing a search request and attributes that should appear in the search result. It is also possible to define the position of the search response attributes in the search user interface.

All the details can be found in the template service description.

**Note:** The search templates can be imported, changed and viewed in the Enterprise Search modeling user interface. The DPS templates can only be changed by re-importing them into Enterprise Search.

Search Connector

The search connector is used to apply a specific search template to a concrete system or service. The connector is basically a copy of all template information with the addition of the concrete connectivity information to extract the data from a specific connection. In addition, the connector has the knowledge of all physical and logical search engine indexes – the TREX indexes and the jobs that schedule the extraction of the data from the search data provider.

The connectors are used at runtime for searching and help to monitor Enterprise Search. The Enterprise Search administration cockpit is the user interface for all administrative tasks.

*Multiple connectors are created from a single template*

It is possible to create many connectors from a single template. This helps to simplify and to streamline the connection of systems or services to enterprise search and to enable multi system search access.
Search Category

Search categories are used to group connectors in the search federation and can be freely defined by the customer. A connector can be used in many categories. Categories can contain other categories.

The categories are displayed in the Enterprise Search user interface to enable upfront filtering.

Examples are “Products”, “People”, “Sales”, “Purchasing US” etc.
Enterprise Search Meta-Model

The search meta-model can be divided into two layers.

1) **Extraction Model** - the meta-model that describes all data that has to be extracted from the search data provider and stored into search indexes

2) **Search Interface Model** - the meta-model that describes the search (query) interfaces and the binding to the search data

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**Extraction Model**

The extraction meta-model is used to describe the extraction of search relevant data from the search data provider and to create the search engine indexes to store the search data.

The extraction model is used for business and technical data in the same way.

The following assumptions describe the features that have to be supported by a search data provider to implement the search data provider services.

**Assumption 1: Search data providers can express their data model in a relation model**

It is assumed that all data of a search data provider can be provided according to the relational data base model (tables/relations). Enterprise Search follows here the same model like relational data base management systems. The data and the relationships between data are stored in tables. The relation has many columns to express the data type. Every row in the table can be identified with a primary key and associations are implemented using foreign key relationships. Many to many relationships can be expressed using a link table between two tables.

This view to the data is required to define the extraction of the data from the search data provider system and is used to create the search indexes.

If the data in the search data provider is not organized in this way, Enterprise Search expects that the search data provider can transform its models into a relation model to describe the data extraction.

Enterprise Search calls the relation SearchNode and the relationship SearchRelation.
### Assumption 2: The data model of a search data is self-contained and consistent

As all relations can be connected via relationships, it is assumed that the search data provider has one consistent and self-contained data model (schema). Enterprise Search requires a self contained and consistent search model to operate properly. The search model has to be identifiable by a namespace id.

<table>
<thead>
<tr>
<th>Description Service Reference</th>
<th>Relation (Table)</th>
<th>SearchNode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relation (Table)</td>
<td>SearchNode</td>
<td></td>
</tr>
<tr>
<td>Relationship between relations</td>
<td>SearchRelation</td>
<td></td>
</tr>
<tr>
<td>Relation Column</td>
<td>Attribute</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>DataType</td>
<td></td>
</tr>
</tbody>
</table>

### Assumption 3: The search data provider is able to group search nodes for data extraction

A set of relations (tables/ search nodes) can be grouped to a business or technical entity. This grouping entity is called a search template that defines the set of search nodes that can be extracted from the search data provider within one extraction step. The search templates can be grouped according to a business term or according to a technical term. The search data extraction process operates on the granularity of SearchTemplates (one job for each template).

<table>
<thead>
<tr>
<th>Description Service Reference</th>
<th>Group of relations for data extraction. Data that describes a business object or technical object.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data model / Schema</td>
<td>NamespaceID</td>
</tr>
<tr>
<td>Data model / Schema</td>
<td>SearchBusinessTemplate</td>
</tr>
<tr>
<td>Data model / Schema</td>
<td>SearchTechnicalTemplate</td>
</tr>
</tbody>
</table>

### Assumption 4: Search data providers can provide data on template level

Beside the model information, it is also assumed that the search data provider can provide all search relevant data on the level of search business or technical template instances.

The set of related data that has to be extracted must be identifiable using an instance id. The search data provider has to provide the instances in a specific order of the instance id.

<table>
<thead>
<tr>
<th>Extraction Service Reference</th>
<th>Identifier of a search template instance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extractor Service Reference</td>
<td>LastInstanceID</td>
</tr>
</tbody>
</table>

### Assumption 5: Search data providers supports mass data extraction

The search data provider must support the extraction of multiple instances of a template.

### Assumption 6: Search data providers is able to track changes and deletions over time
The search data provider is able to provide instances of search data that have been changed or deleted over time.

If the search data provider is not able to fulfill this feature, the search index has to be rebuilt completely to update the search index. This is acceptable for small data volumes.

**Search Interface Model**

The search interface meta-model describes the search (query) interfaces and the binding to the search nodes.

**Assumption 1: The search data provider is able to define a search interface and the binding**

The interface model is relevant to describe the search queries. Search queries can be defined on the basis of the search nodes and their search relations.

<table>
<thead>
<tr>
<th>Query interfaces for searching in defined search data</th>
<th>Description Service Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>SearchQueryInterface</td>
<td></td>
</tr>
</tbody>
</table>

All elements of a search request or search response must reference a search node element. This is described using the attribute references and the navigation using search relations in a defined order (OrderedRelationReference).

**Assumption 2: The search data provider is able to describe and assign authorization checks optionally**

Enterprise Search executes the authorization check by passing the user id of the current user into the search query in addition to the normal query request parameters. If authorization checks are defined, Enterprise Search creates a join between the related search indexes. In this case it is required that a navigation path (an ordered list or search relations) is defined from the search request to a search node that contains the user id.

If a result can be determined, the user has automatically the authorization to view the result.

<table>
<thead>
<tr>
<th>Authorization check on search node level</th>
<th>Description Service Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>AuthorizationCheckComposite</td>
<td></td>
</tr>
<tr>
<td>SearchAuthorizationCheck</td>
<td></td>
</tr>
</tbody>
</table>

**Assumption 4: Search interfaces are defined on business and virtual template level**

Business and virtual templates define their own search interfaces. Technical templates do not have search interfaces, as they are used to support the definition of joins or to complement search query interfaces of business and virtual templates.

If a technical template should be enabled for search, it has to be defined as a business template.

Virtual templates don’t reference any search nodes for data extraction, they are exposing a different view to already defined search nodes and indexed search data.

**Assumption 5: The search data provider has to provide a self contained and consistent search model segment**

The data model and the search interface model of a search data provider can become very complex and extensive. It is not required by the search data provider to describe the complete data model and interface model for search integration. It is possible to describe a subset or segment of the search model.
The segment of the search model is determined by a business or virtual template and the transitive closure of all related model elements.

All model elements (search nodes, templates, data types etc.) that are connected to this template have to be described in this model segment to get consistent and self-contained view.

<table>
<thead>
<tr>
<th>Description Service Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search model segment</td>
</tr>
<tr>
<td>The consistent set of related SearchTemplates that is described by the description service response SearchTemplateGetDetailResponse_sync</td>
</tr>
</tbody>
</table>

**Handling of multi language texts**

Enterprise Search is able to support texts in different languages. To provide multi-language texts, it is required to define an extra text SearchNode with a language code attribute that is part of the primary key. The extra SearchNode has to be assigned to the original node.

**Single language Example:**
Node: Inspection Plan:

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Creation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Schallprüfung Turbine</td>
<td>2008-11-12</td>
</tr>
</tbody>
</table>

The “ID” is the primary key; the “description” attribute cannot take multi language descriptions.

**Multi language Example:**
Node: Inspection Plan:

<table>
<thead>
<tr>
<th>ID</th>
<th>Creation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>2008-11-12</td>
</tr>
</tbody>
</table>

The “ID” is the primary key; the “description” is moved to the text node.

Text node Inspection Plan Description

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>LanguageCode*</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Schallprüfung Turbine</td>
<td>DE</td>
</tr>
<tr>
<td>12</td>
<td>Noise emission inspection</td>
<td>EN</td>
</tr>
</tbody>
</table>

The “ID” and the LanguageCode is the compound primary key.

**Relationship**
A 1:n relationship from Inspection Plan (ID) to Inspection Plan Description (ID) has to be defined.
Template Service

The template service provides information to describe a search model that can be used in Enterprise Search. The service provides a list of search templates and the details of a search template.

The description service is used during design time. The search templates are stored in Enterprise Search. Enterprise Search uses the search templates during configuration to create the connectors and the TREX indexes and to schedule the search data extraction service.

The template service requires the administration authorization to be invoked on the search data provider system during template import. The template service is invoked by an administration user from the Enterprise Search template modeler user interface.

The WSDL of the service can be found in the appendix.

Service Operation: GetList

The GetList service operation returns all search templates that can be imported from a search data provider system.

The list contains the namespaces and the business templates. It is possible to import a complete namespace or single business templates with all dependent and related elements.

The GetList operation is used to discover and select all supported templates of a search data provider. This operation is mandatory.

Note: The implementation of this service operation can be derived from the GetDetail operation.

Service Operation: GetDetail

The GetDetail service operation returns the detail information of one search template and all related templates. This operation is used to import the template into enterprise search.

This is the most complex service as the service response requires the complete meta model of Enterprise Search. However, most of the elements are optional and the development can start with simple examples.

SearchBusinessTemplate

The search business template describes a business entity in the domain of search.

The business template contains information on the search access, the search data structure, the search authorizations and its business context.

It contains a structure of search nodes and a search interface.
SearchTechnicalTemplate

The search technical template describes an entity that supplements and/or supports business template(s). It contains additional specific information that is needed for the process. Typical examples are the use of technical template(s) to model authorization checks or references to objects that are used by many other business templates like simple code lists and enumerations.

The difference to a business template is that it is not considered to show up as search result in the search UI. Therefore it does not have a search interface.

SearchVirtualTemplate

Search Virtual Templates always refer to a search business template. They are used to generate different views on the search business template without remodeling and re-indexing of data.

Virtual templates are used to focus on certain specific aspects of an entity that are relevant in a specific context.

A business partner can be for example a customer and at the same time be a supplier and a person. Dependent on the context only the supplier or the customer aspects are relevant. The relevant aspects can be defined by the virtual template.

Using business templates for all different aspects would lead to a high redundancy of data to be indexed. And multiple data extraction runs. The virtual templates are pointing to the already indexed information of a business template and are presenting only sub segments of the business template. The customer data is a segment of all business partner data.

Virtual templates are be used to provide a different labeling for example “article” instead of “material” and are used to provide different requests and responses.

SearchNode

Search nodes consist of s search attributes and each template must have exactly one root search node. It depends on the use case if several search nodes are used in one search template or if several search templates are used.

A search node can be compared to a table of a database with extra properties for search.

SearchAttribute

Search attributes are grouped within search nodes but are also referenced from search requests, the search response and search relations. Every search attribute refers to a search data type.

KeyWord

Key words are optionally defined for the usage within the Enterprise Search query language to select the scope of the used connectors in the search federation.

SearchQueryInterface

The search query interface simply combines the search requests and the unique search response of a business or virtual template. It defines the conceptual view to the search templates.

Note: The search query interface and especially the search response is a good starting point to define the search templates. The response really defines the thing the end-user wants to see in the search result. We recommend starting with this conceptual modeling element and then going back to the physical extraction view that is referenced in the search nodes and the relationships.
SearchRequest
Search requests define the structure that is used for searching. There is always one default request. A business or virtual template can have multiple search requests. If the Enterprise Search is invoked without scope restrictions, only the default requests are used.

A search request can reference any attributes in any search node that can be reached via search relations in a specific order. For example you can search with the customer name to find material, even if the customer name is not stored in the material, but can be navigated through a path in the object model (customer name from customer via sales order line item to the referenced material).

SearchResponse
The search response defines the structure that builds the result of the search. The response contains references to search node attributes. As the search response is always a flat structure, only attributes in search nodes can be referenced with a to-one-cardinality.

Related request can be used to retrieve sub segments.

SearchRelation
Search relations are always used to connect search attributes of search nodes to one another. They can be referred from the attributes of the search request, the search response and the search authorization checks.

SearchDataType
SearchDataTypes follow the XSD related types and are used to characterize and define the search attributes by reference only.

SearchAuthorizationCheck
Search authorization checks can be used to characterize the authorization for search nodes from where they are referred to. The authorization check defines the path within a search node network to find the user id from the implicitly given user id of the search request to a target search node that contains the user id. If the user id can be found through that path, the user has the authorization to access the item. All ACL-based (access control list) systems can be supported with that feature. The authorization check defines the path and the order of the steps. During runtime, Enterprise Search is joining the various indexes (created from the search nodes) to find the user id.

Multiple authorization checks can be combined using a simple Boolean expression language.

Logical AND = "&"
Logical OR = "|
Logical NOT = "-"

Example: ( Check1 | Check2 ) & ( Check3 | -Check4 )

6.3.2.13 AuthorizationCheckComposite and Assignment
These are the elements within search nodes that refer to authorization checks. They define which search authorization checks are used from which initial point on (the so called start relation reference ID).

SearchCategory
Search categories are used to group search templates. They can also be organized within hierarchies of search categories.
**Data Service**

The search data extraction service provides the structured search information to Enterprise Search. Enterprise Search uses the information to populate the TREX search indexes. The service is exposed by the search data provider and invoked from Enterprise Search. The search data extraction service is used during indexing time. The data service requires potentially very broad permissions to extract all data for the use in Enterprise Search. The data service is invoked by the extraction job scheduler in Enterprise Search automatically and the user is a service or technical user. The WSDL of the service can be found in the [appendix](#).

**Service Operation: GetCurrentTimeStamp**

The GetCurrentTimeStamp service operation provides the current timestamp from the search data provider. The timestamp is used to determine the time when the initial indexing has been started. This timestamp is used for starting the delta indexing process after the initial indexing has been completed.

**Service Operation: GetNextByObject**

The GetNextByObject service operation provides a package of search data instances for indexing starting from a given object id. If no last instance id is provided, the first instance should be picked by the data provider. The operation should be implemented completely stateless on the search data provider side. The state of the extraction resides completely in Enterprise Search. The instance id is used for iteration. The package size of the delivered instances depends on the performance of the search data provider system and can be freely determined by the data provider. The package size can vary in every service invocation. The package size proposal in the request can be ignored.

**Service Operation: GetNextByTimeStamp**

The GetNextByTimeStamp service operation provides a package of search data instances for indexing starting from a given time. This operation provides all information that have been changed or deleted since the given time stamp. The operation should be implemented completely stateless on the search data provider side. The state of the extraction resides completely in Enterprise Search. The timestamp is used for iteration. The package size of the delivered instances depends on the performance of the search data provider system and can be freely determined by the data provider. The package size can vary in every service invocation. The package size proposal in the request can be ignored.
Document Service

The document data extraction service is a HTTP GET request (REST web service) to acquire semi structured content (document) from the search data provider. The HTTP GET request requires an URL to the requested document resource.

The resource URL is provided by the Search Data Extraction service.

The service technology is plain HTTP GET and not SOAP or SOAP with attachments.

Due to security reasons and for the sake of configuration simplification, the logical port (endpoint) of the document service must be a sub path of the data service logical port. As the same technical service user is used in the data and document service the same HTTP destination is used for both services. Additional maintenance of authentication information can be avoided with such a setup.

**Note:** The document service should only be used for the extraction of files for indexing and should not be accessible for end-users. Redirects to other hosts are not supported. If the file content is not available on the same host a reverse proxy should be used.

Technology

Enterprise Search DPS supports generic and platform independent synchronous SOAP web services. The web service definition (WSDL) can be found in the appendix of this document and is delivered with the SAP Enterprise Services Repository in the http://sap.com/xi/BASIS namespace as of version 7.20.
The access to semi structured content (file content) is carried out via HTTP GET requests to retrieve the specific file content.

Developers need to have the knowledge to expose SOAP web services in their runtime environment. Code generation capabilities of the development infrastructure, to generate service stubs using the Enterprise Search WSDLs are useful but necessarily required.

**Note:** In case of the DPS template service it does not appear to be reasonable to generate code for all the data structures. We recommend to just return the SOAP response as plain XML (more a RESTful approach), as the template service can be exposed very statically.

**Compatibility**

SAP guarantees that the service interfaces will only change in a backward compatible way in future releases.

Backward compatible changes are

- Adding a new operation
- Adding new optional data structures to the input message
- Changing cardinality of existing input data structures from mandatory to optional
**Best Practices**

This section should provide business analysts and consultants with information, how non ABAP based information assets should be integrated using DPS. This section is considered as work in progress and will be updated on a regular basis in this document.

Beside the technical implementation of the DPS services, it is required to define the right search model to be able to expose the template service.

This definition work requires a very broad know how in the following areas

1. Business area of the search data provider and the users who want to search
2. Technical APIs of the search data provider to extract the data from the data provider
3. Application know how to determine changes and deletions in the search data provider and user interface technology for navigation
4. Platform know how to expose SOAP web services
5. Enterprise Search and DPS

**Understanding the customer**

Enterprise Search is a user driven application scenario. The first step is to understand the users search requirements.

**Tipp:** Talk to the users. Demo Enterprise Search to the search users and show the features that they gain like faceted search, related actions, navigation to the original item etc. Don't let the non search users decide.

The following questions help to get a good picture of the search requirements of the users.

**Result definition**

What do you expect to find? What is the entity? How can this entity be described?

Do not confuse the attributes you need for searching with the result that should be presented to the user.

How should the search result be presented? What should be presented in the search result areas? The most important part is the title and the default navigation target to navigate away from the result list.

**Tipp:** The default navigation target, typically the link to display a single instance, is a feature that is considered to be mandatory. A search result without a link does not provide enough value.

Enterprise Search supports navigation targets as HTTP GET requests. The application specialist should provide information on how a URL to a navigation target can be constructed. Typically the identifier of the instance is required here.

**Tipp:** Some applications do only support HTTP POST or do not support detail navigation at all as they are based on AJAX UIs. Convince the customer that this is an effort that must be provided by the original application as this behavior is considered to hurt general RESTful architecture principles or is just a missing feature.

Are images or icons available that have a meaning to the search result item? Thumbnails can displayed in the search result and large images can be shown in the detail area.

What are the most important activities a user wants to carry out, when the item has been found? All the related activities are implemented as HTTP GET request. A URL has to be provided during the data extraction process. The same technical considerations have to be applied like for the navigation target.

If the item has been identified by the user, what are the subsequent instances that could be presented to the users? A related search could be issued to find instances that are related to the current result item. Contained instances could be shown in the detail area.
Grouping of information assets for searching

Search connectors can be arranged in search categories. This has the advantage that users do not have to filter search results after searching. Categories can be used for upfront filtering.

What are the categories or groups that the user is used to? Are they related to the area of work, organizational circumstances, technical limitations or company policy?

Try to define a meaningful category hierarchy an assign the connectors to the categories.

Tipp: Do not define deep category hierarchies that are hard to look through. Connectors can be assigned to multiple categories for example “people search” would be a popular candidate. This helps to keep the hierarchies as flat as possible.

Technology Practices

The DPS services are based on the SOAP web service technology. Developers are using the DPS WSDLs to generate the service stubs in their technology platform to expose the services.

This is the recommended and standard way for developers who have already used their SOAP platform successfully exposing web services.

When the WSDL is extended, the stubs have to be regenerated. Another disadvantage is that the generated classes require a lot of work to instantiate in the platform specific code.

We also encountered that the different SOAP web service platforms handle compatibility to WSDL differently or contain bugs. We also found out that these frameworks often support the SOAP client role, but do have more problems to act as SOAP servers.

Tipp: Do not use SOAP/WSDL tooling of your development platform, if you do not already have active experience with it.

We recommend exposing the DPS services directly using HTTP POST and XML processing. These technologies are proven and do not require the WSDL tooling knowledge. Using HTTP POST in SOAP web services as transport protocol is considered to be the industry standard.

Template Service:

The template service contains 57 type definitions. The template service is created during development time and is changed rarely as the service defines the model. Therefore we recommend to store the complete template GetDetail response as plain SOAP XML and to pass this SOAP XML 1:1 when the template GetDetail services operation is invoked.

This saves development efforts and provides flexible template editing on XML level during template development.

Data Service

The data service contains 28 type definitions. Data service responses are created during the indexing process. The SOAP XML of the data service is simple and can easily be created via XML tooling. Serializing the SOAP XML of the data service can also be used for buffering.
Appendix

Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
</table>
| DPS    | Data Provider Services
The name of the set of services to describe the search model and the data extraction. |

Questions and Answers

Q: I want to push the data from my application to Enterprise Search. Why is Enterprise Search calling the services and not the other way round?
A: The goal of Enterprise Search is to centralize the administration and configuration to reduce the costs for the customer. The customer can maintain the security information for data extraction and template deployment centrally on Enterprise Search. Having only one direction of access simplifies the administration drastically.
The second reason is security. It is a potential security risk to push data to Enterprise Search from a remote system directly and it is hard to monitor.

Q: Where can I monitor the SOAP services and SOAP errors in Enterprise Search?
A: Enter Enterprise Search in the SAPGui and start the SRTUTIL transaction. This transaction allows you to monitor errors and to activate the logging of all SOAP messages. The Enterprise Search administration authorization is required.

Q: Why are the template and the data service separated and not bundled in one single service?
A: The separation is desired, as the template service is invoked only at configuration time and the data service is called during indexing – data extraction time.
The second reason is security, as both services require a complete different kind of authorization.

The template service requires the administration authorization to be invoked on the search data provider system during template import. The template service is invoked by an administration user.
The data service requires potentially very broad permissions to extract all data for the use in Enterprise Search. The data service is invoked by the extraction job scheduler in Enterprise Search automatically and the user is a service or technical user.

We recommend limiting the authorization of the data service in the search data provider only for technical service users – never for human users.

Q: Should the search template with the search nodes describe a de-normalized data model to optimize performance?
A: Enterprise Search is designed for high performance joins among the search indexes. You should not de-normalize the data model as this would increase the volume of data you have to index and this would lead to longer indexing times.

One exception: If you have code lists and you want to search for the texts and they are not Multilanguage texts, you should index directly the texts.
Example: m=male, f=female, just index the text instead of creating a mini search node for gender. Enterprise Search will normalize this internally.

Q: When we import a DPS software component / namespace, a six character alpha-numeric prefix is added for example AD4C9A. This prefix is also used in the nodes, template ID. Why this is generated and can it be used by the customer?

A: There is a distinction between the elements IDs and names that come from the outside world (backend name) via DPS and ids that are used internally. Enterprise Search generates this prefix to ensure uniqueness of all model elements internally. The DPS model elements provide always the information that has been provided via the DPS template service in the “backend name” sections. These IDs can’t be changed and are not relevant externally.

Q: The remove button is not active in the list of logical ports. How can logical ports be deleted in Enterprise Search?

A: Logical Ports can only be deleted if they are not used in a connector (data service) or in a template (template service). The deletion can be carried out in SAPGUI with the SE38 ABAP report ESH_INT_DISCONNECT_DPS. Do not use the SOAMANAGER or the SE59 transaction to remove parts of the communication.

A: There is a difference in the way the categories are valid. The categories created via DPS are belonging to a certain software component / namespace. These categories can serve as a good default for the customer when the connectors are created. DPS templates represent also a standard for certain kind of search providers like WIKIs or CMS. There is a clear distinction between the categories of a customer and the standard template categories. Customers may use categories that focus on the organization or on geographical aspects. These customer categories cannot be predefined by SAP or partners. As categories can be used for all connectors, we have decided to put them all together in one category repository to enable the software logistics. The template categories cannot be deleted; the custom categories can be removed. The category definition and assignment in DPS templates is optional.

Best Practice: If customers are using DPS to integrate their specific search data providers they have to decide if they want to drive standardization for the categories or if they have flexible and often changed category assignments. For flexible assignment use the custom (Y*, Z*) categories, for standardization use the DPS template categories.

Q: What happens when I imported a changed DPS template?

A: All connectors that have been created with that specific template will get the status ‘updated’. That can be viewed in the administration cockpit. The changes from the templates can be applied to the connector by selecting the action “update” in the administration cockpit. If the connector requires a re-indexing, the full indexing can be scheduled. By selecting the option “keep index”, the current index stays searchable until the full re-indexing has finished.
Process Steps for Connecting a DPS enabled System to Enterprise Search

The developer of the DPS services has to take care about the step 1 only. System integrators or business analysts should know the entire process of connecting a DPS provider.

However, the conception of DPS interfaces require the definition of the important and search relevant information segments of an information asset. This conceptual work of the business analyst is not considered here, but should not be underestimated, as it requires a deep knowledge of the structure and the technical aspects of an information asset.

Initial Situation:

The data provider system is a non ABAP based system
The data provider system contains information
The information is locked in the system
The information is not searchable
The information is not searchable in Enterprise Search

Step 1: Implementation of Template and Data Services

Phase: Development Time

The data provider system has to implement and expose the Data Provider Services (DPS) that are defined by Enterprise Search

The template service describes the information for the extraction and usage in Enterprise Search

The data service provides the information to Enterprise Search

Actors: Business Expert and Developer

The Business Expert specifies the structure of the information in the search data provider system and the usage within search

Developers from SAP partners, system vendors, SAP or customers are developing the services
Step 2: Importing the Templates into Enterprise Search

Phase: Configuration Time

The template service of the search data provider system is invoked and a copy of the template information is imported to the template repository of Enterprise Search system.

Actors: Business Expert

The Business Expert uses Enterprise Search to import the templates from the search data provider system.

Step 3: Creating a Connector from the imported Search Template

Phase: Configuration Time

A connector is created from the imported template information and by providing the data service connectivity information. All TREX indexes are created. The same template can be used for many search data provider systems.

Actors: Business Expert

The Business Expert uses connection wizard to create the connector by selecting the template.
Step 4: Extract from the Data Provider and index information in Enterprise Search

**Phase: Indexing Time**

The extraction process invokes the data services of the search data provider to extract the information. The indexer transfers the information to the TREX indexes. Full- and delta-indexing as well as deletions are supported.

**Actors:** Business Expert, Administrator

The Business Expert or the Administrator uses administration cockpit to schedule the indexing of the connector.

Step 5: Search

**Phase: Runtime / Search time**

After the initial indexing, the connector is active and the information is searchable in Enterprise Search.

**Actors:** End User

The End User uses the search UI for searching.
Web Service Definitions – WSDL

The DPS Template Service WSDL

<?xml version="1.0" encoding="utf-8"?>
    <xsd:simpleType name="Indicator">
      <xsd:restriction base="xsd:boolean" />
    </xsd:simpleType>
    <xsd:simpleType name="LanguageCode">
      <xsd:restriction base="xsd:language" />
      <xsd:maxLength value="2" />
    </xsd:simpleType>
    <xsd:simpleType name="Value">
      <xsd:restriction base="xsd:decimal" />
    </xsd:simpleType>
    <xsd:simpleType name="SearchTemplateGetListRequest" type="SearchTemplateGetListRequest_sync" />
    <xsd:simpleType name="SearchTemplateGetDetailResponse" type="SearchTemplateGetDetailResponse_sync" />
    <xsd:simpleType name="SearchDescriptionText_Content" type="SearchDescriptionText_Content_sync" />
    <xsd:simpleType name="SearchNamespaceName" type="SearchNamespaceName_sync" />
    <xsd:simpleType name="SearchIconID" type="SearchIconID_sync" />
    <xsd:simpleType name="SearchDataTypeID" type="SearchDataTypeID_sync" />
    <xsd:simpleType name="SearchLogicalConjunction" type="SearchLogicalConjunction_sync" />
    <xsd:simpleType name="SearchRelationID" type="SearchRelationID_sync" />
    <xsd:simpleType name="SearchSemanticsCode" type="SearchSemanticsCode_sync" />
    <xsd:simpleType name="SearchRequestID" type="SearchRequestID_sync" />
    <xsd:simpleType name="SearchTemplateID" type="SearchTemplateID_sync" />
    <xsd:simpleType name="SearchPatternText" type="SearchPatternText_sync" />
    <xsd:simpleType name="SearchNodeID" type="SearchNodeID_sync" />
    <xsd:simpleType name="SearchAuthorizationCheckID" type="SearchAuthorizationCheckID_sync" />
  </xsd:schema>
</wsdl:definitions>
<xs:simpleType name="SearchMinCardinalityValue">
    <xs:restriction base="xsd:token">
        <xs:maxLength value="1"/>
        <xs:enumeration value="0"/>
        <xs:enumeration value="1"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="SearchMaxCardinalityValue">
    <xs:restriction base="xsd:token">
        <xs:maxLength value="1"/>
        <xs:enumeration value="1"/>
        <xs:enumeration value="n"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="SearchAttributeID">
    <xs:restriction base="xsd:token">
        <xs:minLength value="1"/>
        <xs:maxLength value="255"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="SearchCategoryID">
    <xs:restriction base="xsd:token">
        <xs:minLength value="1"/>
        <xs:maxLength value="30"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="SearchRankingRelevancy">
    <xs:restriction base="xsd:token">
        <xs:minLength value="1"/>
        <xs:maxLength value="120"/>
    </xs:restriction>
</xs:simpleType>

<xs:complexType name="SearchRestrictionCondition">
    <xs:sequence>
        <xs:element name="AttributeID" type="SearchAttributeID"/>
        <xs:element name="ConstantValue" type="SearchConstantValue"/>
    </xs:sequence>
</xs:complexType>

<xs:complexType name="SearchAuthorizationCheckComposite">
    <xs:sequence>
        <xs:element name="AuthorizationCheckAssignment" type="SearchAuthorizationCheckAssignment" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>

<xs:complexType name="SearchLogicalConjunction">
    <xs:sequence>
        <xs:element name="LogicalConjunctionText" type="SearchLogicalConjunction"/>
    </xs:sequence>
</xs:complexType>

<xs:complexType name="SearchKeyWord">
    <xs:simpleContent>
        <xs:extension base="xsd:token">
            <xs:attribute name="p6:LanguageCode" type="p6:LanguageCode" use="required"/>
        </xs:extension>
    </xs:simpleContent>
</xs:complexType>

<xs:complexType name="SearchTechnicalTemplate">
    <xs:sequence>
        <xs:element name="ID" type="SearchTemplateID"/>
        <xs:element name="IconID" type="SearchIconID" minOccurs="0"/>
        <xs:element name="Description" maxOccurs="unbounded"/>
        <xs:element name="Node" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
The DPS Data Service WSDL

```xml
 xmlns:soap="http://schemas.xmlsoap.org/soap/">
  <wsdl:types>
      <xsd:complexType name="Indicator">
        <xsd:restriction base="xsd:boolean"/>
      </xsd:complexType>
    </xsd:schema>
      <xsd:element name="SearchDataGetNextByInstanceRequest_sync" type="SearchDataGetNextByInstanceRequest" />  
      <xsd:element name="SearchDataGetNextByInstanceResponse_sync" type="SearchDataGetNextByInstanceResponse" />  
      <xsd:element name="SearchDataGetCurrentTimeStampRequest_sync" type="SearchDataGetCurrentTimeStampRequest" />  
      <xsd:element name="SearchDataGetCurrentTimeStampResponse_sync" type="SearchDataGetCurrentTimeStampResponse" />
      <xsd:element name="SearchDataGetNextByTimeStampRequest" type="SearchDataGetNextByTimeStampRequest" />  
      <xsd:element name="SearchDataGetNextByTimeStampResponse" type="SearchDataGetNextByTimeStampResponse" />  
      <xsd:element name="SearchDataGetNextByInstanceRequest" type="SearchDataGetNextByInstanceRequest" />  
      <xsd:element name="SearchDataGetNextByInstanceResponse" type="SearchDataGetNextByInstanceResponse" />  
      <xsd:element name="SearchDataGetCurrentInstance" type="SearchDataGetCurrentInstance" />  
      <xsd:element name="SearchDataGetNextByInstance" type="SearchDataGetNextByInstance" />  
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      <xsd:element name="SearchDataGetNextByInstanceResponseResponse" type="SearchDataGetNextByInstanceResponseResponse" />  
      <xsd:element name="SearchDataGetNextByInstanceResponseSync" type="SearchDataGetNextByInstanceResponseSync" />  
      <xsd:element name="SearchDataGetNextByInstanceResponseSyncResponse" type="SearchDataGetNextByInstanceResponseSyncResponse" />  
      <xsd:element name="SearchDataGetNextByInstanceResponseSyncResponse" type="SearchDataGetNextByInstanceResponseSyncResponse" />  
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      <xsd:element name="SearchDataGetNextByInstanceResponseSyncResponse" type="SearchDataGetNextByInstanceResponseSyncResponse" />  
      <xsd:element name="SearchDataGetNextByInstanceResponseSyncResponse" type="SearchDataGetNextByInstanceResponseSyncResponse" />  
      <xsd:element name="SearchDataGetNextByInstanceResponseSyncResponse" type="SearchDataGetNextByInstanceResponseSyncResponse" />  
      <xsd:element name="SearchDataGetNextByInstanceResponseSyncResponse" type="SearchDat
<xsd:complexType name="SearchNodeType">
  <xsd:sequence minOccurs="0" maxOccurs="unbounded">
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    <xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>

<xsd:complexType name="SearchTemplateType">
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    <xsd:element name="SearchTemplateName" type="SearchString" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>

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<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

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<xsd:element name="SearchTemplateName" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

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<xsd:element name="SearchNodeID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

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<xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"></xsd:element>

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<xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateName" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"></xsd:element>

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<xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateName" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateName" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

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<xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateName" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateName" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchNodeKeyValue" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateID" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateName" type="SearchString" minOccurs="0" maxOccurs="unbounded"></xsd:element>

<xsd:element name="SearchTemplateTimeDataStructureResponse" type="SearchTemplateTimeDataStructureResponse" minOccurs="0" maxOccurs="unbounded"></xsd:element>
**PrimitiveTypeCode**

The primitive type code describes the basic XSD based data type.

The following set of codes is supported:

<table>
<thead>
<tr>
<th>PrimitiveTypeCode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>String</td>
</tr>
<tr>
<td></td>
<td>No length limitation</td>
</tr>
<tr>
<td></td>
<td>Optional attributes:</td>
</tr>
<tr>
<td></td>
<td>MinimumLengthValue</td>
</tr>
<tr>
<td></td>
<td>MaximumLengthValue</td>
</tr>
<tr>
<td>boolean</td>
<td>The attribute value in the data services accepts the following values:</td>
</tr>
<tr>
<td></td>
<td>‘true’, ‘True’, ‘TRUE’, ‘1’</td>
</tr>
<tr>
<td></td>
<td>‘false’, ‘False’, ‘FALSE’, ‘0’</td>
</tr>
<tr>
<td>time</td>
<td>Format: “hh:mm:ss”, Character 8</td>
</tr>
<tr>
<td></td>
<td>Optional attributes:</td>
</tr>
<tr>
<td></td>
<td>PatternText = hh:mm:ss</td>
</tr>
<tr>
<td>date</td>
<td>Format: “YYYY-MM-DD”, Character 10</td>
</tr>
<tr>
<td></td>
<td>Optional attributes:</td>
</tr>
<tr>
<td></td>
<td>PatternText = YYYY-MM-DD</td>
</tr>
<tr>
<td>dateTime</td>
<td>Format: “YYYY-MM-DDThh:mm:ss”, Character 19</td>
</tr>
<tr>
<td></td>
<td>The timestamp must be provided in UTC time. Enterprise Search converts the time in the search result to the user’s time zone.</td>
</tr>
<tr>
<td></td>
<td>The ISO 8601 including time zone information is also supported. Enterprise Search will convert the time to UTC internally.</td>
</tr>
<tr>
<td>Integer</td>
<td>Integer value,</td>
</tr>
<tr>
<td></td>
<td>Range: -2.147.483.648 to 2.147.483.647</td>
</tr>
<tr>
<td></td>
<td>Optional attributes:</td>
</tr>
<tr>
<td></td>
<td>none</td>
</tr>
<tr>
<td>decimal</td>
<td>Decimal floating point number with 34 decimal places</td>
</tr>
<tr>
<td></td>
<td>(internal decfloat 34)</td>
</tr>
<tr>
<td></td>
<td>Required attributes:</td>
</tr>
<tr>
<td></td>
<td>Maximum total digit numbers &lt;= 34</td>
</tr>
<tr>
<td></td>
<td>Fraction digit numbers &lt; 34</td>
</tr>
</tbody>
</table>
LanguageCode

The language code is used as an attribute for a language dependent text and determines the language. The LanguageCode is an abbreviation for language of the assigned text. The following language codes are supported:

<table>
<thead>
<tr>
<th>Code</th>
<th>Language</th>
<th>Code</th>
<th>Language</th>
<th>Code</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>0A</td>
<td>Arabic_OM</td>
<td>EL</td>
<td>Greek</td>
<td>NO</td>
<td>Norwegian</td>
</tr>
<tr>
<td>1A</td>
<td>Arabic_DZ</td>
<td>EN</td>
<td>English</td>
<td>PL</td>
<td>Polish</td>
</tr>
<tr>
<td>2A</td>
<td>Arabic_BH</td>
<td>ES</td>
<td>Spanish</td>
<td>PT</td>
<td>Portuguese</td>
</tr>
<tr>
<td>3A</td>
<td>Arabic_EG</td>
<td>ET</td>
<td>Estonian</td>
<td>RO</td>
<td>Romanian</td>
</tr>
<tr>
<td>4A</td>
<td>Arabic_IQ</td>
<td>FI</td>
<td>Finnish</td>
<td>RU</td>
<td>Russian</td>
</tr>
<tr>
<td>5A</td>
<td>Arabic_JO</td>
<td>FR</td>
<td>French</td>
<td>SH</td>
<td>Serbian (Latin)</td>
</tr>
<tr>
<td>6A</td>
<td>Arabic_KW</td>
<td>HE</td>
<td>Hebrew</td>
<td>SK</td>
<td>Slovakian</td>
</tr>
<tr>
<td>7A</td>
<td>Arabic_LB</td>
<td>HR</td>
<td>Croatians</td>
<td>SR</td>
<td>Serbian (Cyr.)</td>
</tr>
<tr>
<td>8A</td>
<td>Arabic_LY</td>
<td>HU</td>
<td>Hungarian</td>
<td>SV</td>
<td>Swedish</td>
</tr>
<tr>
<td>9A</td>
<td>Arabic_MA</td>
<td>ID</td>
<td>Indonesians</td>
<td>TH</td>
<td>Thai</td>
</tr>
<tr>
<td>AC</td>
<td>A Chinese</td>
<td>IS</td>
<td>Icelandic</td>
<td>TR</td>
<td>Turkish</td>
</tr>
<tr>
<td>AF</td>
<td>Afrikaans</td>
<td>IT</td>
<td>Italian</td>
<td>UK</td>
<td>Ukrainian</td>
</tr>
<tr>
<td>AR</td>
<td>Arabic</td>
<td>JA</td>
<td>Japanese</td>
<td>UZ</td>
<td>Uzbek</td>
</tr>
<tr>
<td>BG</td>
<td>Bulgarian</td>
<td>KO</td>
<td>Korean</td>
<td>VI</td>
<td>Vietnamese</td>
</tr>
<tr>
<td>CA</td>
<td>Catalan</td>
<td>LT</td>
<td>Lithuanian</td>
<td>Z1</td>
<td>Customer Reserve</td>
</tr>
<tr>
<td>CS</td>
<td>Czech</td>
<td>LV</td>
<td>Latvian</td>
<td>Z2</td>
<td>VI_Polnisch</td>
</tr>
<tr>
<td>DA</td>
<td>Danish</td>
<td>MS</td>
<td>Malaysian</td>
<td>ZF</td>
<td>Chinese trad.</td>
</tr>
<tr>
<td>DE</td>
<td>German</td>
<td>NL</td>
<td>Dutch</td>
<td>ZH</td>
<td>Chinese456</td>
</tr>
</tbody>
</table>
SemanticsCode

The semantics code standardizes a node attribute according to its type. The following codes are supported:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ValidFrom</td>
<td>Valid from a specified date</td>
</tr>
<tr>
<td></td>
<td>Format. YYYY-MM-DDThh:mm:ss</td>
</tr>
<tr>
<td>ValidTo</td>
<td>Valid to a specified date</td>
</tr>
<tr>
<td></td>
<td>Format. YYYY-MM-DDThh:mm:ss</td>
</tr>
<tr>
<td>ChangeNumber</td>
<td>Change number of engineering change management</td>
</tr>
<tr>
<td></td>
<td>Data type: string</td>
</tr>
<tr>
<td>CreationDate</td>
<td>Creation date of the instance</td>
</tr>
<tr>
<td></td>
<td>Format. YYYY-MM-DDThh:mm:ss</td>
</tr>
<tr>
<td>ModificationDate</td>
<td>Last change date of the instance</td>
</tr>
<tr>
<td></td>
<td>Format. YYYY-MM-DDThh:mm:ss</td>
</tr>
<tr>
<td>CreatedBy</td>
<td>Name, user id or email address of the author of the instance</td>
</tr>
<tr>
<td></td>
<td>Data type: string</td>
</tr>
<tr>
<td>ModifiedBy</td>
<td>Name, user id or email address of the editor of the instance</td>
</tr>
<tr>
<td></td>
<td>Data type: string</td>
</tr>
<tr>
<td>LanguageCode</td>
<td>The attribute contains a character 2 language ISO language code. Refer to the supported language code list. This code is used to determine that the search node is language dependent.</td>
</tr>
<tr>
<td>SAPUserID</td>
<td>The user id of the enterprise search system in the SAP user id format. This id is also used to determine the authorization of the logged on user if an authorization path is defined.</td>
</tr>
<tr>
<td></td>
<td>Data type: string, length 12, uppercase</td>
</tr>
<tr>
<td>Email</td>
<td>Email address in the format &lt;local part&gt;@&lt;domain part&gt;</td>
</tr>
<tr>
<td>InternetAddress</td>
<td>Any internet address according to RFC 3986.</td>
</tr>
<tr>
<td>GeoLocationCoordinateLongitude</td>
<td>Geographic longitude coordinates specified in decimal degrees. The geographic coordinate reference system is the World Geodetic System (2d) [WGS84]. No other reference system is supported.</td>
</tr>
<tr>
<td>GeoLocationCoordinateLatitude</td>
<td>Geographic latitude coordinates specified in decimal degrees. The geographic coordinate reference system is the World Geodetic System (2d) [WGS84]. No other reference system is supported.</td>
</tr>
<tr>
<td>MimeType</td>
<td>Description of the content type of the attached file content. This code is required, if a content URL is used in a search node.</td>
</tr>
</tbody>
</table>
User Interface Areas

Example for a single result item of the search result list:

The user interface areas (UI area) define the placement of result attributes in the result list of a specific result item.

TITLE

The TITLE area is the area where the title of the result item is displayed. The title is displayed as a hyperlink, if a default object navigation is defined in the connector template.

SUMMARY

The SUMMARY area consists of 9 positions where result attributes can be placed. The position can be specified by the position number from 1 to 9.

PREVIEWIMAGE

The PREVIEWIMAGE is the area that is used to display the thumbnail of a result item.
DETAILS

The DETAILS area consists of 9 positions where result attributes can be placed. The position can be specified by the position number from 1 to 9. The detail area is not displayed by default.

DETAILIMAGE

The DETAILIMAGE is an area in the DETAILS are, where the image of a result item is shown.
List of supported icon IDs

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
<th>ID &amp; File Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="access_controlled_area.png" alt="Icon" /></td>
<td><strong>Access Controlled Area</strong>&lt;br&gt;Represents an access controlled area</td>
<td><strong>AccessControlledArea</strong>&lt;br&gt;AccessControlledArea.gif</td>
</tr>
<tr>
<td><img src="add_favorite.png" alt="Icon" /></td>
<td><strong>Add Favorite</strong>&lt;br&gt;Performs the action &quot;Add Favorite&quot;</td>
<td><strong>AddFavorite</strong>&lt;br&gt;AddFavorite.gif</td>
</tr>
<tr>
<td><img src="add_file.png" alt="Icon" /></td>
<td><strong>Add File</strong>&lt;br&gt;Performs the action &quot;Add File&quot;</td>
<td><strong>AddFile</strong>&lt;br&gt;AddFile.gif</td>
</tr>
<tr>
<td><img src="add_row.png" alt="Icon" /></td>
<td><strong>Add Row</strong>&lt;br&gt;Performs the action &quot;Add Row&quot;</td>
<td><strong>AddRow</strong>&lt;br&gt;AddRow.gif</td>
</tr>
<tr>
<td><img src="advanced_search.png" alt="Icon" /></td>
<td><strong>Advanced Search</strong>&lt;br&gt;Performs the action &quot;Advanced Search&quot;</td>
<td><strong>AdvancedSearch</strong>&lt;br&gt;AdvancedSearch.gif</td>
</tr>
<tr>
<td><img src="alert.png" alt="Icon" /></td>
<td><strong>Alert</strong>&lt;br&gt;Message type &quot;Alert&quot;</td>
<td><strong>AlertMessage</strong>&lt;br&gt;AlertMessage.gif</td>
</tr>
<tr>
<td><img src="approve.png" alt="Icon" /></td>
<td><strong>Approve</strong>&lt;br&gt;Performs the action &quot;Approve&quot;</td>
<td><strong>Approve</strong>&lt;br&gt;Approve.gif</td>
</tr>
<tr>
<td><img src="attachment.png" alt="Icon" /></td>
<td><strong>Attachment</strong>&lt;br&gt;Represents an attachment, gives the information that attached files are available</td>
<td><strong>Attachment</strong>&lt;br&gt;Attachment.gif</td>
</tr>
<tr>
<td><img src="audio_file.png" alt="Icon" /></td>
<td><strong>Audio File</strong>&lt;br&gt;Represents an audio file</td>
<td><strong>AudioFile</strong>&lt;br&gt;AudioFile.gif</td>
</tr>
<tr>
<td><img src="audio_file_alias.png" alt="Icon" /></td>
<td><strong>Audio File Shortcut</strong>&lt;br&gt;Shortcut for audio file</td>
<td><strong>AudioFileAlias</strong>&lt;br&gt;AudioFileAlias.gif</td>
</tr>
<tr>
<td><img src="automated_task.png" alt="Icon" /></td>
<td><strong>Automated Task</strong>&lt;br&gt;Message type &quot;Automated Task&quot;</td>
<td><strong>AutomatedTask</strong>&lt;br&gt;AutomatedTask.gif</td>
</tr>
<tr>
<td><img src="bill_of_material.png" alt="Icon" /></td>
<td><strong>Bill Of Material</strong>&lt;br&gt;Represents a bill of material</td>
<td><strong>BillMaterial</strong>&lt;br&gt;BillMaterial.gif</td>
</tr>
<tr>
<td><img src="bill_of_material_item.png" alt="Icon" /></td>
<td><strong>Bill Of Material Item</strong>&lt;br&gt;Represents a bill of material item</td>
<td><strong>BillMaterialItem</strong>&lt;br&gt;BillMaterialItem.gif</td>
</tr>
<tr>
<td><img src="blog.png" alt="Icon" /></td>
<td><strong>Blog</strong>&lt;br&gt;Represents a blog</td>
<td><strong>Blog</strong>&lt;br&gt;Blog.gif</td>
</tr>
<tr>
<td><img src="business_object.png" alt="Icon" /></td>
<td><strong>Business Object</strong>&lt;br&gt;Represents a business object, used for Enterprise Search</td>
<td><strong>BusinessObject</strong>&lt;br&gt;BusinessObject.gif</td>
</tr>
<tr>
<td><img src="business_partner.png" alt="Icon" /></td>
<td><strong>Business Partner</strong>&lt;br&gt;Represents a business partner, used to identify companies which are vendors, customers or partners</td>
<td><strong>BusinessPartner</strong>&lt;br&gt;BusinessPartner.gif</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
<td>Icon File</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td><img src="Cancelled.png" alt="Image" /></td>
<td>Cancelled: Represents the status “Cancelled”, belongs to the set “Posted State” and should only be used together with icons belonging to this set</td>
<td>Cancelled Cancelled.gif</td>
</tr>
<tr>
<td><img src="ChangeNumber.png" alt="Image" /></td>
<td>Change Number: Represents a change number</td>
<td>ChangeNumber ChangeNumber.gif</td>
</tr>
<tr>
<td><img src="Attachment.png" alt="Image" /></td>
<td>Attachment: Represents an attachment</td>
<td>ChAttachment ChAttachment.gif</td>
</tr>
<tr>
<td><img src="CommentNote.png" alt="Image" /></td>
<td>CommentNote: Represents a comment or a note</td>
<td>ChCommentNote ChCommentNote.gif</td>
</tr>
<tr>
<td><img src="CheckedOk.png" alt="Image" /></td>
<td>Checked, OK: Represents the status “Checked, Ok, Completed”, belongs to the set “Status Signs” and should only be used together with icons belonging to this set</td>
<td>CheckedOk CheckedOk.gif</td>
</tr>
<tr>
<td><img src="CheckedOut.png" alt="Image" /></td>
<td>Checked Out: Represents the status “Checked Out”</td>
<td>CheckedOut CheckedOut.gif</td>
</tr>
<tr>
<td><img src="CheckedOutByMe.png" alt="Image" /></td>
<td>Checked Out by Me: Represents the status “Checked Out by Me”</td>
<td>CheckedOutByMe CheckedOutByMe.gif</td>
</tr>
<tr>
<td><img src="Priority.png" alt="Image" /></td>
<td>Priority: Represents a priority</td>
<td>ChPriority ChPriority.gif</td>
</tr>
<tr>
<td><img src="TaskMessage.png" alt="Image" /></td>
<td>Task Message: Represents a task message</td>
<td>ChTaskMessage ChTaskMessage.gif</td>
</tr>
<tr>
<td><img src="Comment.png" alt="Image" /></td>
<td>Comment: Represents a comment or a note and performs the action “Open Comment or Note”</td>
<td>CommentNote CommentNote.gif</td>
</tr>
<tr>
<td><img src="Complete.png" alt="Image" /></td>
<td>Complete: Represents the status “Complete”</td>
<td>Complete Complete.gif</td>
</tr>
<tr>
<td><img src="ConferenceSession.png" alt="Image" /></td>
<td>Conference Session: Represents a conference session: announcement of lectures and presentations at a conference</td>
<td>ConferenceSession ConferenceSession.gif</td>
</tr>
<tr>
<td><img src="Critical.png" alt="Image" /></td>
<td>Critical: Represents that the item has the status “Critical”, belongs to the set “Status Signs” and should only be used together with icons belonging to this set</td>
<td>Critical Critical.gif</td>
</tr>
<tr>
<td><img src="DataVisualisation.png" alt="Image" /></td>
<td>Data Visualisation: Represents a data visualisation</td>
<td>DataVisualisation DataVisualisation.gif</td>
</tr>
<tr>
<td><img src="Delete.png" alt="Image" /></td>
<td>Delete: Performs the action “Delete”</td>
<td>Delete Delete.gif</td>
</tr>
<tr>
<td><img src="DeletedItem.png" alt="Image" /></td>
<td>Deleted Item: Represents the status “Deleted Item” or “Deleted File”</td>
<td>DeletedItem DeletedItem.gif</td>
</tr>
<tr>
<td><img src="DetailedSettings.png" alt="Image" /></td>
<td>Detailed Settings: Performs the action “Detailed Settings”</td>
<td>DetailedSettings DetailedSettings.gif</td>
</tr>
<tr>
<td><img src="DifferentValueBefore.png" alt="Image" /></td>
<td>Different Value Before: Represents different value before</td>
<td>DifferentValueBefore DifferentValueBefore.gif</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
<td>Document File</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>---------------</td>
</tr>
<tr>
<td><img src="DocumentFile.gif" alt="Document File" /></td>
<td>Represents a document</td>
<td>DocumentFile</td>
</tr>
<tr>
<td><img src="DocumentFileAlias.gif" alt="Document File Shortcut" /></td>
<td>Shortcut for document</td>
<td>DocumentFileAlias</td>
</tr>
<tr>
<td><img src="DocumentFileTemplate.gif" alt="Document File Template" /></td>
<td>Template for document</td>
<td>DocumentFileTemplate</td>
</tr>
<tr>
<td><img src="DocumentList.gif" alt="Document List" /></td>
<td>Represents a document list</td>
<td>DocumentList</td>
</tr>
<tr>
<td><img src="DropZone.gif" alt="Drop Zone" /></td>
<td>Represents a drop zone</td>
<td>DropZone</td>
</tr>
<tr>
<td><img src="DuplicateInvoice.gif" alt="Duplicate Invoice" /></td>
<td>Performs the action “Duplicate Invoice”, belongs to the set “Invoice Management” and should only be used together with icons belonging to this set</td>
<td>DuplicateInvoice</td>
</tr>
<tr>
<td><img src="Edit.gif" alt="Edit" /></td>
<td>Performs the action “Edit”</td>
<td>Edit</td>
</tr>
<tr>
<td><img src="EditedItem.gif" alt="Edited Item" /></td>
<td>Represents the status “Edited Item” or “Edited File”</td>
<td>EditedItem</td>
</tr>
<tr>
<td><img src="Empty.gif" alt="Empty" /></td>
<td>Represents an empty icon</td>
<td>Empty</td>
</tr>
<tr>
<td><img src="ErrorMessage.gif" alt="Error" /></td>
<td>Message type “Error”</td>
<td>ErrorMessage</td>
</tr>
<tr>
<td><img src="Escalation.gif" alt="Escalation" /></td>
<td>Message type “Escalation”</td>
<td>Escalation</td>
</tr>
<tr>
<td><img src="ExeFile.gif" alt="Exe File" /></td>
<td>Represents an EXE file</td>
<td>ExeFile</td>
</tr>
<tr>
<td><img src="ExeFileAlias" alt="Exe File Shortcut" /></td>
<td>Shortcut for EXE file</td>
<td>ExeFileAlias</td>
</tr>
<tr>
<td><img src="Failure" alt="Failure" /></td>
<td>Represents the status &quot;Failed, Error, Incomplete&quot;, belongs to the set &quot;Status Signs&quot; and should only be used together with icons belonging to this set</td>
<td>Failure</td>
</tr>
<tr>
<td><img src="Faq" alt="FAQ" /></td>
<td>Represents Frequently Asked Questions, used for WEKTRA help</td>
<td>Faq</td>
</tr>
<tr>
<td><img src="Fax" alt="Fax" /></td>
<td>Represents a fax</td>
<td>Fax</td>
</tr>
<tr>
<td>Icon</td>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>![Paperclip]</td>
<td>Fax</td>
<td>Represents a fax, belongs to the set &quot;Invoice Management&quot; and should only be used together with icons belonging to this set</td>
</tr>
<tr>
<td>![Folder]</td>
<td>File</td>
<td>Represents a generic file</td>
</tr>
<tr>
<td>![FolderView]</td>
<td>File View</td>
<td>Represents a file view</td>
</tr>
<tr>
<td>![Folder]</td>
<td>Standard Folder</td>
<td>Represents a standard folder</td>
</tr>
<tr>
<td>![Folder]</td>
<td>Standard Folder Shortcut</td>
<td>Shortcut for standard folder</td>
</tr>
<tr>
<td>![Folder]</td>
<td>Formatted Data</td>
<td>Represents a formatted data</td>
</tr>
<tr>
<td>![Folder]</td>
<td>Form File</td>
<td>Represents a form</td>
</tr>
<tr>
<td>![Folder]</td>
<td>Form File Shortcut</td>
<td>Shortcut for form</td>
</tr>
<tr>
<td>![Chat]</td>
<td>Forum</td>
<td>Represents a forum</td>
</tr>
<tr>
<td>![Warning]</td>
<td>Forwarded Alert</td>
<td>Message type “Forwarded Alert”</td>
</tr>
<tr>
<td>![Warning]</td>
<td>Forwarded Notification</td>
<td>Message type “Forwarded Notification”</td>
</tr>
<tr>
<td>![Warning]</td>
<td>Forwarded Request</td>
<td>Message type “Forwarded Request”</td>
</tr>
<tr>
<td>![Warning]</td>
<td>Forwarded Response</td>
<td>Message type “Forwarded Response”</td>
</tr>
<tr>
<td>![Warning]</td>
<td>Forwarded Task</td>
<td>Message type “Forwarded Task”</td>
</tr>
<tr>
<td>![Fund]</td>
<td>Fund</td>
<td>Represents a fund</td>
</tr>
<tr>
<td>Icon</td>
<td>Glossary Item</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>🌍</td>
<td>Geographical Information System</td>
<td>Represents a geographical information system</td>
</tr>
<tr>
<td>📚</td>
<td>Glossary</td>
<td>Represents a glossary, used for WEKTRA help</td>
</tr>
<tr>
<td>💚</td>
<td>Green LED</td>
<td>Represents the status &quot;Go, Correct&quot;, belongs to the set &quot;LEDs&quot; and should only be used together with icons belonging to this set</td>
</tr>
<tr>
<td>📚</td>
<td>Help File</td>
<td>Represents a help document (fundamentals) that provides a detailed introduction</td>
</tr>
<tr>
<td>📚</td>
<td>Help File Shortcut</td>
<td>Shortcut for help file and fundamentals</td>
</tr>
<tr>
<td>🔴</td>
<td>High Priority</td>
<td>Represents the status &quot;High Priority&quot;</td>
</tr>
<tr>
<td>🧵</td>
<td>Hint</td>
<td>Message type &quot;Hint&quot;</td>
</tr>
<tr>
<td>📜</td>
<td>HTML File</td>
<td>Represents a HTML file</td>
</tr>
<tr>
<td>📜</td>
<td>HTML File Shortcut</td>
<td>Shortcut for HTML file</td>
</tr>
<tr>
<td>📜</td>
<td>HTML File Template</td>
<td>Template for HTML file</td>
</tr>
<tr>
<td>📜</td>
<td>Image File</td>
<td>Represents an image file</td>
</tr>
<tr>
<td>📜</td>
<td>Image File Shortcut</td>
<td>Shortcut for image file</td>
</tr>
<tr>
<td>🚧</td>
<td>Inactive LED</td>
<td>Represents the status &quot;Inactive, Undefined&quot;, belongs to the set &quot;LEDs&quot; and should only be used together with icons belonging to this set</td>
</tr>
<tr>
<td>📞</td>
<td>Incoming Call</td>
<td>Message type &quot;Incoming Call&quot;, used only within the table and the action pad</td>
</tr>
<tr>
<td>🔄</td>
<td>Inherited From</td>
<td>Represents inherited from</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
<td>Diagram</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>🔄</td>
<td>In Progress</td>
<td><img src="InProgress.gif" alt="InProgress" /></td>
</tr>
<tr>
<td>🔄</td>
<td>Open</td>
<td><img src="IsOpen.gif" alt="IsOpen" /></td>
</tr>
<tr>
<td>🔄</td>
<td>Less</td>
<td><img src="Less.gif" alt="Less" /></td>
</tr>
<tr>
<td>📚</td>
<td>Unit, Learning Module</td>
<td><img src="LessonUnitFolder.gif" alt="LessonUnitFolder" /></td>
</tr>
<tr>
<td>📚</td>
<td>Unit, Learning Module Shortcut</td>
<td><img src="LessonUnitFolderAlias.gif" alt="LessonUnitFolderAlias" /></td>
</tr>
<tr>
<td>🗝️</td>
<td>Locked</td>
<td><img src="Locked.gif" alt="Locked" /></td>
</tr>
<tr>
<td>🗝️</td>
<td>Locked By Me</td>
<td><img src="LockedByMe.gif" alt="LockedByMe" /></td>
</tr>
<tr>
<td>🔻</td>
<td>Low Priority</td>
<td><img src="LowPriority.gif" alt="LowPriority" /></td>
</tr>
<tr>
<td>📧</td>
<td>Mail File</td>
<td><img src="MailFile.gif" alt="MailFile" /></td>
</tr>
<tr>
<td>📧</td>
<td>Mail File Shortcut</td>
<td><img src="MailFileAlias.gif" alt="MailFileAlias" /></td>
</tr>
<tr>
<td>🦴</td>
<td>Material</td>
<td><img src="Material.gif" alt="Material" /></td>
</tr>
<tr>
<td>🧘‍♂️</td>
<td>Member List</td>
<td><img src="MemberList.gif" alt="MemberList" /></td>
</tr>
<tr>
<td>📣</td>
<td>Message</td>
<td><img src="Message.gif" alt="Message" /></td>
</tr>
<tr>
<td>📞</td>
<td>Missed Call</td>
<td><img src="MissedCall.gif" alt="MissedCall" /></td>
</tr>
<tr>
<td>🛡️</td>
<td>Missing Goods Receipt</td>
<td><img src="MissingGoodsReceipt.gif" alt="MissingGoodsReceipt" /></td>
</tr>
<tr>
<td>🕵️‍♂️</td>
<td>Missing Information</td>
<td><img src="MissingInformation.gif" alt="MissingInformation" /></td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
<td>Image</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td>More</td>
<td>Performs the action &quot;More&quot;</td>
<td>More.gif</td>
</tr>
<tr>
<td>Move Down</td>
<td>Performs the action &quot;Move Down&quot;</td>
<td>MoveDown.gif</td>
</tr>
<tr>
<td>Move Left</td>
<td>Performs the action &quot;Move Left&quot;</td>
<td>MoveLeft.gif</td>
</tr>
<tr>
<td>Move Right</td>
<td>Performs the action &quot;Move Right&quot;</td>
<td>MoveRight.gif</td>
</tr>
<tr>
<td>Move Up</td>
<td>Performs the action &quot;Move Up&quot;</td>
<td>MoveUp.gif</td>
</tr>
<tr>
<td>Multiple Nodes</td>
<td>Represents multiple nodes</td>
<td>MultipleNode.gif</td>
</tr>
<tr>
<td>Negative</td>
<td>Represents the status &quot;Negative&quot;, belongs to the set &quot;Negative/Positive&quot; and should only be used together with icons belonging to this set</td>
<td>Negative.gif</td>
</tr>
<tr>
<td>New Item</td>
<td>Represents the status &quot;New Item&quot; or &quot;New File&quot;</td>
<td>NewItem.gif</td>
</tr>
<tr>
<td>News File</td>
<td>Represents a news file</td>
<td>NewsFile.gif</td>
</tr>
<tr>
<td>News File Shortcut</td>
<td>Shortcut for news file</td>
<td>NewsFileAlias.gif</td>
</tr>
<tr>
<td>News File Template</td>
<td>Template for news file</td>
<td>NewsFileTemplate.gif</td>
</tr>
<tr>
<td>Node</td>
<td>Represents a node, used for MoM</td>
<td>Node.gif</td>
</tr>
<tr>
<td>No Picture Available</td>
<td>Represents the status &quot;no picture available&quot;</td>
<td>NoPictureAvailable.gif</td>
</tr>
<tr>
<td>Notification</td>
<td>Message type &quot;Notification&quot;</td>
<td>Notification.gif</td>
</tr>
<tr>
<td>Not Staffed</td>
<td>Represents the status &quot;Not Staffed&quot;</td>
<td>NotStaffed.gif</td>
</tr>
<tr>
<td>Objective</td>
<td>Represents an objective, a short overview of a lesson, used for WEKTRA help</td>
<td>Objective.gif</td>
</tr>
<tr>
<td>Other Outlook Element Shortcut</td>
<td>Shortcut for another Outlook element</td>
<td>OtherOutlookEleFileAlias.gif</td>
</tr>
<tr>
<td><strong>Other Outlook Element</strong></td>
<td>Represents another Outlook element</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Outgoing Call</strong></td>
<td>Message type “Outgoing Call”, used only within the table and the action pad</td>
<td></td>
</tr>
<tr>
<td><strong>Partially Posted</strong></td>
<td>Represents the status “Partially Posted”, belongs to the set “Posted State” and should only be used together with icons belonging to this set</td>
<td></td>
</tr>
<tr>
<td><strong>PDF File</strong></td>
<td>Represents a PDF file</td>
<td></td>
</tr>
<tr>
<td><strong>PDF File Shortcut</strong></td>
<td>Shortcut for PDF file</td>
<td></td>
</tr>
<tr>
<td><strong>Person</strong></td>
<td>Represents a person, used for Enterprise Search</td>
<td></td>
</tr>
<tr>
<td><strong>Phone</strong></td>
<td>Message type “Phone”</td>
<td></td>
</tr>
<tr>
<td><strong>Plaintext File</strong></td>
<td>Represents plaintext</td>
<td></td>
</tr>
<tr>
<td><strong>Plaintext File Shortcut</strong></td>
<td>Shortcut for plaintext</td>
<td></td>
</tr>
<tr>
<td><strong>Plaintext File Template</strong></td>
<td>Template for plaintext</td>
<td></td>
</tr>
<tr>
<td><strong>Positive</strong></td>
<td>Represents the status “positive”, belongs to the set “Negative/Positive” and should only be used together with icons belonging to this set</td>
<td></td>
</tr>
<tr>
<td><strong>Posted</strong></td>
<td>Provide the status information that an item is posted, belongs to the set “Posted State” and should only be used together with icons belonging to this set</td>
<td></td>
</tr>
<tr>
<td><strong>Practice File</strong></td>
<td>Represents a practice file for interactive training</td>
<td></td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
<td>Specification</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Practice File Shortcut</td>
<td>Shortcut for practice file</td>
<td>PracticeFileAlias</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PracticeFileAlias.gif</td>
</tr>
<tr>
<td>Presentation File</td>
<td>Represents a presentation file</td>
<td>PresentationFile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PresentationFile.gif</td>
</tr>
<tr>
<td>Presentation File Shortcut</td>
<td>Shortcut for presentation file</td>
<td>PresentationFileAlias</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PresentationFileAlias.gif</td>
</tr>
<tr>
<td>Presentation File Template</td>
<td>Template for a presentation file</td>
<td>PresentationFileTemplate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PresentationFileTemplate.gif</td>
</tr>
<tr>
<td>Price Variance</td>
<td>Represents “Price Variance”, belongs to the set “Invoice Management” and should only be used together with icons belonging to this set</td>
<td>PriceVariance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PriceVariance.gif</td>
</tr>
<tr>
<td>Project File</td>
<td>Represents a project file</td>
<td>ProjectFile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ProjectFile.gif</td>
</tr>
<tr>
<td>Project File Shortcut</td>
<td>Shortcut for project file</td>
<td>ProjectFileAlias</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ProjectFileAlias.gif</td>
</tr>
<tr>
<td>Project File Template</td>
<td>Template for project file</td>
<td>ProjectFileTemplate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ProjectFileTemplate.gif</td>
</tr>
<tr>
<td>Quantity Variance</td>
<td>Represents “Quantity Variance”, belongs to the set “Invoice Management” and should only be used together with icons belonging to this set</td>
<td>QuantityVariance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QuantityVariance.gif</td>
</tr>
<tr>
<td>Recurring</td>
<td>Represents the status “Recurring”</td>
<td>Recurring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recurring.gif</td>
</tr>
<tr>
<td>Red LED</td>
<td>Represents the status “Stop, Incorrect”, belongs to the set “LEDs” and should only be used together with icons belonging to this set</td>
<td>RedLed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RedLed.gif</td>
</tr>
<tr>
<td>Reject</td>
<td>Performs the action “Reject”</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reject.gif</td>
</tr>
<tr>
<td>Related Alert</td>
<td>Message type “Related Alert”</td>
<td>RelatedAlert</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RelatedAlert.gif</td>
</tr>
<tr>
<td>Related Notification</td>
<td>Message type “Related Notification”</td>
<td>RelatedNotification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RelatedNotification.gif</td>
</tr>
<tr>
<td><strong>Related Request</strong></td>
<td>Message type “Related Request”</td>
<td><strong>RelatedRequest</strong></td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Related Response</strong></td>
<td>Message type “Related Response”</td>
<td><strong>RelatedResponse</strong></td>
</tr>
<tr>
<td><strong>Related Task</strong></td>
<td>Message type “Related Task”</td>
<td><strong>RelatedTask</strong></td>
</tr>
<tr>
<td><strong>Reminder</strong></td>
<td>Message type “Reminder”</td>
<td><strong>Reminder</strong></td>
</tr>
<tr>
<td><strong>Remote Content</strong></td>
<td>Represents a remote content</td>
<td><strong>RemoteContent</strong></td>
</tr>
<tr>
<td><strong>Remote List</strong></td>
<td>Represents a remote list or remote document list</td>
<td><strong>RemoteList</strong></td>
</tr>
<tr>
<td><strong>Remove Row</strong></td>
<td>Performs the action “Remove row”</td>
<td><strong>RemoveRow</strong></td>
</tr>
<tr>
<td><strong>Request</strong></td>
<td>Message type “Request”</td>
<td><strong>Request</strong></td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td>Message type “Response”</td>
<td><strong>Response</strong></td>
</tr>
<tr>
<td><strong>Shopping Cart</strong></td>
<td>Represents a shopping cart</td>
<td><strong>ShoppingCart00</strong></td>
</tr>
<tr>
<td><strong>Spreadsheet File</strong></td>
<td>Represents a spreadsheet</td>
<td><strong>SpreadsheetFile</strong></td>
</tr>
<tr>
<td><strong>Spreadsheet File Shortcut</strong></td>
<td>Shortcut for spreadsheet</td>
<td><strong>SpreadsheetFileAlias</strong></td>
</tr>
<tr>
<td><strong>Spreadsheet File Template</strong></td>
<td>Template for spreadsheet</td>
<td><strong>SpreadsheetFileTemplate</strong></td>
</tr>
<tr>
<td><strong>Staffed</strong></td>
<td>Represents the status “Staffed”</td>
<td><strong>Staffed</strong></td>
</tr>
<tr>
<td><strong>Substituted Alert</strong></td>
<td>Message type “Substituted Alert”</td>
<td><strong>SubstitutedAlert</strong></td>
</tr>
<tr>
<td>Icon</td>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><img src="image" alt="Notification" /></td>
<td>Substituted Notification</td>
<td>Message type “Substituted Notification”</td>
</tr>
<tr>
<td><img src="image" alt="Request" /></td>
<td>Substituted Request</td>
<td>Message type “Substituted Request”</td>
</tr>
<tr>
<td><img src="image" alt="Response" /></td>
<td>Substituted Response</td>
<td>Message type “Substituted Response”</td>
</tr>
<tr>
<td><img src="image" alt="Task" /></td>
<td>Substituted Task</td>
<td>Message type “Substituted Task”</td>
</tr>
<tr>
<td><img src="image" alt="Success" /></td>
<td>Success</td>
<td>Message type “Success”</td>
</tr>
<tr>
<td><img src="image" alt="Synchronize" /></td>
<td>Synchronize</td>
<td>Performs the action “Synchronize”</td>
</tr>
<tr>
<td><img src="image" alt="Table" /></td>
<td>Table</td>
<td>Represents a table</td>
</tr>
<tr>
<td><img src="image" alt="Tag" /></td>
<td>Tag</td>
<td>Represents a tag</td>
</tr>
<tr>
<td><img src="image" alt="Task Message" /></td>
<td>Task Message</td>
<td>Message type &quot;Task&quot;</td>
</tr>
<tr>
<td><img src="image" alt="Tax Variance" /></td>
<td>Tax Variance</td>
<td>Represents “Tax variance”, belongs to the set &quot;Invoice Management&quot; and should only be used together with icons belonging to this set</td>
</tr>
<tr>
<td><img src="image" alt="Detail" /></td>
<td>Detail</td>
<td>Performs the action &quot;Detail&quot;, displays detailed information, should only be used within the toolbar control</td>
</tr>
<tr>
<td><img src="image" alt="Filter" /></td>
<td>Filter</td>
<td>Performs the action “Filter”, opens the filter function, should only be used within the toolbar control</td>
</tr>
<tr>
<td><img src="image" alt="Query" /></td>
<td>Query</td>
<td>Performs the action “Query”, opens a query, should only be used within the toolbar control</td>
</tr>
<tr>
<td><img src="image" alt="Refresh" /></td>
<td>Refresh</td>
<td>Performs the action “Refresh”, refreshes the content, should only be used within the toolbar control</td>
</tr>
<tr>
<td><img src="image" alt="Settings" /></td>
<td>Settings</td>
<td>Performs the action “Settings”, opens a setting function, should only be used within the toolbar control</td>
</tr>
<tr>
<td><img src="image" alt="Text Pad" /></td>
<td>Text Pad</td>
<td>Represents a text pad</td>
</tr>
<tr>
<td><img src="image" alt="Trend Constant" /></td>
<td>Trend Constant</td>
<td>Represents the status &quot;Trend Constant&quot;</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
<td>Image URL</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td><img src="TrendDecreasing.gif" alt="Trend Decreasing" /></td>
<td>Represents the status &quot;Trend Decreasing&quot;</td>
<td>TrendDecreasing.gif</td>
</tr>
<tr>
<td><img src="TrendIncreasing.gif" alt="Trend Increasing" /></td>
<td>Represents the status &quot;Trend Increasing&quot;</td>
<td>TrendIncreasing.gif</td>
</tr>
<tr>
<td><img src="TrendStrongDownward.gif" alt="Trend Strong Downward" /></td>
<td>Represents the status &quot;Trend Strong Downward&quot;</td>
<td>TrendStrongDownward.gif</td>
</tr>
<tr>
<td><img src="TrendStrongUpward.gif" alt="Trend Strong Upward" /></td>
<td>Represents the status &quot;Trend Strong Upward&quot;</td>
<td>TrendStrongUpward.gif</td>
</tr>
<tr>
<td><img src="UnknowniPart.gif" alt="Unknown iPart" /></td>
<td>Represents a unknown iPart</td>
<td>UnknowniPart.gif</td>
</tr>
<tr>
<td><img src="UnknownStatus.gif" alt="Unknown Status" /></td>
<td>Represents the status &quot;Unknown&quot;</td>
<td>UnknownStatus.gif</td>
</tr>
<tr>
<td><img src="UnknownFile.gif" alt="Unknown File" /></td>
<td>Represents an unknown file</td>
<td>UnknownFile.gif</td>
</tr>
<tr>
<td><img src="UnknownFileAlias.gif" alt="Unknown File Shortcut" /></td>
<td>Shortcut for unknown file</td>
<td>UnknownFileAlias.gif</td>
</tr>
<tr>
<td><img src="Unlocked.gif" alt="Locked" /></td>
<td>Represents the status &quot;Locked&quot;, belongs to the set &quot;Locked State&quot; and should only be used together with icons belonging to this set</td>
<td>Unlocked.gif</td>
</tr>
<tr>
<td><img src="ValueWillChangeOn.gif" alt="Value Will Change On" /></td>
<td>Represents value will change on</td>
<td>ValueWillChangeOn.gif</td>
</tr>
<tr>
<td><img src="VectorFileTemplate.gif" alt="Vectorgraphic File Template" /></td>
<td>Template for vector graphic file</td>
<td>VectorFileTemplate.gif</td>
</tr>
<tr>
<td><img src="VectorgraphicFile.gif" alt="Vectorgraphic File" /></td>
<td>Represents a vector graphic file</td>
<td>VectorgraphicFile.gif</td>
</tr>
<tr>
<td><img src="VectorgraphicFileAlias.gif" alt="Vectorgraphic File Shortcut" /></td>
<td>Shortcut for vector graphic file</td>
<td>VectorgraphicFileAlias.gif</td>
</tr>
<tr>
<td><img src="VerticalBarChart.gif" alt="Vertical Bar Chart" /></td>
<td>Represents a vertical bar chart</td>
<td>VerticalBarChart.gif</td>
</tr>
<tr>
<td><img src="VideoFile.gif" alt="Video File" /></td>
<td>Represents a video file</td>
<td>VideoFile.gif</td>
</tr>
<tr>
<td><img src="VideoFileAlias.gif" alt="Video File Shortcut" /></td>
<td>Shortcut for video file</td>
<td>VideoFileAlias.gif</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
<td>Identifier</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td><img src="image" alt="Virtual Folder" /></td>
<td>Represents a virtual folder</td>
<td>VirtualFolderFile</td>
</tr>
<tr>
<td><img src="image" alt="Virtual Folder Shortcut" /></td>
<td>Shortcut for virtual folder</td>
<td>VirtualFolderFileAlias</td>
</tr>
<tr>
<td><img src="image" alt="Waiting for Approval" /></td>
<td>Represents &quot;Waiting for Approval&quot;, belongs to the set &quot;Invoice Management&quot; and should only be used together with icons belonging to this set</td>
<td>WaitingForApproval</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>Message type “Warning”</td>
<td>WarningMessage</td>
</tr>
<tr>
<td><img src="image" alt="Web Service" /></td>
<td>Represents web service</td>
<td>WebService</td>
</tr>
<tr>
<td><img src="image" alt="Wiki" /></td>
<td>Represents a wiki</td>
<td>Wiki</td>
</tr>
<tr>
<td><img src="image" alt="Workspace" /></td>
<td>Represents a workspace</td>
<td>Workspace</td>
</tr>
<tr>
<td><img src="image" alt="Workspace Content" /></td>
<td>Represents a workspace content</td>
<td>WorkspaceContent</td>
</tr>
<tr>
<td><img src="image" alt="Wrong Reference" /></td>
<td>Represents &quot;Wrong Reference&quot;, icon belongs to the set &quot;Invoice Management&quot; and should only be used together with icons belonging to this set</td>
<td>WrongReference</td>
</tr>
<tr>
<td><img src="image" alt="Xml File" /></td>
<td>Represents a XML file</td>
<td>XmlFile</td>
</tr>
<tr>
<td><img src="image" alt="Xml File Shortcut" /></td>
<td>Shortcut for xml file</td>
<td>XmlFileAlias</td>
</tr>
<tr>
<td><img src="image" alt="Yellow LED" /></td>
<td>Represents the status &quot;Caution&quot;, belongs to the set &quot;LEDs&quot; and should only be used together with icons belonging to this set</td>
<td>YellowLed</td>
</tr>
<tr>
<td><img src="image" alt="Zip File" /></td>
<td>Represents a ZIP file</td>
<td>ZipFile</td>
</tr>
<tr>
<td><img src="image" alt="Zip File Shortcut" /></td>
<td>Shortcut for ZIP file</td>
<td>ZipFileAlias</td>
</tr>
</tbody>
</table>
Supported Mime Types

- 'application/andrew-inset'
- 'application/dca-rtf'
- 'application/excel'
- 'application/macwriteii'
- 'application/msword'
- 'application/msoutlook'
- 'application/oda'
- 'application/pdf'
- 'application/powerpoint'
- 'application/rtf'
- 'application/smil'
- 'application/vnd.lotus-1-2-3'
- 'application/vnd.lotus-freelance'
- 'application/vnd.lotus-wordpro'
- 'application/vnd.ms-excel'
- 'application/vnd.ms-powerpoint'
- 'application/vnd.ms-wpl'
- 'application/vnd.visio'
- 'application/vnd.openxmlformats-officedocument.wordprocessingml.document'
- 'application/vnd.openxmlformats-officedocument.presentationml.presentation'
- 'application/vnd.openxmlformats-officedocument.spreadsheetml.sheet'
- 'application/wordperfect5.1'
- 'application/x-123'
- 'application/x-cdlink'
- 'application/x-chess-pgn'
- 'application/x-compress'
- 'application/x-csh'
- 'application/x-dvi'
- 'application/x-freelance'
- 'application/x-gtar'
- 'application/x-gzip'
- 'application/x-httpd-php'
- 'application/x-javascript'
- 'application/x-latex'
- 'application/x-maker'
- 'application/x-mif'
- 'application/x-msdos-program'
- 'application/x-msexcel'
- 'application/x-msg'
- 'application/x-msmetafile'
- 'application/x-netcdf'
- 'application/x-ns-proxy-autoconfig'
- 'application/x-perl'
- 'application/x-sh'
- 'application/x-tar'
- 'application/x-tcl'
- 'application/x-tex'
- 'application/x-texinfo'
- 'application/x-troff'
- 'application/x-troff-man'
- 'application/x-troff-me'
- 'application/x-troff-ms'
- 'application/x-ustar'
- 'application/x-wais-source'
- 'application/xlc'
- 'application/zip'
- 'application/x-zip-compressed'
'message/rfc822'
'text/asp'
'text/css'
'text/html'
'text/plain'
'text/richtext'
'text/rtf'
'text/src-c'
'text/src-c++'
'text/src-java'
'text/src-perl'
'text/src-tcl'
'text/tab-separated-values'
'text/thtml'
'text/vnd.wap.wml'
'text/wiki'
'text/wml'
'text/x-asm'
'text/x-setext'
'text/x-sgml'
'text/x-ssi-html'
'text/x-uuid'
'text/x-uuecode'
'text/x-vCalendar'
'text/x-vCard'
'text/xml'
'application/msexcel'
'application/mspowerpoint'
Examples

Template.GetList

Request
<?xml version="1.0" encoding="utf-8"?>
xmlns:ns1="http://sap.com/xi/BASIS">
  <SOAP-ENV:Body>
    <ns1:SearchTemplateGetListRequest_sync>
      <RequesterID>PHP-EnterpriseSearch DPS test client</RequesterID>
    </ns1:SearchTemplateGetListRequest_sync>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>

Response
<?xml version="1.0" encoding="utf-8"?>
xmlns:ns1="http://sap.com/xi/BASIS">
  <SOAP-ENV:Body>
    <ns1:SearchTemplateGetListResponsesync>
      <Namespace>
        <ID>http://es720.test/movie/2009/02</ID>
        <SearchTemplate>
          <ID>MoviePerson</ID>
          <DescriptionText languageCode="EN">Person from the film industry</DescriptionText>
          <DescriptionText languageCode="DE">Person aus der Filmwirtschaft</DescriptionText>
        </SearchTemplate>
      </Namespace>
    </ns1:SearchTemplateGetListResponse_sync>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
Template Get.Detail

Request

```xml
<?xml version="1.0" encoding="utf-8"?>
 xmlns:ns1="http://sap.com/xi/BASIS">
 <SOAP-ENV:Body>
  <ns1:SearchTemplateGetDetailRequest_sync>
   <NamespaceID>http://es720.test/movie/2009/02</NamespaceID>
   <SearchTemplateID>MoviePerson</SearchTemplateID>
  </ns1:SearchTemplateGetDetailRequest_sync>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
Response

<?xml version="1.0" encoding="utf-8"?>
xmlns:ns1="http://sap.com/xi/BASIS">
  <SOAP-ENV:Body>
    <ns1:SearchTemplateGetDetailResponse_sync>
      <NamespaceID>http://es720.test/movie/2009/02</NamespaceID>
      <DescriptionText languageCode="EN">Movie example templates</DescriptionText>
      <DescriptionText languageCode="DE">Beispielvorlagen aus der Filmwirtschaft</DescriptionText>

      <SearchBusinessTemplate>
        <ID>MoviePerson</ID>
        <IconID>BusinessPartner</IconID>
        <DescriptionText languageCode="EN">Person from the film industry</DescriptionText>
        <DescriptionText languageCode="DE">Person aus der Filmwirtschaft</DescriptionText>

        <SearchNode>
          <ID>PersonData</ID>
          <RootNodeIndicator>true</RootNodeIndicator>
          <DescriptionText languageCode="EN">Person information</DescriptionText>
          <DescriptionText languageCode="DE">Informationen zur Person</DescriptionText>

          <Attribute>
            <ID>id</ID>
            <DataTypeReferenceID>id</DataTypeReferenceID>
            <SemanticsCode></SemanticsCode>
            <PrimaryKeyIndicator>true</PrimaryKeyIndicator>
            <TextSearchIndicator>false</TextSearchIndicator>
            <FilterIndicator>false</FilterIndicator>
            <ContentUrlIndicator>false</ContentUrlIndicator>
            <DescriptionText languageCode="EN">ID</DescriptionText>
            <DescriptionText languageCode="DE">ID</DescriptionText>
          </Attribute>

          <Attribute>
            <ID>name</ID>
            <DataTypeReferenceID>string</DataTypeReferenceID>
            <SemanticsCode></SemanticsCode>
            <PrimaryKeyIndicator>false</PrimaryKeyIndicator>
            <TextSearchIndicator>true</TextSearchIndicator>
            <FilterIndicator>false</FilterIndicator>
            <ContentUrlIndicator>false</ContentUrlIndicator>
            <DescriptionText languageCode="EN">Name</DescriptionText>
            <DescriptionText languageCode="DE">Name</DescriptionText>
          </Attribute>

          <Attribute>
            <ID>changed_at</ID>
            <DataTypeReferenceID>timestamp</DataTypeReferenceID>
            <SemanticsCode>ModificationDate</SemanticsCode>
            <PrimaryKeyIndicator>false</PrimaryKeyIndicator>
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            <FilterIndicator>true</FilterIndicator>
            <ContentUrlIndicator>false</ContentUrlIndicator>
            <DescriptionText languageCode="EN">Changed</DescriptionText>
            <DescriptionText languageCode="DE">Geändert</DescriptionText>
          </Attribute>
        </SearchNode>
      </SearchBusinessTemplate>
    </ns1:SearchTemplateGetDetailResponse_sync>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
<DescriptionText languageCode="DE">Suche</DescriptionText>

ATTRIBUTE

<ATTRIBUTE>

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MoviePerson</TemplateReferenceID>
<NodeReferenceID>PersonData</NodeReferenceID>
<AttributeReferenceID>name</AttributeReferenceID>
</NodeAttributeDefinition>

</ATTRIBUTE>

<ATTRIBUTE>

<ID>comments</ID>
<TemplateReferenceID>
MoviePerson</TemplateReferenceID>
<NodeReferenceID>PersonData</NodeReferenceID>
<AttributeReferenceID>comments</AttributeReferenceID>
</NodeAttributeDefinition>

</ATTRIBUTE>

<ATTRIBUTE>

<ID>document_content</ID>
<TemplateReferenceID>
MoviePerson</TemplateReferenceID>
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<AttributeReferenceID>document_content</AttributeReferenceID>
</NodeAttributeDefinition>

</ATTRIBUTE>

</SearchRequest>

<SearchResponse>

<DefaultNavigationAttributeReferenceID>detail_url</DefaultNavigationAttributeReferenceID>

ATTRIBUTE

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</LayoutAssignment>

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</LayoutAssignment>

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ATTRIBUTE

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ATTRIBUTE

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<LayoutAssignment>
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ATTRIBUTE

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</LayoutAssignment>

ATTRIBUTE

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<LayoutAssignment>
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</LayoutAssignment>

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</LayoutAssignment>

<LayoutAssignment>
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</LayoutAssignment>

<LayoutAssignment>
<brickset>TITLE</brickset>
</LayoutAssignment>
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  <ID>changed_at</ID>
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  <LayoutAssignment>
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    <PositionNumberValue>3</PositionNumberValue>
  </LayoutAssignment>
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<Attribute>
  <ID>image_url</ID>
  <NavigationUrlIndicator>false</NavigationUrlIndicator>
  <LayoutAssignment>
    <LayoutCode>PREVIEWIMAGE</LayoutCode>
    <PositionNumberValue>1</PositionNumberValue>
  </LayoutAssignment>
</Attribute>

<Attribute>
  <ID>document_url</ID>
  <NavigationUrlIndicator>true</NavigationUrlIndicator>
  <LayoutAssignment>
    <LayoutCode>DETAILS</LayoutCode>
    <PositionNumberValue>4</PositionNumberValue>
  </LayoutAssignment>
</Attribute>

<Attribute>
  <ID>image_search</ID>
  <NavigationUrlIndicator>true</NavigationUrlIndicator>
  <LayoutAssignment>
    <LayoutCode>DETAILS</LayoutCode>
    <PositionNumberValue>7</PositionNumberValue>
  </LayoutAssignment>
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  <ID>comments</ID>
</Attribute>
<FractionDigitNumberValue>0</FractionDigitNumberValue>
<PatternText></PatternText>
<DescriptionText languageCode="EN">Timestamp</DescriptionText>
<DescriptionText languageCode="DE">Zeitstempel</DescriptionText>
</SearchDataType>
<SearchDataType>
<ID>url</ID>
<PrimitiveTypeCode>string</PrimitiveTypeCode>
<LowerCaseAllowedIndicator>false</LowerCaseAllowedIndicator>
<MinimumLengthValue>0</MinimumLengthValue>
<MaximumLengthValue>0</MaximumLengthValue>
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<PatternText></PatternText>
<DescriptionText languageCode="EN">URL</DescriptionText>
<DescriptionText languageCode="DE">URL</DescriptionText>
</SearchDataType>
<SearchCategory>
<ID>ENTERTAINMENT3</ID>
<ParentCategoryReferenceID></ParentCategoryReferenceID>
<DescriptionText languageCode="EN">Entertainment</DescriptionText>
<DescriptionText languageCode="DE">Unterhaltung</DescriptionText>
</SearchCategory>
<SearchCategory>
<ID>MOVIES3</ID>
<ParentCategoryReferenceID>ENTERTAINMENT3</ParentCategoryReferenceID>
<DescriptionText languageCode="EN">Movies</DescriptionText>
<DescriptionText languageCode="DE">Filme</DescriptionText>
</SearchCategory>
<SearchCategory>
<ID>ACTORS3</ID>
<ParentCategoryReferenceID>MOVIES3</ParentCategoryReferenceID>
<DescriptionText languageCode="EN">Actors</DescriptionText>
<DescriptionText languageCode="DE">Schauspieler</DescriptionText>
</SearchCategory>
</ns1:SearchTemplateGetDetailResponse_sync>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
Data GetNextByInstance

Request:
<?xml version="1.0" encoding="utf-8"?>
xmlns:ns1="http://sap.com/xi/BASIS">
  <SOAP-ENV:Body>
    <ns1:SearchDataGetNextByInstanceRequest_sync>
      <NamespaceID>http://es720.test/movie/2009/02</NamespaceID>
      <LastInstanceID></LastInstanceID>
      <PackageSizeValue>100</PackageSizeValue>
      <SearchTemplate>
        <ID>MoviePerson</ID>
        <ConnectorID>dps-tester~dummy-connector~id</ConnectorID>
        <SearchNodeType>
          <ID>PersonData</ID>
          <AttributeType>
            <ID>id</ID>
          </AttributeType>
          <AttributeType>
            <ID>name</ID>
          </AttributeType>
          <AttributeType>
            <ID>changed_at</ID>
          </AttributeType>
          <AttributeType>
            <ID>image_url</ID>
          </AttributeType>
          <AttributeType>
            <ID>image_search</ID>
          </AttributeType>
          <AttributeType>
            <ID>document_url</ID>
          </AttributeType>
          <AttributeType>
            <ID>document_content</ID>
          </AttributeType>
          <AttributeType>
            <ID>mime_type</ID>
          </AttributeType>
          <AttributeType>
            <ID>comments</ID>
          </AttributeType>
          <AttributeType>
            <ID>detail_url</ID>
          </AttributeType>
        </SearchNodeType>
      </SearchTemplate>
    </ns1:SearchDataGetNextByInstanceRequest_sync>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
Response

<?xml version="1.0" encoding="utf-8"?>
xmlns:ns1="http://sap.com/xi/BASIS">
  <SOAP-ENV:Body>
    <ns1:SearchDataGetNextByInstanceResponse_sync>
      <NamespaceID>http://es720.test/movie/2009/02</NamespaceID>
      <LastInstanceID>10</LastInstanceID>
      <NoMoreDataIndicator />
      <SearchTemplate>
        <ID>MoviePerson</ID>
        <SearchNodeValue>
          <TypeReferenceID>PersonData</TypeReferenceID>
          <Attribute>
            <ID>id</ID>
            <Value>1</Value>
          </Attribute>
          <Attribute>
            <ID>name</ID>
            <Value>Woody Allen</Value>
          </Attribute>
          <Attribute>
            <ID>changed_at</ID>
            <Value>2009-09-22 09:27:21</Value>
          </Attribute>
          <Attribute>
            <ID>image_url</ID>
            <Value>
              http://www.example.org/woody_allen.jpg
            </Value>
          </Attribute>
          <Attribute>
            <ID>image_search</ID>
            <Value>
              http://some.cool.image.search.engine.org/images?q=Woody Allen
            </Value>
          </Attribute>
          <Attribute>
            <ID>document_content</ID>
            <Value>
          </Attribute>
          <Attribute>
            <ID>document_url</ID>
            <Value>
            </Value>
          </Attribute>
          <Attribute>
            <ID>mime_type</ID>
            <Value>application/pdf</Value>
          </Attribute>
          <Attribute>
            <ID>comments</ID>
            <Value>Woody Comment</Value>
          </Attribute>
          <Attribute>
            <ID>detail_url</ID>
            <Value>
              http://dps.data.service.host:1080/data/service/index.php?command=getDetail&amp;id=1&amp;view=ViewMovie&amp;type=person</Value>
          </Attribute>
        </SearchNodeValue>
      </SearchTemplate>
    </ns1:SearchDataGetNextByInstanceResponse_sync>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
<SearchNodeValue>
  <TypeReferenceID>PersonData</TypeReferenceID>
  <Attribute>
    <ID>id</ID>
    <Value>2</Value>
  </Attribute>
  <Attribute>
    <ID>name</ID>
    <Value>Clint Eastwood</Value>
  </Attribute>
  <Attribute>
    <ID>changed_at</ID>
    <Value>2009-06-10 16:18:23</Value>
  </Attribute>
  <Attribute>
    <ID>image_url</ID>
    <Value>http://www.some.picture.source.com/Pic/clinteastwood.jpg</Value>
  </Attribute>
  <Attribute>
    <ID>image_search</ID>
    <Value>http://some.cool.image.search.engine.org/images?q=Clint Eastwood</Value>
  </Attribute>
  <Attribute>
    <ID>document_content</ID>
  </Attribute>
  <Attribute>
    <ID>document_url</ID>
  </Attribute>
  <Attribute>
    <ID>mime_type</ID>
    <Value>application/pdf</Value>
  </Attribute>
  <Attribute>
    <ID>comments</ID>
    <Value>This is an comment to clint</Value>
  </Attribute>
  <Attribute>
    <ID>detail_url</ID>
    <Value>http://dps.data.service.host:1080/data/service/index.php?command=getDetail&amp;id=2&amp;view=ViewMovie&amp;type=person</Value>
  </Attribute>
</SearchNodeValue>

... and many more records here ....
</SearchTemplate>
</ns1:SearchDataGetNextByInstanceResponse_sync>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
### Detailed Element Description

#### DataProviderID

<table>
<thead>
<tr>
<th>ID</th>
<th>DataProviderID</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>The data provider id is an optional identifier that is used to separate different sources in the search data provider. It is used as a modifier for dispatching of requests. Enterprise Search is able to configure search data provider ids. During the data extraction process Enterprise Search provides the ids. The search data provider can then dispatch the data extraction request to the desired source. For example you have created a search data provider service and you want to index multiple WIKI systems in your system landscape in one Enterprise Search connector. Then you can separate the WIKI systems by using their names as a search data provider id. Note: This feature not available in the initial 7.20 release</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Used in Service Operation(s)</th>
<th>SearchData.GetNextByInstance SearchData.GetNextByTimeStamp</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Parent Element(s)</th>
<th>SearchDataGetNextByInstanceRequest_sync SearchDataGetNextByInstanceResponse_sync SearchDataGetNextByTimeStampRequest_sync SearchDataGetNextByTimeStampResponse_sync</th>
</tr>
</thead>
</table>

| Optional | true |

#### ConnectorID

<table>
<thead>
<tr>
<th>ID</th>
<th>ConnectorID</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>The connector id is an information for the search data provider that explains, to which connector the data is transferred. The connector id identifies a search connector in Enterprise Search. A search data provider can use the connector id for logging and monitoring.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Used in Service Operation(s)</th>
<th>SearchData.GetNextByInstance SearchData.GetNextByTimeStamp</th>
</tr>
</thead>
</table>
### RequesterID

<table>
<thead>
<tr>
<th>ID</th>
<th>RequesterID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>The requester id identifies the Enterprise Search system. It can be used by the search data provider to log which Enterprise Search systems are using the search data service.</td>
</tr>
<tr>
<td>Used in Service Operation(s)</td>
<td>GetCurrentTimeStamp</td>
</tr>
<tr>
<td>Parent Element(s)</td>
<td>SearchDataGetCurrentTimeStampRequest</td>
</tr>
<tr>
<td>Optional</td>
<td>false</td>
</tr>
</tbody>
</table>

### FilterIndicator

<table>
<thead>
<tr>
<th>ID</th>
<th>FilterIndicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>The filter indicator can be set on search node attribute and on search request attribute level. The indicator is used to tell Enterprise Search that this attribute should be used for search refinement to enable an interactive navigation among search results. The filter attributes are displayed in the search user interface as links to refine the search result. OpenSearch returns &quot;subsearch&quot; search terms based on the filter attribute in the search result header. By default the filter indicator is set to &quot;False&quot;. If the filter indicator is set on search node attribute level and not on search request level, the indicator is valid for all requests of the business of virtual template. Setting the filter indicator on search request attribute level has a higher priority and overrules the setting on search node level. Best practice: Set the filter indicator on search request attribute level as this provides more flexibility. If many requests are defined that require the same filter settings, set the indicator on search node attribute level.</td>
</tr>
<tr>
<td>Used in Service Operation(s)</td>
<td>Template.GetDetail</td>
</tr>
</tbody>
</table>
| Parent Element(s)   | SearchNode.Attribute  
|                      | SearchRequest.Attribute |
### LastInstanceId

<table>
<thead>
<tr>
<th>ID</th>
<th>LastInstanceId</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>The last instance id is used to control the full indexing process of enterprise search. Enterprise Search provides an initial last instance id when the full indexing is called the first time. Enterprise Search invokes the GetNextByInstance DPS service operation with an initial last instance id. The DPS provider has to provide the last instance ID in the response to tell Enterprise Search the start point for the subsequent full indexing service call. Enterprise Search stores the last instance id and provides the ID in the next GetNextByInstance call. The id is used to enable a stateless behavior for the DPS data provider (no queuing required). The last instance ID is not used in the index and the id need not be the primary key of the root node of the template. The last instance id is a string with the length 120.</td>
</tr>
<tr>
<td><strong>Used in Service Operation(s)</strong></td>
<td>SearchData.GetNextByInstance</td>
</tr>
<tr>
<td><strong>Parent Element(s)</strong></td>
<td>SearchDataGetNextByInstanceRequest</td>
</tr>
<tr>
<td><strong>Optional</strong></td>
<td>true</td>
</tr>
</tbody>
</table>
Finding Errors during DPS development

During the development process it might be required to find errors in the communication, the protocol, the SOAP payload. We recommend monitoring the SOAP communication to find potential errors.

Enterprise Search is using the standard SOAP infrastructure of the SAP NetWeaver ABAP server. Please find more details in the documentation of the ABAP SOAP infrastructure.

However, here’s a quick introduction to the tracing utilities of the SAP NetWeaver ABAP server. Please ensure that you have the authorizations to access these tools. The authorizations are included in the Enterprise Search administrator role.

Displaying SOAP errors

1) Start the SAPGUI
2) Start transaction SRTUTIL (Web Service Utilities)
3) Press F9 to show the error log
4) Filter the error entries by the consumer proxy (CO_ESH*)
   only SearchTemplate_Out and SearchData_Out are relevant for DPS monitoring
5) Clicking on the user displays the details of the error

Displaying SOAP messages

1) Start the SAPGUI
2) Start transaction SRTUTIL (Web Service Utilities)
3) Press F6 to configure the payload trace for a user or terminal
4) Select a user or a terminal for trace creation
5) Activate the Payload Trace for consumer and provider and save the configuration in the configuration tab
6) Go to Enterprise Search and import templates or schedule data with DPS
7) Go back to SRTUTIL and check the payload trace in the payload race tab
8) Click on a message operation to get the request and response details
9) Click on the details to get also the plain SOAP XML payload
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