
# json2puml

Based on version v2.0.x

## Documentation

# 1 Content

# 2 Introduction

## 2.1 Current Situation

### 2.1.1 Plain JSON

Working with API's leads to working with JSON data.

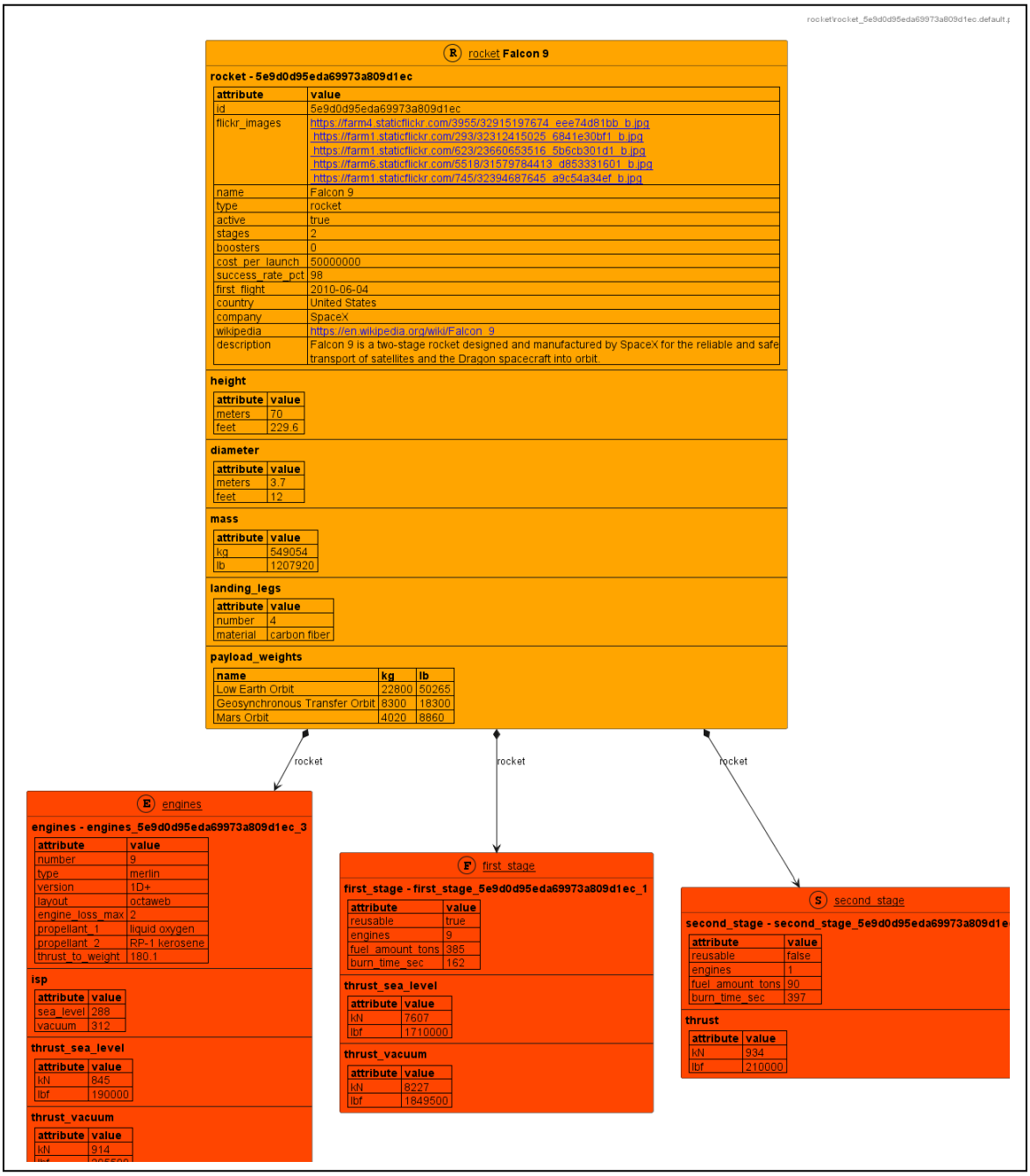



*Figure 1: JSON sample*

A typical answer of a TMF call can look like this:

A long line of data which is quite often not formatted or structured.

### 2.1.2 JSON Editor

A first starting point to understand the data is formatting and using a JSON editor which visualises the data in a better way:

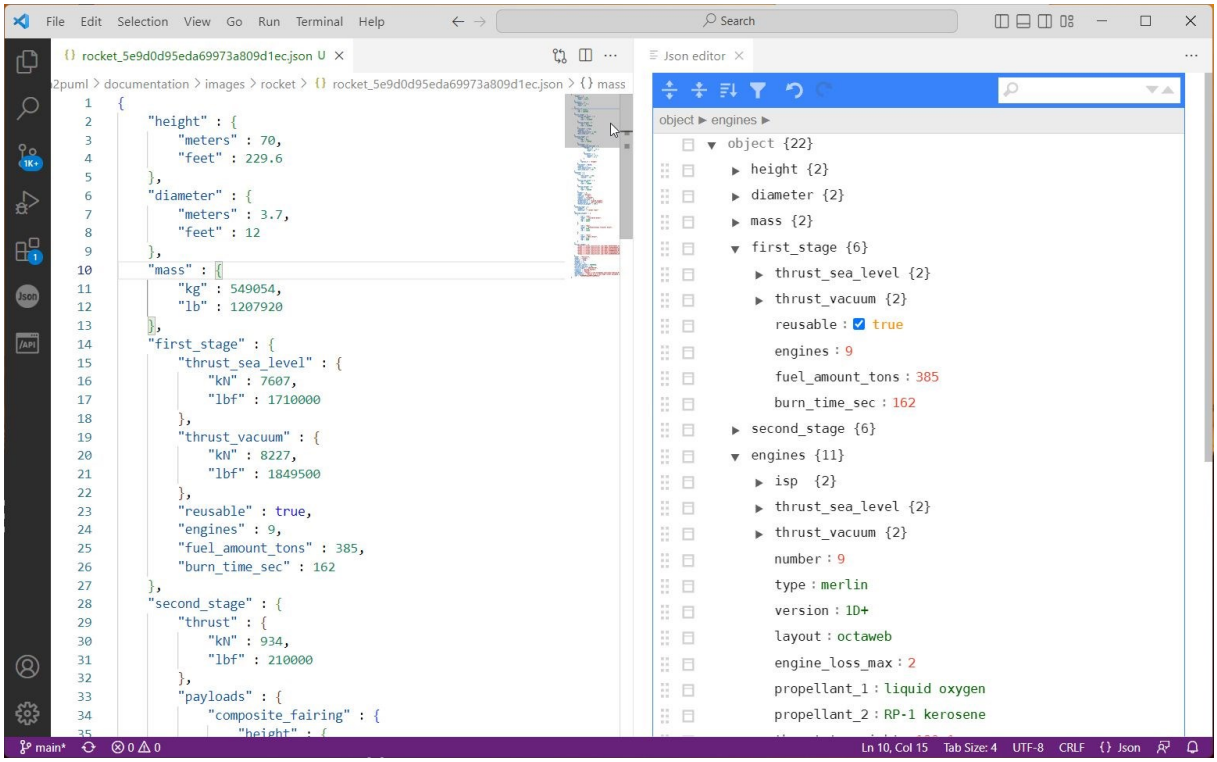



*Figure 2: JSON Editor*

This makes the live easier but it is still complex to understand the context of the data ☺.

### 2.1.3 PlantUML

Another option is to use PlantUML.

Plant is a tool/library to generate images based on a textual description. PlantUML has a JSON specific command to visualize the content of a JSON data structure.

```
@startjson
<JSON data>
@endjson
```

Using this syntax PlantUML automatically generates a picture which visualises all elements of the JSON structure as tree-based image:

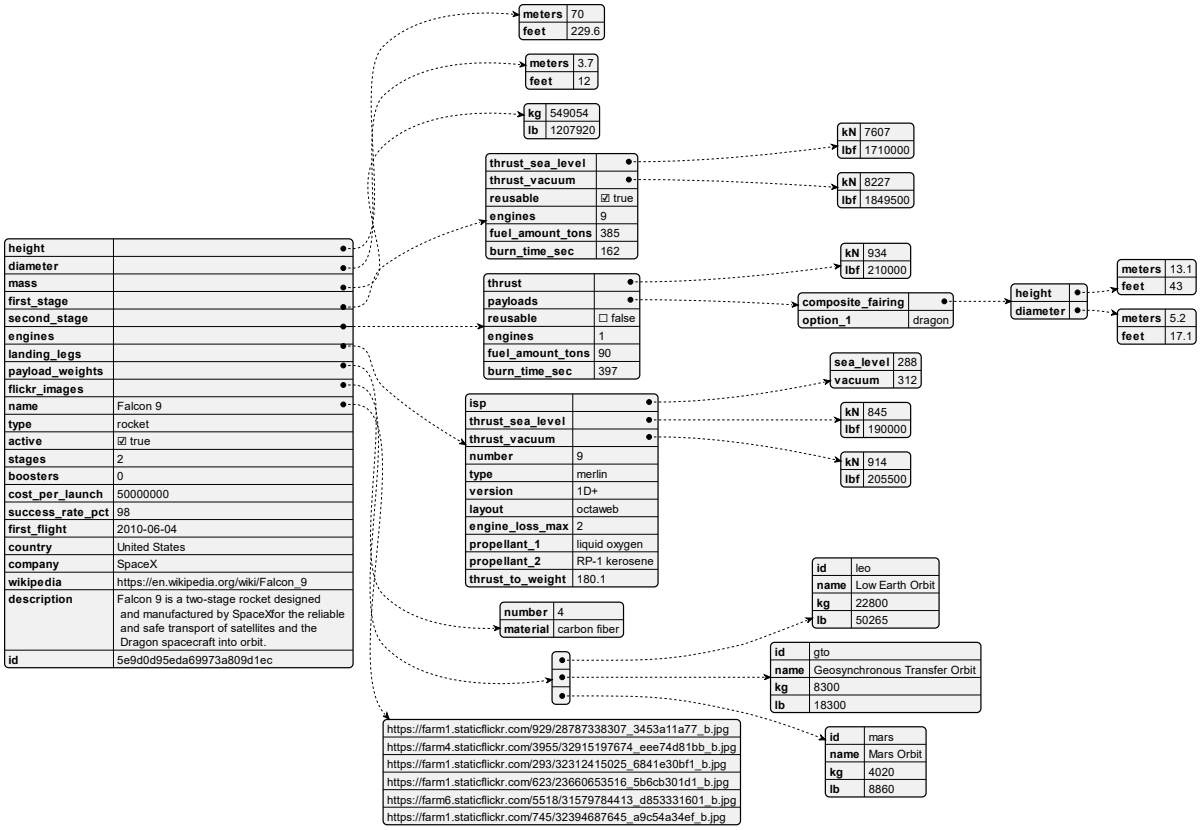



*Figure 3 JSON Example PlantUML*

This improves also, but there is no knowledge about the data models behind and so no logical grouping or filtering is possible.

## 2.2 json2puml

The solution to improve the visualisation of JSON data is

`json2puml`

`json2puml` is a command line tool developed to generate PlantUML files based JSON files (TMF based).

`json2puml` has an understanding of how data is structured in TMF and simplifies and visualises the outcome.

`json2puml` has the possibility to combine the JSON results of multiple API calls into one result set.

`json2puml` is highly configurable to generate outcomes in different detailed levels.

All images are based on the same JSON structure, the outcomes are only separated based on different configurations.

## SpaceX REST API

**Open-Source REST API for launch, rocket, core, capsule, starlink, launchpad, and landing pad data.**

https://github.com/r-spacex/SpaceX-API

What is this?

It's an unofficial public API to receive various information about all Space X rocket launches.

## 2.3 Space X API based examples

### 2.3.1 Example 1 – get /rockets

The example data shown above is the result of a `get /rockets/{id}` api call.

Based on this data the following outputs are possible.

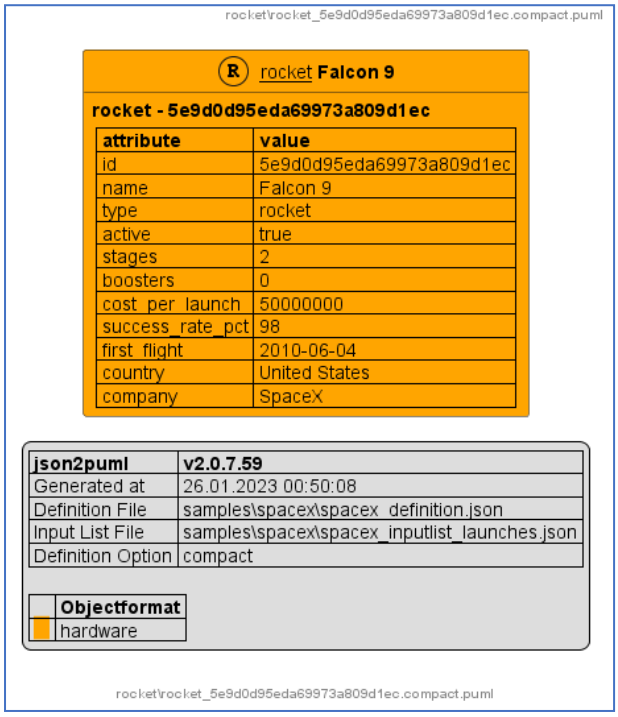



*Figure 4 Space X – get /rockets – compact option*

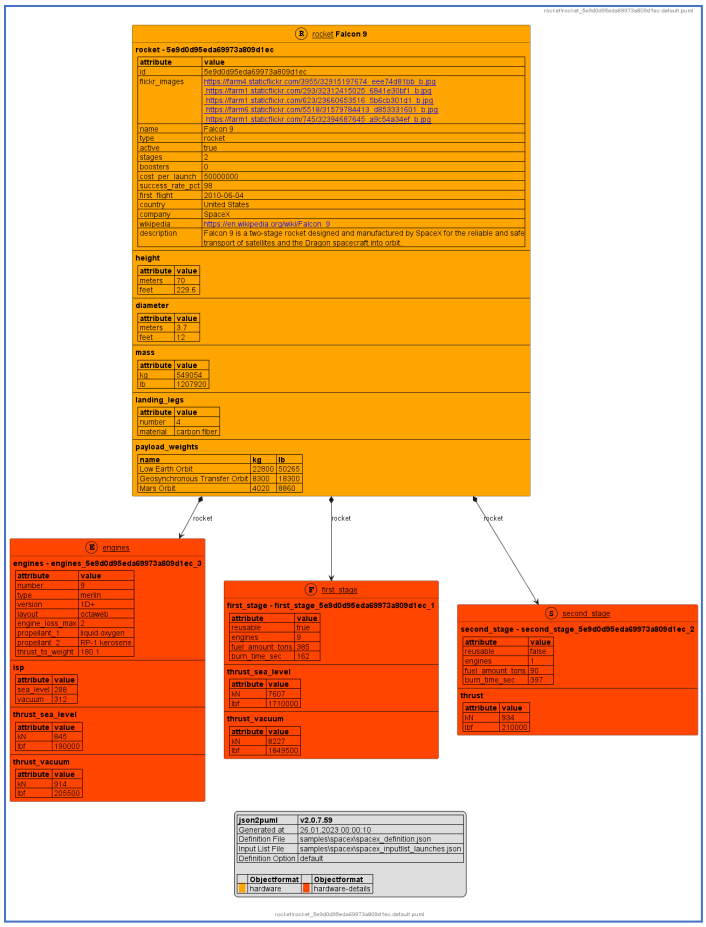



*Figure 5 Space X – get /rockets – default option*

*Figure 6 Space X – get /rockets – full option*

### 2.3.2 Example 2 – Data of all API's in relation to a launch

This example is based on the results of the following api calls:

- `get /launches`
- `get /capsule`
- `get /core`
- `get /crew`
- `get /dragon`
- `get /landpad`

- `get /launchpad`
- `get /payload`
- `get /rocket`

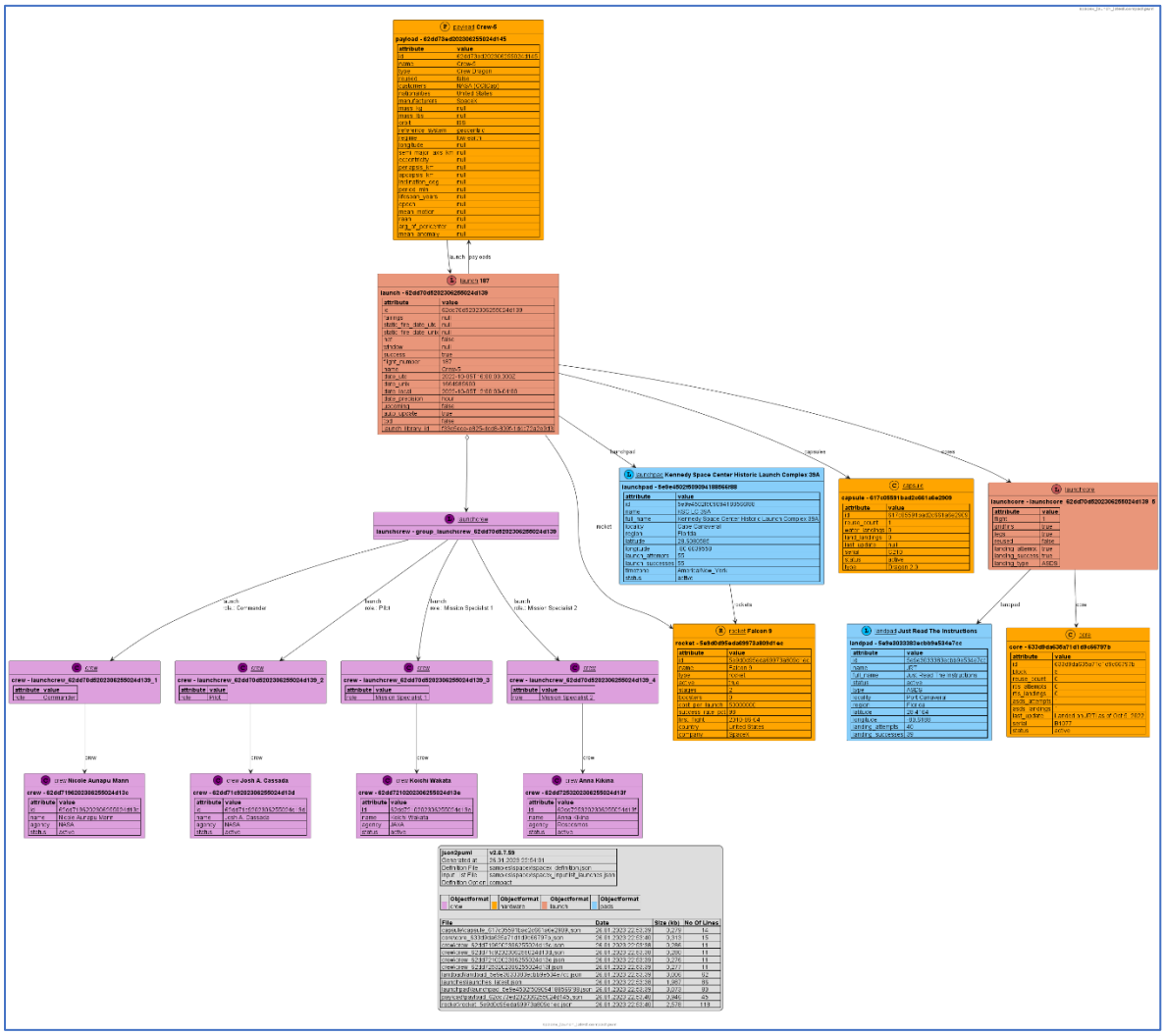


*Figure 7 Space X – get all API – compact option*

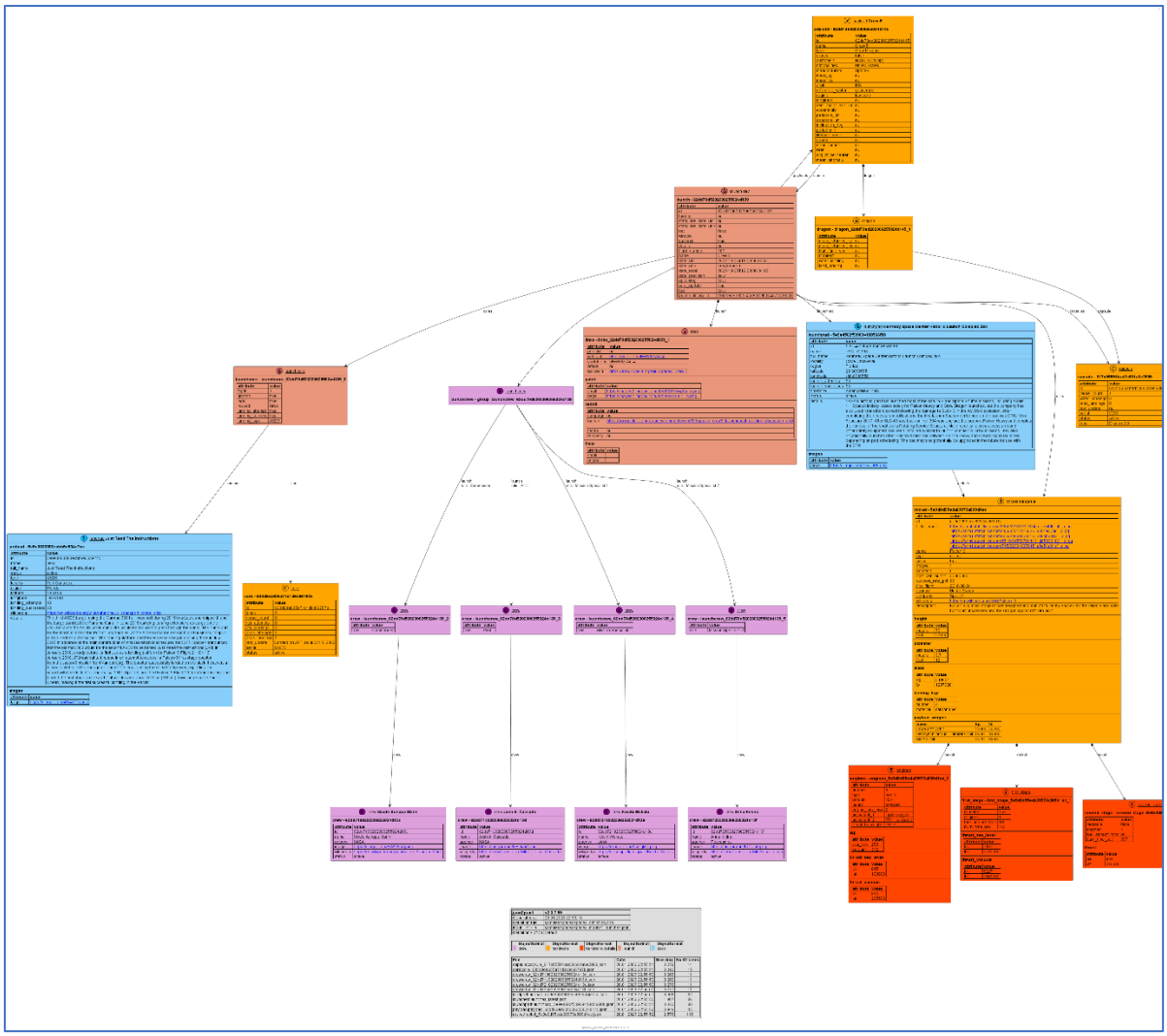


*Figure 8 Space X – get all API – default option*

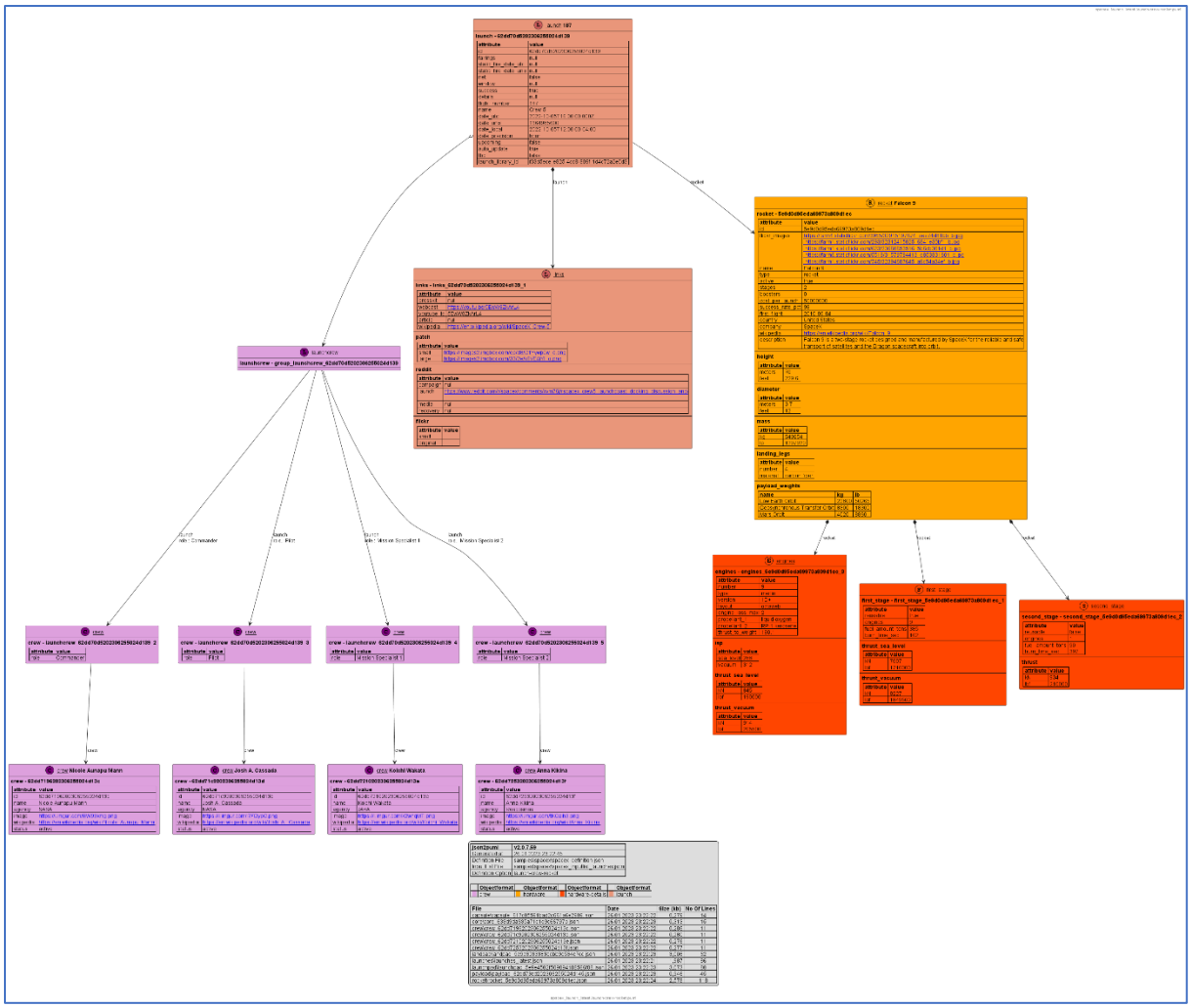


*Figure 9 Space X – get all API – launch-crew-rocket option*

## 2.4 swapi.dev based examples

[SWAPI - The Star Wars API](https://swapi.dev/)

What is this?

The Star Wars API, or "swapi" (Swah-pee) is the world's first quantified and programmatically-accessible data source for all the data from the Star Wars canon universe!

We've taken all the rich contextual stuff from the universe and formatted into something easier to consume with software. Then we went and stuck an API on the front so you can access it all!

### 2.4.1 Example 1 – All data

This image combines the data of all api results unfiltered into one image.

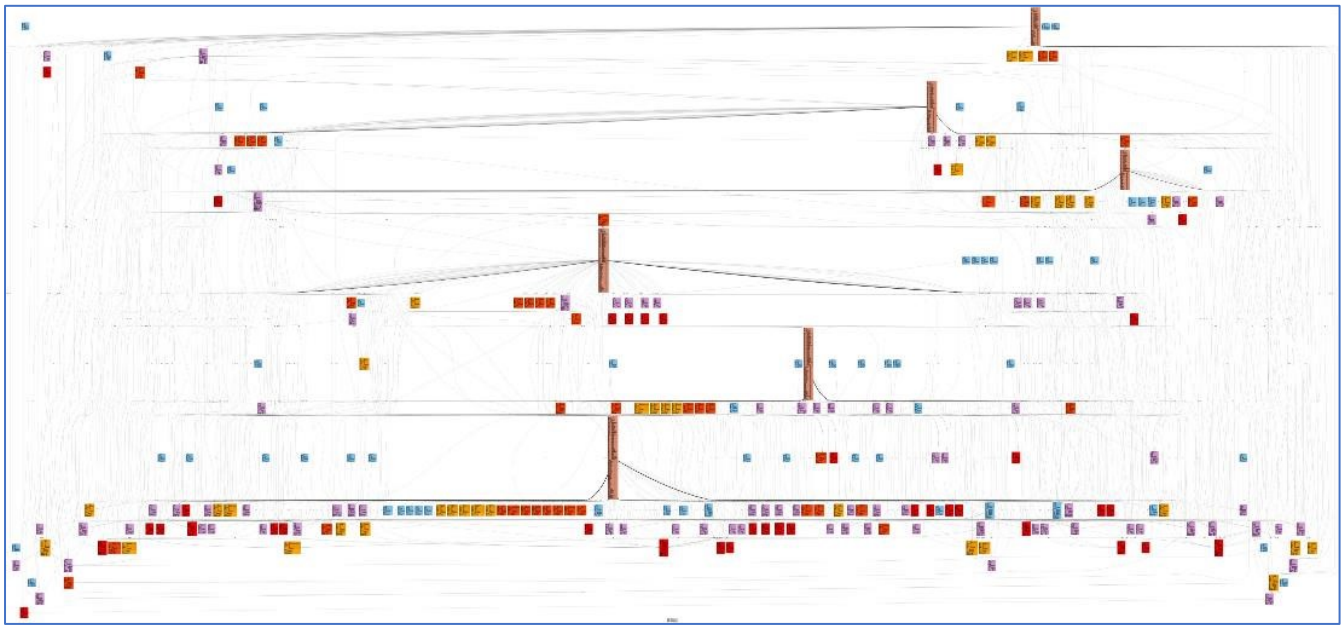


*Figure 10 swapi.dev - all data - 6 Films, 82 Persons, 60 Planets, 37 Species, 36 Star ships, 39 Vehicles*

### 2.4.2 Example 2 – Han Solo

This example is based on all data in combination with the `titlefilter` “Han Solo”.

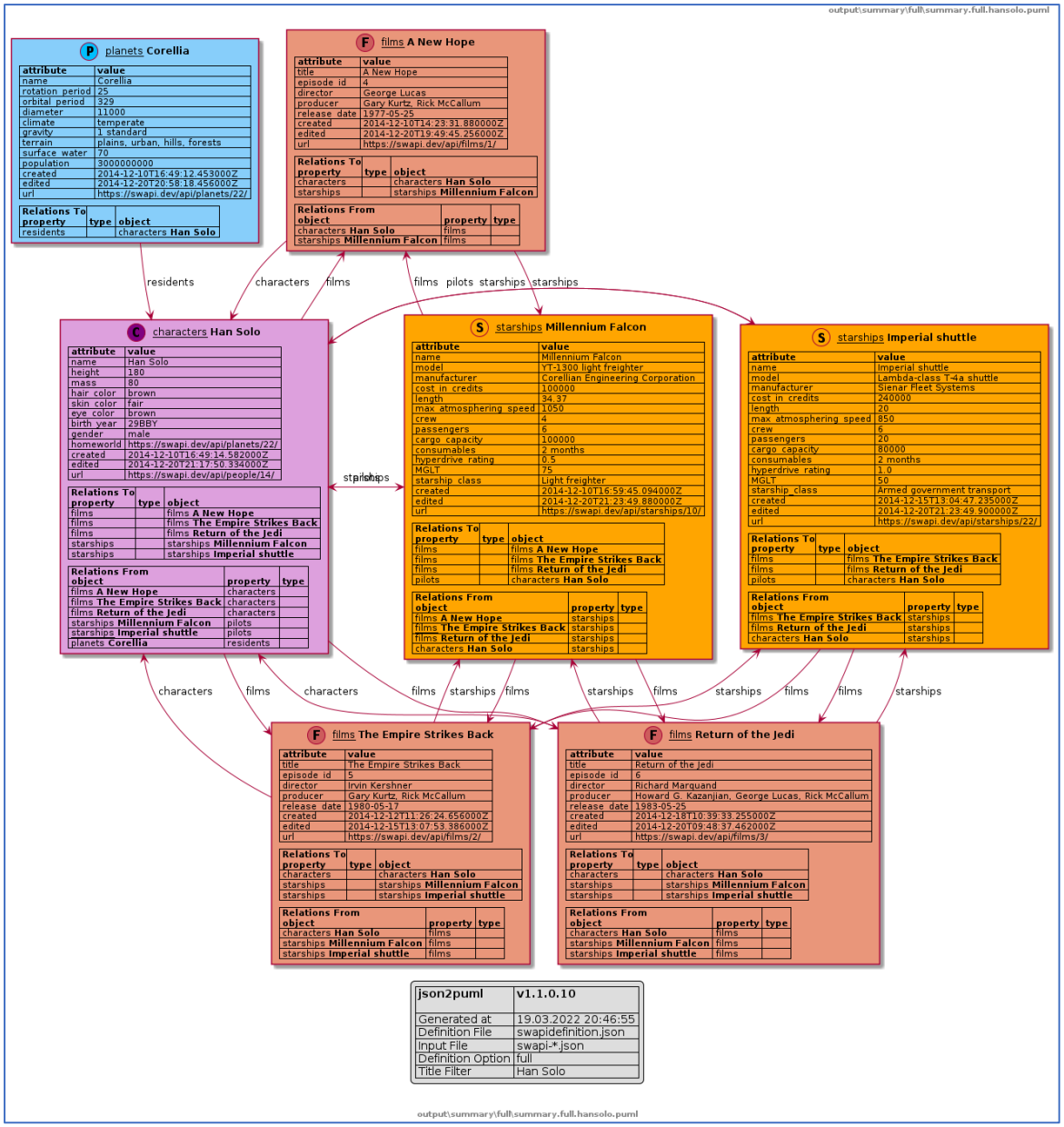



*Figure 11 swapi.dev - /titlefilter = "Han Solo"*

### 2.4.3 Example 3 – Death Star

This example is based on all data in combination with the `titlefilter` “Death Star”.

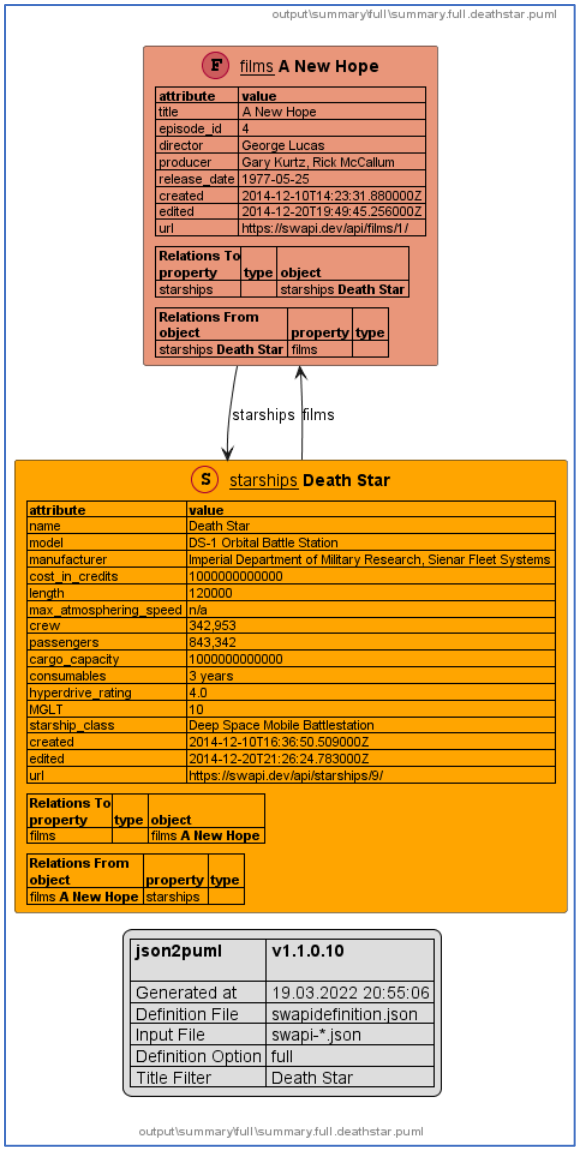



*Figure 12 swapi.dev - /titlefilter = "Han Solo"*

# 3 Installation

`json2puml` comes with an automated setup program which copies the main files to a user defined directory, optionally downloads the PlantUML jar file and configures the system to simplify the usage.

The setup file is named `json2puml.setup.<version>.exe`.

## 3.1 Steps

The setup is following the following steps:

### 3.1.1 Welcome Screen

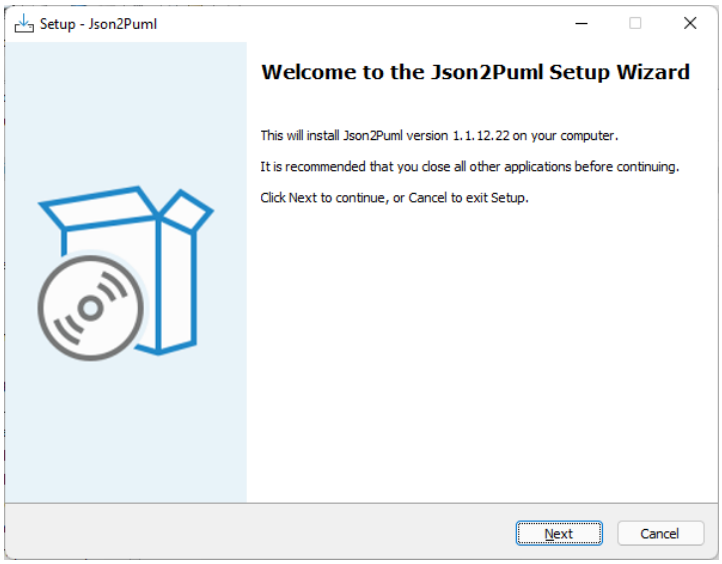



*Figure 13 Setup - Welcome Screen*

### 3.1.2 Definition of the installation folder

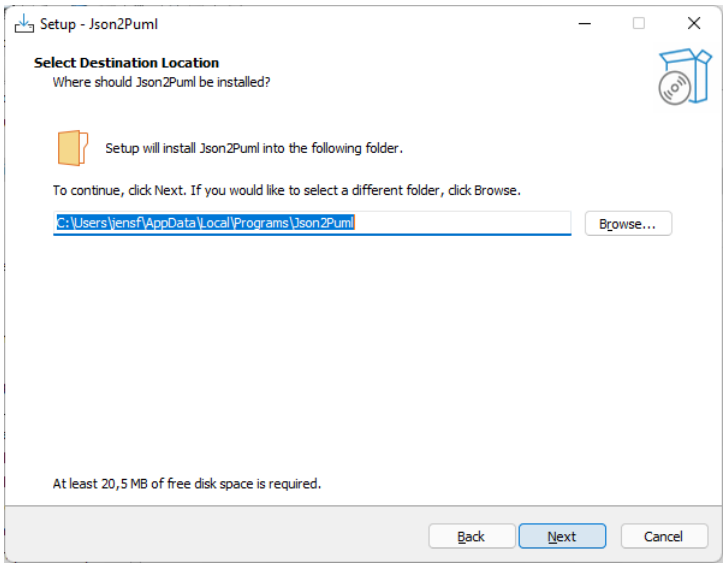
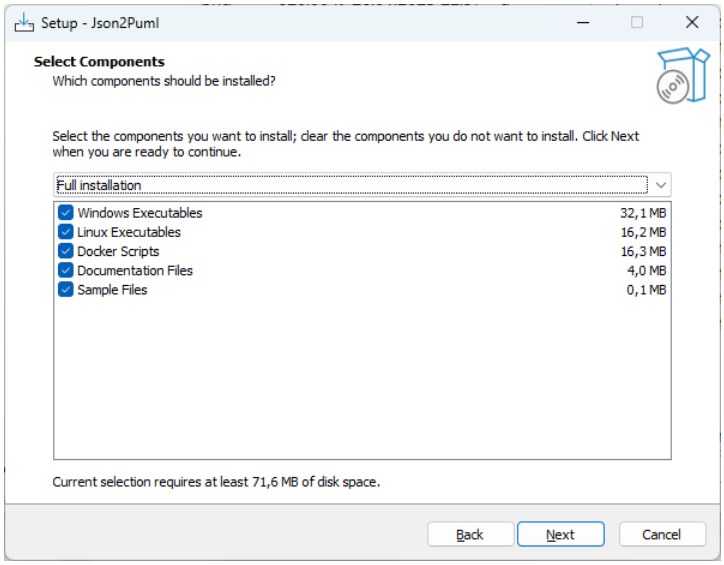



*Figure 14 Setup - Definition of installation folder*

### 3.1.3 Definition of components to be installed




### 3.1.4 Definition of installation options

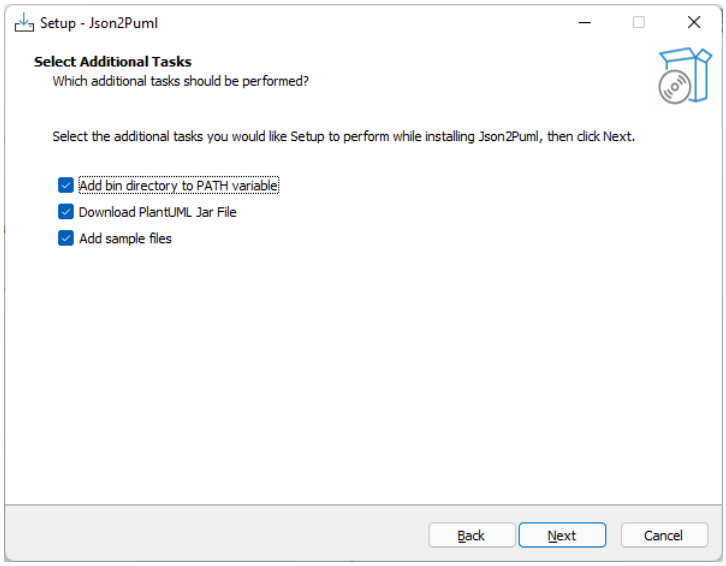



*Figure 15 Setup - Definition of installation options*

### 3.1.5 Summary before installation

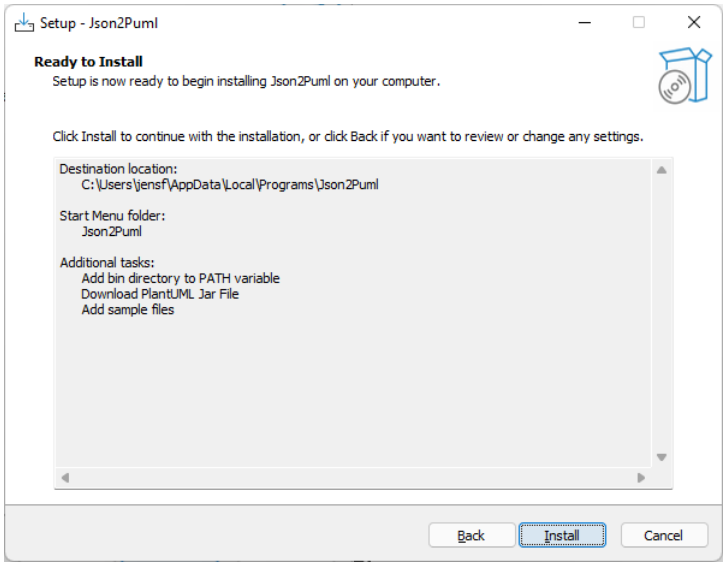



*Figure 16 Setup - Summary before installation*

### 3.1.6 Status screen while the installation is running

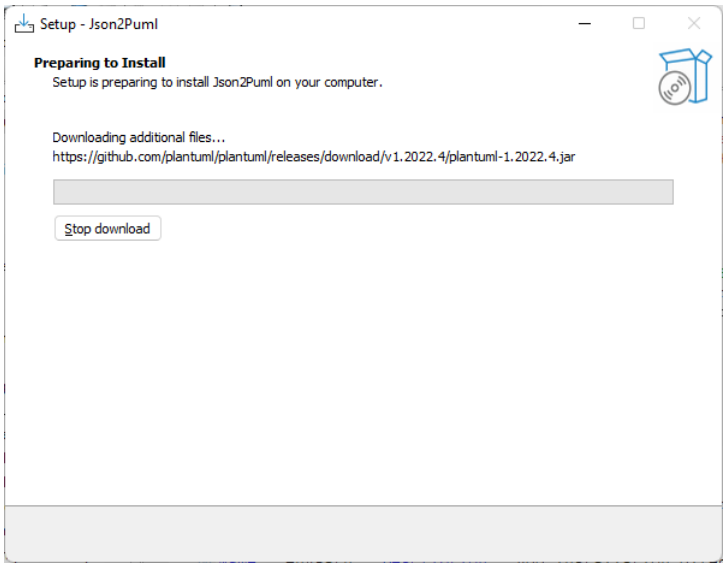



*Figure 17 Setup - Status screen while installation*

### 3.1.7 Completion screen

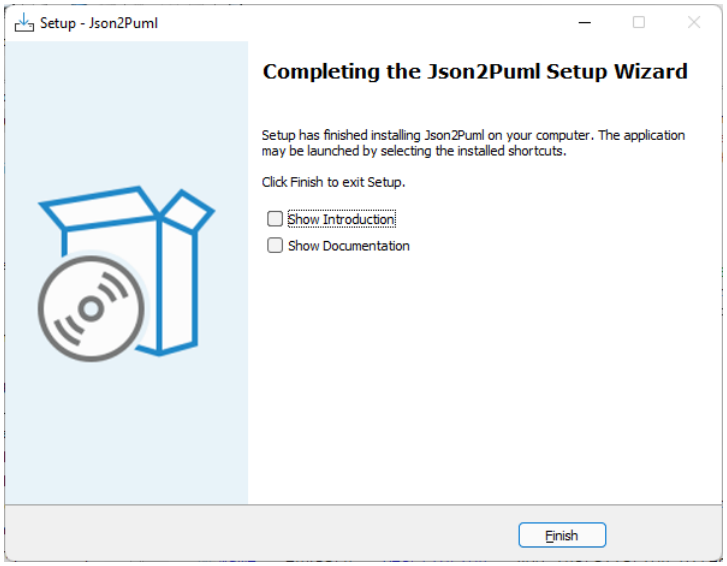



*Figure 18 Setup - Completion screen*

## 3.2 Required privileges

The installation can be executed without having admin privileges as the program is installed in the user profile of the current user.

## 3.3 Created directories / Installed Files

The default suggested directory is the common local application folder in the user profile of the current user.

The directory is: `%USERPROFILE%\AppData\Local\Programs\Json2Puml`

Inside this directory the following sub directories are created:

| Directory | Description | Task / Option |
|---|---|---|
| `bin` | Windows binaries of json2puml | Windows Executables |
| `bin\linux` | Linux binaries of json2puml | Linux Executables |
| `docker` | Docker scripts to generate linux docker containers | Docker |
| `documentation` | Documentation files | |
| `PlantUML` | Destination folder for the PlantUML jar file which is downloaded from the PlantUML project | Download PlantUML jar |
| `samples` | Sample definition files | Add sample files |

The following files are installed:

| File | Folder | Description |
|---|---|---|
| `json2puml.exe` | `bin` | Windows command line executable |

| File | Folder | Description |
|---|---|---|
| json2pumlui.exe | bin | Windows UI version to simplify the configuration development. |
| json2pumlservice.exe | bin | Windows command line application which provides the microservice. |
| json2pumlwindowsservice.exe | bin | Windows service application which provides the microservice. |
| json2puml | bin\linux | Linux command line executable |
| json2pumlservice | bin\linux | Linux command line application which provides the microservice. |
| release-notes.txt | documentation | Version history |
| json2puml introduction.pdf | documentation | Short introduction presentation |
| json2puml documentation.pdf | documentation | Full documentation |
| json2puml.yaml | Documentation | OpenAPI based swagger definition which describes the microservice. |
| PlantUML<version>.jar | PlantUML | Java executable to convert the generated puml files into the graphical output. |
| * | samples | Examples of definition and list files for various API's. |

## 3.4 Setup Options

The setup program has the following options:

### 3.4.1 Add bin directory to PATH variable

When this option is activated, the installation `bin` folder will be added to the environment parameter `%Path%`.

### 3.4.2 Download PlantUML Jar File

When this option is activated, the following steps will be executed:

- Download a released PlantUML jar file from Github (https://github.com/PlantUML/PlantUML/releases/download/)
- The file will be installed in the `PlantUML` folder.

- The environment parameter `%PlantUmlJarFile%` will be created/updated.

### 3.4.3 Add sample files

When this option is activated a set of example configuration files will be installed.

This includes examples for the following API definitions:

- jsonplaceholder
  https://jsonplaceholder.typicode.com/
- SpaceX
  https://github.com/r-spacex/SpaceX-API
- SWAPI - The Star Wars API
  https://swapi.dev/
- TMForum
  http://ww.tmforum.org
- TVMaze
  https://www.tvmaze.com/api

## 3.5 Environment Parameters

The following environment parameters are created/updated used:

| Parameter | Description | Setup Managed |
|---|---|---|
| `Path` | The bin folder should be added to the path to simplify the execution of the json2puml. | Yes |
| `PlantUmlJarFile` | System wide definition where the PlantUML jar file is installed. This allows to include the generation of the images without the need to define the path to the jar file in the definition file or as a command line parameter. | Yes, when the option “Download PlantUML jar file” is activated |
| `Json2PumlDefinitionFile` | System wide definition of the default definition file to be used when no definition file is defined at command line. | No, manual action needed |
| `Json2PumlCurlAuthenticationFile` | System wide definition of the default definition file to define user | No, manual action needed |

| Parameter | Description | Setup Managed |
|---|---|---|
| | specific authentication parameter when using curl (See also 0<br><br>Curl ) | |

## 3.6 PlantUML Installation

Json2puml generates only PlantUML configuration files.
If configured it is possible to call the PlantUML software to also generate automatically the image files base on the configuration files.

For doing this the following prerequisites must be enabled:

### 3.6.1 Java Runtime

Java Runtime must be installed.
The `java` command must be available in the current search path.

### 3.6.2 PlantUML software

A valid PlantUML jar file must be installed and available on the computer.

This could be done manually or by the setup program activating the option “Download PlantUML jar file” (See 3.4 Setup Options).

After the generation of the PlantUML configuration file the PlantUML software is called to generate the wished output files.

### 3.6.3 Output generation

Json2punlThis is done calling the following command line:

```
java -jar <parameter> <plantum.jar> <configuration.puml> <format>
```

#### *3.6.3.1 <parameter>*

This is an additional runtime parameter which could be used to influence the PlantUML generation.

Example:

```
-DPLANTUML_LIMIT_SIZE=8192
```

This parameter can be defined at the following places (searching in the defined order, stopping when a value is defined):

1. json2puml command line parameter
   (See 4.1.2 Command Line Parameters)
2. json2puml configuration file

#### *3.6.3.2 <PlantUML.jar>*

This parameter must reflect the path to a PlantUML jar file.

The parameter can be defined at the following places (searching in the defined order, stopping when a value is defined):

1. json2puml command line parameter
   (See 4.1.2 Command Line Parameters)
2. json2puml configuration file

3. User environment parameter `%PlantUmlJarFile%`
   (See 3.5 Environment Parameters)

#### *3.6.3.3 <configuration.puml>*

This is the name of the generated PlantUML output file. This parameter will automatically determined.

#### *3.6.3.4 <format>*

This is the option to define the output format.
This parameter will automatically determined based on the command line parameter `/outputformat` (See 4.1.2 Command Line Parameters) or the "`outputFormats`" parameter in the configuration file (See **Fehler! Verweisquelle konnte nicht gefunden werden. Fehler! Verweisquelle konnte nicht gefunden werden.**).

# 4 How to use

There are multiple types of applications to use `json2puml`:

- Command line application Windows/Linux
- UI application windows (unsupported, for debugging only)
- Service application Windows/Linux

The Linux based applications can be started from command-line or via predefined docker containers.

The Windows service application can be started from command-line or as a windows service application

## 4.1 Command line

The command line application allows to run the converter based on a set of parameters defined as command line parameters when calling the application.

Windows

```
json2puml.exe /inputlistfile:swapi_inputlist_local.json
      /option=detailed -outputformat=png
```

Linux

```
./json2puml -inputlistfile:swapi_inputlist_local.json
      -option=detailed -outputformat=png
```

This generates the puml files and the corresponding png images.

### 4.1.1 Help Screen

The help screen of the command line application is shown when no command line parameter or the help parameter /? -? is used.

```
*****************************************************************************************************************************
 json2puml v2.0.7.59 - Command line converter JSON to PUML
 *****************************************************************************************************************************
 /?                              Showing this Help screen
 /plantumljarfile:<file>         PlantUML Jar file which should be used to generate the sample images. If
                                 defined this parameter overwrites the corresponding parameter in the definition
                                 file
 /javaruntimeparameter:<param>   Additional parameter which will be added to the java call when calling the
                                 PlantUML jar file to generate the output formats.

 /configurationfile:<file>       Global base configuration of json2puml. Overwrites the
                                 "Json2PumlConfigurationFile" environment parameter.
 /parameterfile:<file>           ParameterFileName which contains a set of command line parameters in one file
 /definitionfile:<file>          DefinitionFileName which contains the configuration of the mapper
 /optionfile:<file>              OptionFileName which contains only the configuration of one option which then
                                 will be used for generation
 /option:<name>                  Name of the option group of the DefinitionFileName which should be used to
                                 generate the files
 /formatdefinitionfiles          Flag to reformat the used definition files.

 /inputfile:<file>               Filter to find the JSON files to be migrated (Wildcard supported)
 /input list file:<file>           Listfile which contains the coniguration to handle list of different files to
                                 be migrated as one big file
 /leadingobject:<name>           Name of the property which should be used as highest level of the json objects
                                 This parameter is only needed for the single file conversion
 /splitinputfile                 Flag to define if the InputFileName should be split up in single files.
                                 This option is splitting the input file in separate files when the leading
                                 structure of the input is an array. Then every record of the array will be
                                 generated as a single file.
                                 This option is only valid when generatedetails is activated
 /splitidentifier:<identifier>   Name of the property which defines the name/filename of the splitted json
                                 element

 /curlauthenticationfile:<file> CurlAuthenticationFileName which contains the central authentication
                                 configuration when using the curl automations
 /curlparameterfile:<file>       CurlParameterFileName which contains additional variables to enable a dynamic
                                 configuration when using the curl automations
 /curlparameter:<name>=<value>   Single curl command line parameter, defined as name and value.
                                 The parameter can be used multiple times to define more than one curl
                                 parameter.
                                 The command line parameter will overwrite parameter from the parameter file
                                 having the same name.

 /summaryfile:<file>             Filename of the generated summary file
 /baseoutputpath:<path>          Base path which will be combinded with the outputpath, to define where the
                                 generated files will be stored. This parameter overwrites the path configured
                                 in the definition file
 /outputpath:<path>              Output path for the generation of files. This parameter overwrites the path
                                 configured in the definition file
 /outputsuffix:<suffix>          Additional suffix added to the name of the generated files. This parameter
                                 overwrites the value configured in the definition file
 /outputformat:<format>          Format of the generated Puml converters (Allowed values: ,png,svg,pdf)
 /openoutput:[<format>]          Flag to define if the generated files should be opened after the generation.
                                 The files will be opened using the default program to handle the file format.
                                 Optional the files to be opened can be restricted by the format types (Allowed
                                 values: ,png,svg,pdf,puml,zip)

 /generatedetails:<boolean>      This allows to overwrite the generateDetails property of the Input list file
 /generatesummary:<boolean>      This allows to overwrite the generateSummary property of the Input list file

 /identfilter:<filter>           Value to filter/allow only objects where the ident matches to this filter
                                 value.
 /titlefilter:<filter>           Value to filter/allow only objects where the title matches to this filter
                                 value.

 /group:<group>                  Group name which can be used in the output path and output suffix, it's
                                 overwriting the value from the Input list file
 /detail:<detail>                Additional detail name which can be used in the output path and output suffix
 /job:<job>                      Additional job name which can be used in the output path and output suffix

 /generateoutputdefinition       Flag to define if the merged generator definition should be stored in the
                                 output folder.
 /debug                          Flag to define that a converter log file should be generated parallel to the
                                 puml file

 /description                    Description of the generated result. This information will be put into the
                                 legend of the image.
```

### 4.1.2 Command Line Parameters

| Parameter | Description |
|---|---|
| /? | Shows the help screen with all command line parameters |
| /plantumljarfile: <file> | Defines an alternative path to the PlantUML jar file.<br>If defined this parameter overwrites the corresponding parameter in the definition file. |
| /javaruntimeparameter: <param> | Additional parameter which will be added to the java call when calling the PlantUML jar file to generate the output formats. |

| Parameter | Description |
|---|---|
| /configurationfile: <file> | |
| /parameterfile: <file> | |
| /definitionfile: <file> | Definition file which contains the configuration of the converter.<br>When the parameter is not defined or the file is not known the filename is fetched from environment parameter "%Json2PumlDefinitionFile%". When this is also not defined or not value the default file "json2pumldefinition.json" is searched in the current directory. |
| /optionfile: <file> | Additional configuration file which contains only the option definition to be used for the conversion. |
| /option: <name> | Defines which configuration option should be used to generate the outcome.<br>It is possible to define multiple options separated by "," or ";".<br>This parameter will be ignored when the optionfile parameter is used. |
| /formatdefinitionfiles | Flag to reformat the used definition files.<br>If it is defined all definition files which are defined via command line will be reformatted.<br>The original files will be saved with the extension ".bak". |
| /inputfile: <file> | Filter to find the JSON files to be migrated (Wildcard supported).<br>(See: 5.4.1 Single File) |
| /inputlistfile: <file> | Name of the input list file, which allows to run the generation for multiple JSON files at the same time and to combine the results into one overall image.<br>(See: 5.4.2 List File) |
| /leadingobject: <name> | Name of the property which should be used as highest level of the JSON objects in the input files.<br>(See: 5.3.6 leadingObject)<br>This parameter is only needed for the single file conversion. |
| /splitinputfile | Flag to define if the inputfile should be split up in single files.<br>This option is splitting the input file in separate files when the leading structure<br>of the input is an array. Then every record of the array will be generated as a single file.<br>This option is only valid when generatedetails is activated.<br>(See 6.5.5.4 splitIdentifier) |

| Parameter | Description |
|---|---|
| | This parameter is only needed for the single file conversion. |
| /splitidentifier: <identifier> | Name of the property which defines the name/filename of the splitted json element. (See 6.5.5.4 splitIdentifier) This parameter is only needed for the single file conversion. |
| /curlauthenticationfile: <file> | CurlAuthenticationFile which contains the central authentication configuration when using the curl automations (See 5.2 Curl pre-processor). |
| /curlparameterfile: <file> | CurlParameterFile which contains additional parameters to enable a dynamic configuration when using the curl automations (See 5.2 Curl pre-processor). |
| /curlauthentication parameterfile: <file> | CurlAuthenticationParameterFile which contains additional authentication parameters to enable a dynamic configuration when using the curl automations (See 5.2 Curl pre-processor). |
| /curlparameter: <name>=<value> | Single curl command line parameter, defined as name and value. The parameter can be used multiple times to define more than one curl parameter. The command line parameter will overwrite parameter from the parameter file having the same name (See 5.2 Curl pre-processor). |
| /curlauthentication parameter: <name>=<value> | Single command line curl authentication parameter, defined as name and value. The parameter can be used multiple times to define more than one curl authentication parameter. The command line parameter will overwrite authentication parameter from the parameter file having the same name (See 5.2 Curl pre-processor). |
| /outputformat: <format> | Comma separated list of output formats to be generated. This parameter overwrites the output format definition in the definition file (See 6.2.2.11 Output formats) |
| /baseoutputpath: <path> | |
| /outputpath: <path> | Outputpath for the generation of files. This parameter overwrites the path configured in the definition file and in the input list file. (See 5.5.3 Output path and 6.2.2.7 Output path) |
| /outputsuffix: <suffix> | Additional name suffix for the generation of files. |

| Parameter | Description |
|---|---|
| | This parameter overwrites the path configured in the definition file and input list file.<br>(See 5.5.4 Output suffix and 6.2.2.5 Output suffix) |
| /openoutput: [<format>] | Flag to define if the generated files should be opened after the generation.<br>The files will be opened using the default program to handle the file format.<br>Optional the list of files to be opened can be restricted by the format types (Allowed values: png, svg, pdf, puml) |
| /generatedetails: <boolean> | Defines if an output should be generated for any included JSON input file.<br>This parameter is only relevant in the list mode, If defined this parameter overwrites the corresponding parameter in the input list file. |
| /generatesummary: <boolean> | Defines if a summary output should be generated as a combination of all included JSON input file.<br>This parameter is only relevant in the list mode. If defined this parameter overwrites the corresponding parameter in the input list file. |
| /identfilter: <filter> | Value to filter/allow only objects where the ident matches to this filter value.<br>(See 5.3.5 Filtering) |
| /titlefilter: <filter> | Value to filter/allow only objects where the title matches to this filter value.<br>(See 5.3.5 Filtering) |
| /group: <group> | Group name which can be used in the output path and output suffix. It's overwriting the value from the input list file. |
| /detail: <detail> | Additional detail name which can be used in the output path and output suffix. It's overwriting the value from the input list file.<br>(See 5.5 Generated Files) |
| /job: <job> | Additional job name which can be used in the output path and output suffix. It's overwriting the value from the input list file.<br>(See 5.5 Generated Files) |
| /generateoutputdefinition | Flag to define if the merged generator definition should be stored in the output folder.<br>(See 5.5 Generated Files) |
| /debug | Flag to define that a converter log file should be generated parallel to the puml file |
| /description | The description will be added to the legend of the generated image.<br>This allows to put additional information's about the context of the data into the generated image. |

### 4.1.3 QuickStart

The minimum parameter you have to define to use json2puml are the "`/definitionfile`" (which contains the definition how to convert) and the "`/inputfile`" or the "`/inputlistfile`" (which are containing the data to be converted).

Have a look into the samples folder.
Every folder has a definition file and a "`information.txt`" file which describes where you can find sample files or further information for the sample.

The following command can be executed in the `samples\swapi\data` folder

```
json2puml /inputlistfile:swapi_inputlist_local.json
```

The output will look similar to this:

```
********************************************************************************
json2puml v2.0.10.62 - Command line converter JSON to PUML
********************************************************************************
Global Configuration (e:\json2puml\configuration\json2pumlconfiguration.json)
  baseOutputPath                : e:\json2puml\runtime\output\
  curlAuthenticationFileName    :
       e:\json2puml\configuration\json2pumlcurlauthentication.json
  curlPassThroughHeader         :
    [1]                         : traceid
    [2]                         : x-b3-traceid
  InputListFileSearchFolder     :
  defaultDefinitionFileName     :
  definitionFileSearchFolder    :
    [1]                         : e:\json2puml\definition\
    [2]                         : e:\json2puml\samples\swapi\*definition*.json
  inputListFileSearchFolder     :
    [1]                         : e:\json2puml\samples\swapi\*inputlist*.json
  javaRuntimeParameter          :
  logFileOutputPath             : e:\json2puml\runtime\logs\
  putputPath                    : <job>\<group>\<file>
  plantUmlJarFileName           :
  servicePort                   : 9090
Current command line parameters: (/inputlistfile:swapi_inputlist_local.json )
  /env json2pumlconfigurationfile
       e:\json2puml\configuration\json2pumlconfiguration.json
  /inputlistfile                                swapi_inputlist_local.json
  /env plantumljarfile                          e:\Json2Puml\plantuml\plantuml-
       1.2023.0.jar
Load configuration files
  Load "GlobalConfigurationFile" from
       e:\json2puml\configuration\json2pumlconfiguration.json (24 lines)
  Load "CurlAuthentication" from
       e:\json2puml\configuration\json2pumlcurlauthentication.json (15 lines)
  Load "InputListFile" from
       e:\json2puml\samples\swapi\data\swapi_inputlist_local.json (24 lines)
  Load "ConverterDefinition" from
       e:\json2puml\samples\swapi\swapi_definition.json (462 lines)

Current Configuration
  Option                                        default
  Group
  Detail
  OutputPath                                    <job>\<group>\<file>
  OutputSuffix
  OutputFormats
       png,svg,pdf,puml,json,log,zip,filelist.json
  GenerateSummary                               true
  GenerateDetails                               false
  BaseOutputPath                                e:\json2puml\runtime\output\
  FullOutputPath
       e:\json2puml\runtime\output\<job>\<group>\<file>
  SummaryFile                                   swapi_all
Input Files
  swapi_data_films.json
  swapi_data_people.json
  swapi_data_planets.json
  swapi_data_species.json
  swapi_data_starships.json
  swapi_data_vehicles.json
Curl Parameter

[  1/  1] Convert e:\json2puml\runtime\output\swapi_inputlist_local\swapi_all.json
               to e:\json2puml\runtime\output\swapi_inputlist_local\swapi_all.puml
               puml generated
Execute java  -jar "e:\Json2Puml\plantuml\plantuml-1.2023.0.jar"
       "e:\json2puml\runtime\output\swapi_inputlist_local\swapi_all.puml" -svg
               svg  generated
Done
```

Then start to build your own definition file for your data files.

## 4.2 Service Application

The service application is a service application which is listening on http requests to execute various tasks.

The service application is executed once and is running until stopped.

The service application is available for Windows and Linux as a command line application. For Windows exists also a Windows service application which is executed as an operating system service in the background.

### 4.2.1 How to prepare

To run the service application a global configuration file is needed (See 6.1.1 Global configuration file).

Additionally the configuration file variable (See 6.2.3.1 Configuration filename) is needed. It is suggested to use the operating system environment variable `Json2PumlConfigurationFile` to define the global configuration file.

### 4.2.2 How to run

#### *4.2.2.1 Command line*

The command line application can be started without any additional parameters:

Windows

```
json2pumlservice.exe
```

Linux

```
./json2pumlservice
```

The application shows a status message similar to this:

```
** JSON2PUML Server ** v2.0.10.62
 Listening on port 9090
 CTRL+C to shutdown the server
```

The command line parameters like `/configurationfile` or `/baseoutputpath` are supported.

#### *4.2.2.2 Windows service application*

The windows service application is started different then the command line application. The service application needs to be installed and registered as an windows service.

For doing this the following command line parameters are supported:

| Parameter | Description |
|---|---|
| `/?` | Shows the help screen with all command line parameters |

| Parameter | Description |
|---|---|
| /install | Installs and registers the application as a windows service. |
| /uninstall | Uninstalls and unregisters the application as a windows service. |

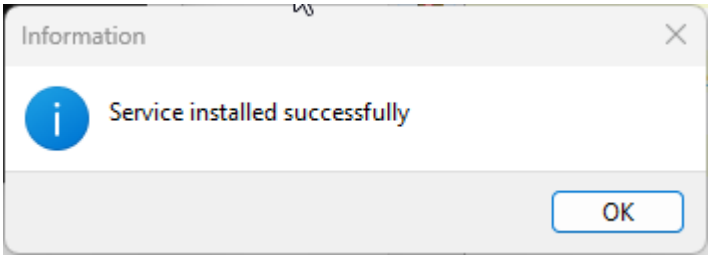
All other command line parameters will be ignored.

**HINT**

For installing or uninstalling the windows service application you must act as a local administrator.

To simplify you can call the install_json2pumlwindowsservice.cmd and uninstall_json2pumlwindowsservice.cmd in the installation folder and execute them “as Administrator.

The success of the installation will be signalled with the following message:




After installing the application, you will find it in the list of services:

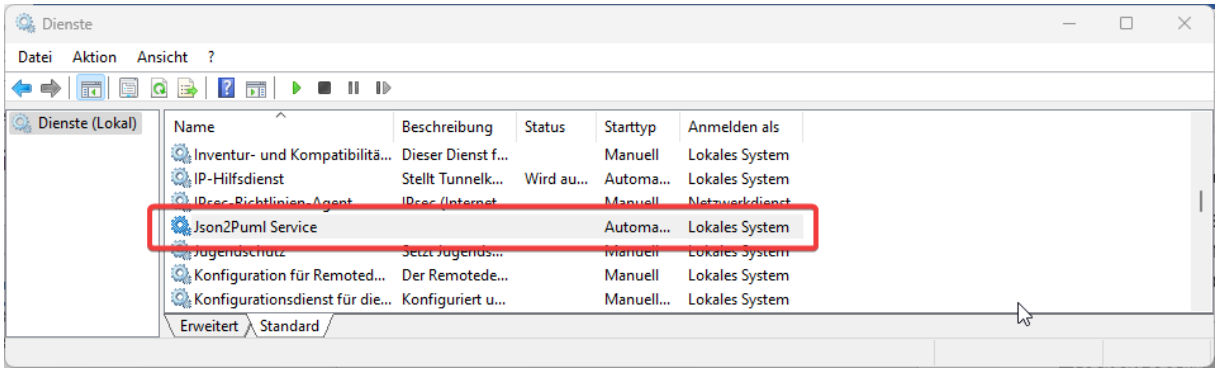



*Figure 19 json2puml in windows service list*

**HINT**

When using the Windows service application, the environment parameters must be defined as system variable. The application is not executed in the user context, it’s always executed in the system context.

### 4.2.3 How to use it via curl

A simple command to see if the application is successfully running is:

```
curl -X GET <hostname>:<configured port>/api/ inputlistfile
```

When the service application is running on the local machine it can look like:

```
curl -X GET http://localhost:9090/api/inputlistfile
```

You will find additional sample command file for using the service application in the `sample\service` folder.

### 4.2.4 Service operations

The detailed parameters of the service operations can be found in the corresponding swagger file `json2puml.yaml` in the documentation folder.

#### *4.2.4.1 get /definitionfiles*

This operations returns a list of all configured converter definition files which could be used by the `post /json2pumlRequest*` operations.

##### 4.2.4.1.1 Sample curl command

```
curl -X GET http://localhost:9090/api/definitionfile
```

##### 4.2.4.1.2 Result data model

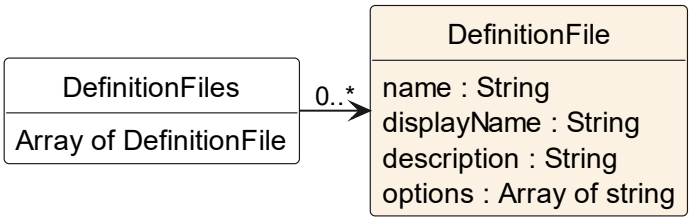



*Figure 20 get /definitionfiles result data model*

The data structure is based on the configuration parameter of the input list file description parameter (See 6.5.2.1 description) and the definition file description found based on the definition parameter (6.5.2.3 definitionFile).

The name property will be filled from the filename of the file.

#### 4.2.4.1.3 Example

A result could look like:

```
[
 {
  "name": "tmf_definition.json",
  "displayName": "TMF Converter Definition",
  "description": "Converter definition file to generate plantuml files
      for TMF based data files.\nYou can find further informations
      here:\nhttps://www.tmforum.org/oda/about-open-apis/",
  "options": [
   "compact", "core", "detailed", "full", "product", "product-detail",
   "relations","short"]
 },
 {
  "name": "placeholder_definition.json",
  "displayName": "JSON Placeholder Definition File",
  "description": "Converter definition file to generate plantuml files
      for jsonplaceholder data files.\nThis file is baed on the
      definitions of the public REST API at
      \nhttps://jsonplaceholder.typicode.com/ to show the capabilities
      of JSON2PUML.",
  "options": [
   "compact", "detailed", "full", "relations", "short"]
 }
]
```

See 6.3.2.6 definitionFileSearchFolder

### *4.2.4.2 get /inputlistfiles*

This operations returns a list of all configured input list files which could be used by the `post /json2pumlRequest*` operations.

The operation has no input parameter.

#### 4.2.4.2.1 Sample curl command

```
curl -X GET http://localhost:9090/api/inputlistfile
```

#### 4.2.4.2.2 Result data model

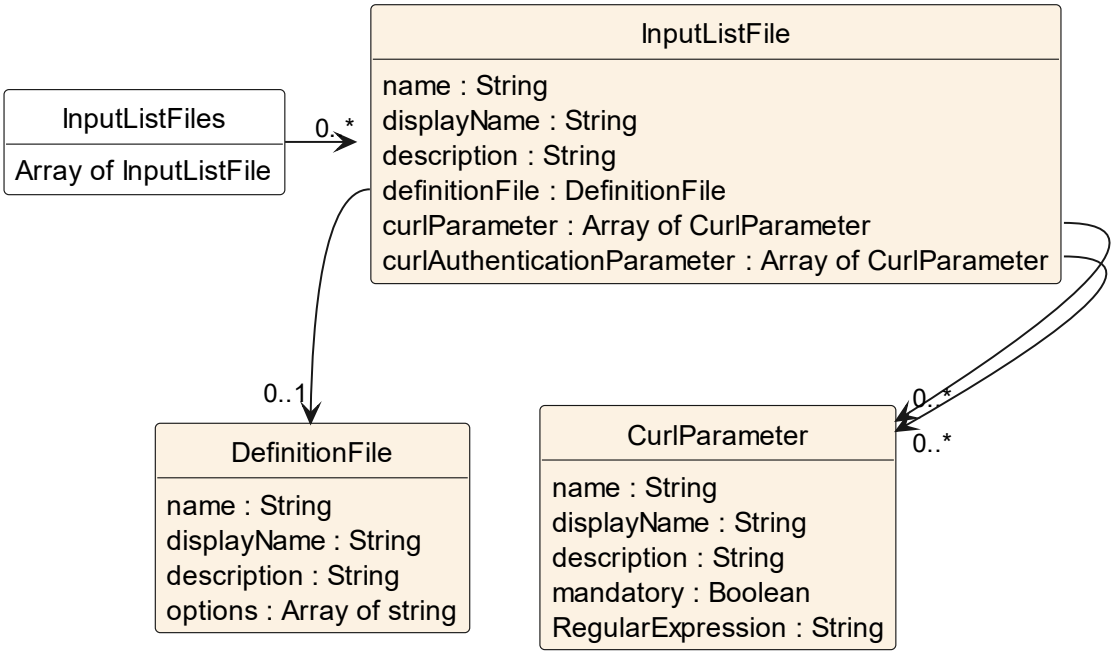



*Figure 21 get /inputlistfiles result data model*

The data structure is based on the configuration parameter of the input list file description parameter (See 6.5.2.1 description) and the definition file description found based on the definition parameter (6.5.2.3 definitionFile)

The name property will be filled from the filename of the file.

#### 4.2.4.2.3 Example

A result could look like:

```
[
 {
  "name": "placeholder_inputlist_curl.json",
  "displayName": "Json Placeholder Data",
  "description": "This example is based on the JsonPlaceHolder API
      (\"https://jsonplaceholder.typicode.com/\").\nIt delivers data
      of one test user with corresponding related albums, photos and
      posts.",
  "definitionFile": {
   "name": "placeholder_definition.json",
   "displayName": "JSON Placeholder Definition File",
   "description": "Converter definition file to generate plantuml
      files for jsonplaceholder data files.\nThis file is baed on the
      definitions of the public REST API at
      \nhttps://jsonplaceholder.typicode.com/ to show the capabilities
      of JSON2PUML.",
   "options": [
    "compact", "detailed", "full", "relations", "short"]
  },
  "curlParameter":  [
    {
     "name": "${userid}",
     "displayName": "UserId",
     "description": "ID of the user",
     "mandatory": "true"
    }
  ]
 },
 {
  "name": "swapi_inputlist_film_characters.json",
  "displayName": "SWAPI Film Character List",
  "description": "This example is based on the SWAPI API
      (\"https://swapi.dev\").\nIt delivers a defined film with the
      characters of the film and the homeworld details of the
      characters.",
  "definitionFile": {
   "name": "swapi_definition.json",
   "options": [
    "compact", "detailed", "full", "relations", "short"]
  },
  "curlParameter":  [
    {
     "name": "${id}",
     "displayName": "Film ID",
     "description": "Primary id of the film",
     "mandatory": "true"
    }
  ]
 }
]
```

See 6.3.2.7 inputListFileSearchFolder

### *4.2.4.3 post /json2pumlRequest**

These operations are executing one command similar to a single command line call. Based on the operation different result are returned.

#### 4.2.4.3.1 Sample curl command

```
curl -X POST http://localhost:9090/api/json2pumlRequest -d
      @jsonplaceholder_parameter_curl.json
```

#### 4.2.4.3.2 Input parameter

The data structure needed as an input parameter is the same as the parameter file definition and can be reused (See 6.4 Parameter file).

The properties `outputFormats`, `generateSummary` and `generateDetails` will be ignored for the operations `post /json2pumlRequestPng` and `post /json2pumlRequestSvg`.

Example:

```
{
 "inputListFile": "placeholder_inputlist_curl.json",
 "generateSummary": "true",
 "generateDetails": "true",
 "outputFormats": "svg,log,json,puml,zip",
 "option": "default",
 "curlParameter": [
    {
     "${id}": "1"
    }
 ]
}
```

#### 4.2.4.3.3 post /json2pumlRequest

This operation generates all requested files and returns them as a json structure. The content of the files is return as b64 encoded string and needs to be decoded before they can be used.

##### 4.2.4.3.3.1 Result data model

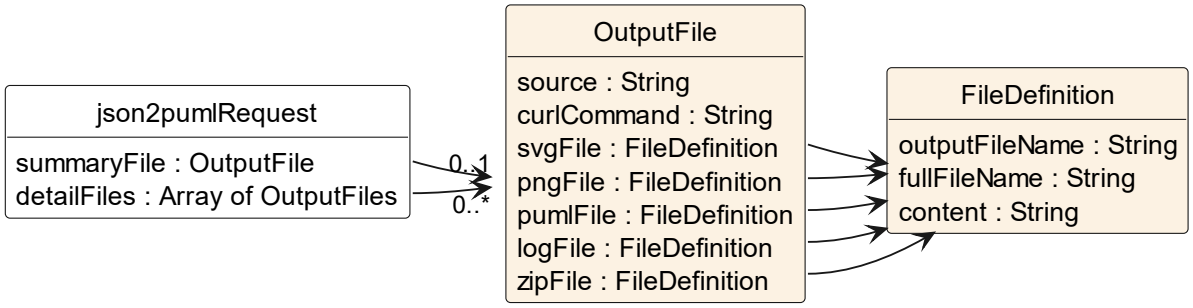



*Figure 22 post /json2pumlRequest result data model*

#### 4.2.4.3.3.2 Json2pumlRequest

##### *4.2.4.3.3.2.1 summaryFile*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| summaryFile | 0..1 | OutputFile | |
| Description | | | |
| When a summaryFile is generated then this record contains all details of the generated summary files. | | | |

##### *4.2.4.3.3.2.2 detailsFiles*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| detailsFiles | 0..* | OutputFile | |
| Description | | | |
| When a detailFiles are generated then this array contains for all details files an outputFile definition. | | | |

#### 4.2.4.3.3.3 OutputFile

The outputFile contains all information regarding the current generated output file.

##### *4.2.4.3.3.3.1 source*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Source | 1 | String | |
| Description | | | |
| Name of the json data file which is basis for the current output file | | | |

##### *4.2.4.3.3.3.2 curlCommand*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlCommand | 0..1 | String | |
| Description | | | |
| If applicable: curl command which is used to fetch the source file. | | | |

##### *4.2.4.3.3.3.3 svgFile*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| svgFile | 0..1 | FileDefinition | |
| Description | | | |
| When `svg` is defined as outputFormat: svg result file definition | | | |

#### 4.2.4.3.3.3.4 pngFile

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| pngFile | 0..1 | FileDefinition | |
| Description | | | |
| When `png` is defined as outputFormat: png result file definition | | | |

#### 4.2.4.3.3.3.5 pumlFile

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| pumlFile | 0..1 | FileDefinition | |
| Description | | | |
| When `puml` is defined as outputFormat: puml file, which is the base line of the generated images. | | | |

#### 4.2.4.3.3.3.6 logFile

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| logIFile | 0..1 | FileDefinition | |
| Description | | | |
| When `log` is defined as outputFormat: log file, which shows how the json structure has been converted in the puml script file. | | | |

#### 4.2.4.3.3.3.7 zipFile

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| zipCommand | 0..1 | FileDefinition | |
| Description | | | |
| When `zip` is defined as outputFormat: zip file, which contains all generated files. This property will only be returned as summaryFile (4.2.4.3.3.2.1 summaryFile). | | | |

### 4.2.4.3.3.4 FileDefinition

For every file the following information will be returned:

#### 4.2.4.3.3.4.1 outputFileName

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| outputFileName | 1 | String | |
| Description | | | |
| Name of the generated file without any folders. | | | |

*4.2.4.3.3.4.2 fullFileName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| fullFileName | 1 | String | |
| Description | | | |
| Name of the generated file including the folder where it's generated. | | | |

*4.2.4.3.3.4.3 content*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Content | 1 | String | |
| Description | | | |
| Base64 encoded content of the generated files.<br>To decode the file any Base64 encoder / algorithm can be used.<br>You can also use: https://www.base64decode.org/ | | | |

4.2.4.3.4 post /json2pumlRequestPng

This operation generates and returns the summary file as a png file.

4.2.4.3.5 post /json2pumlRequestSvg

This operation generates and returns the summary file as a svg file.

4.2.4.3.6 post /json2pumlRequestZip

This operation generates and returns zip file containing all generated summary and details files.

## 4.3 Docker

The docker technology allows to simplify the configuration and execution of Linux based applications in one docker image.

This technology can also be used for json2puml.

As of now there are no pre-configured docker images stored at https://hub.docker.com, but all files which are needed to generate the docker images are part of the `docker` folder in the installation folder.

### 4.3.1 Docker image overview

Currently there are three images defined:

- json2pumlbase
- json2puml (based on json2pumlbase)
- json2pumlservice (based on json2pumlbase)

#### *4.3.1.1 json2pumlbase*

This image is the base image for the two target images `json2puml` and `json2pumlservice`.

Using the base image simplifies the definition of the two target images and improves the build time. The base image is nearly stable and only needs to be updated when one of the used components is updated.

The base image is based on the following components / packages:

| Type | Component / Package | Description |
|---|---|---|
| **Docker Image** | eclipse-temurin:latest | This docker image delivers a current java runtime environment |
| **apk** | Graphviz | Graphviz software used by PlantUml |
| **apk** | PlantUml | Plantum runtime |
| **apk** | Curl | Curl command line utility |

#### *4.3.1.2 json2puml*

This image can be used to run a single converter run similar to the command line application.

#### *4.3.1.3 json2pumlservice*

This image starts the service application.

### 4.3.2 How to build the images

In the docker folder is a set of utility files defined which can be used to build and maintain the images. They could be used as a starting point for your own configuration.

- dbuildbase.sh
  Build the `json2pumlbase` image
- dbuild.sh
  Build the `json2puml` image
- dbuildservice.sh
  Build the `json2pumlservice` image

#### *4.3.2.1 How to adopt the images*

To adopt the images mainly the files in the `docker/src/json2puml/` needs to be updated. This folder is copied into both target docker images.

The `definition` and `inputlist` folders are configured to be returned from the `get /inputlistfles` and get `/definitionfiles` operations.

As main configuration is `configuration/json2pumlconfiguration.json` configured.

### 4.3.3 How to use the docker images

#### *4.3.3.1 Command line image*

This docker image can be used like the command line utility. All command line parameters can be added to the end of the docker command.

```
sudo docker run --rm --name json2puml -option:full --mount
      type=bind,source=/home/jens/docker/output,
      target=/json2puml/output -
      parameterfile:/json2puml/samples/jsonplaceholder/placeholdercurl
      unixparameter.json
```

The output files will be generated in the local folder /json2puml/output.

#### *4.3.3.2 Service image*

To run the service application no further parameters are needed.

```
sudo docker run -d --rm --name json2pumlservice -p 9090:9090
      json2pumlservice
```

Only the used port needs to be mapped from inside to the outside of the docker image.

#### *4.3.3.3 Mount log and output files outside of the image*

To simplify the debugging and the access to the files it is possible to mount the log and output folders to a folder outside of the docker image.

In the main configuration file the following configurations are defined:

```
    "baseOutputPath": "/json2puml/output",
    "logFileOutputPath": "/json2puml/logs",
```

By adding the following parameters to the docker start command the folders will be mapped to a folder outside of the image and persist also when the docker image is stopped.

```
sudo docker run --rm --name json2puml
      --mount type=bind,source=/home/jens/docker/logs,
      target=/json2puml/logs
      --mount type=bind,source=/home/jens/docker/output,
      target=/json2puml/output
```

# 5 How the system is working

## 5.1 Main components

Json2puml consists of 3 main components:

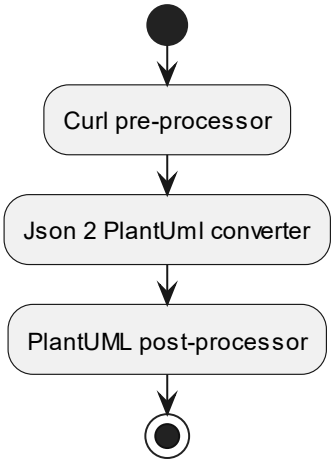



*Figure 23 json2puml main components*

### 5.1.1 Curl pre-processor

The curl pre-processor is an optional step. It allows to collect json files by calling a configures set of API calls. The "`curl`" command will be used on command line to execute the configured API calls.

When the curl pre-processor is not used the files to be converted must be already existing.

These API calls can be configured via parameters. The parameters can also be fetched from one curl result and be used for the next api calls. This allows to have dynamic chains of api calls based on one input parameter.

Example:

Fetching data from a shop system based on an input parameter "OrderId"

| | API Call | Input Parameter | Output Parameter |
|---|---|---|---|
| **1** | Get /order | ${orderId}:2022-1234 | ${custNumber}:4711<br>${addressId}:8819 |
| **2** | Get /customer | ${custNumber}:4711 | ${addressId}:1219 |
| **3** | Get /orderItems | ${orderId}:2022-1234 | ${product}:a14<br>${product}:a177<br>${product}:b88 |
| **4** | Get /address | ${addressId}:8819<br>${addressId}:1219 | |
| **5** | Get /product | ${product}:a14<br>${product}:a177 | |

| | | | |
|---|---|---|---|
| | | ${product}:b88 | |

The result would a set of json files reflecting 1 order object, 1 customer object, 3 order item object, 2 address objects and 5 product objects, which then can be combined into one overall result.

The curl pre-processor is configured in the input list file (See 6.5 Input list File), the curl parameter file(See 6.7 Curl parameter file) and the curl authentication file (See 6.8.3 Curl Parameter)

### 5.1.2 Json 2 PlantUML converter

The Json 2 PlantUML converter a set of json files into PlantUML files. These files can then be used by the PlantUML post-processor to generate the graphical representations of the json files.

The converter works on API specific definitions, which will be configured in the converter definition file (See 6.6 Converter definition file).

### 5.1.3 PlantUML post-processor

The PlantUML post-processor used the generated PlantUML script files and the PlantUML jar file to generate the images based on the script files.

The PlantUML jar file and a valid java runtime environment must be locally available on the operating system.

The path to the needed PlantUML jar file will be defined on the variable `plantumJarfile`. (See 6.2.4.1 PlantUML jar filename).

In addition, the `javaRuntimeParameter` variable can used to configure additional parameters to be added to the java command line (See 6.2.4.2 Java runtime parameter)

The following command line will be used :

```
java <javaRuntimeParameter> -jar <plantumJarFile> <plantumlScriptFile>
      <format>
```

## 5.2 Curl pre-processor

In addition to using static input files, it is also possible to get the content of the files using a curl command.

The curl support is based on the definitions of the input list file.

Here it is possible to define for every single file definition in the list file that this file should be fetched dynamically.

After all files are handled by the pre-processor the converter will start.

The curl pre-processer is based on the curl command, which will be called via command line and must be available on the operating system.

### 5.2.1 Curl parametrisation

To reuse a list definition file for visualisation of different dataset it is possible to use curl parameters to fetch dynamically different data.

For this the system allows to define a set of parameter value pairs which will be used to update the curl command before execution by replacing every occurrence of a known curl parameter name with the corresponding curl parameter value.

#### *5.2.1.1 Using curl parameters in configuration*

To use the dynamic parametrisation the curl parameter must be defined in the configured configuration parameters in the following pattern "`${<name>}`". Before executing a curl command all existing strings following this pattern will be replaced by the value of the corresponding curl parameter.

The search of the name is not case sensitive.

Example:

- Parameter name: id
- Parameter value: 1
- Configured `curlUrl`: "`/users/${id}`"

Before executing the `curlUrl` will be replaced to "`/users/1`".

The content of the following configuration properties could be enhanced by curl parameters:

- `inputListFile.curlOptions` and `singleInputFile.curlOptions`
- `singleInputFile.inputFile` and `singleInputFile.curlFileSuffix`
- `singleInputFile.curlBaseUrl` and `inputListFile.curlBaseUrl`
- `singleInputFile.curlUrl`
- `inputListFile.curlUrlAddon`
- `inputListFile.summaryFile`
- `inputListFile.group` and `inputListFile.detail` and `inputListFile.job`

#### *5.2.1.2 Curl filename parametrisation*

The curl parametrisation can also be used to generate the output files based on the curl parameter values.

The curl parametrisation of filenames can be used for the summary file name (6.5.2.12 summaryFileName) and for the input file name of the SingleListFile (6.5.5.1 inputFile).

As a restriction: For a single file the `curlOutParameter` of this file can only be used for the filename of the files which are defined after the current file.

### 5.2.2 Curl command

For every file defined in the input list file the curl command will be executed when a Url is defined.

The curl command is based build following this pattern:

```
curl <curlOptions> -o <outputFile>
      --URL <curlBaseUrl>/<singleCurlUrl><curlUrlAddon>
```

The different parts of the command are build based on the following logic

- `<curlOptions>`:
  Concatenation of `inputListFile.curlOptions` and `singleInputFile.curlOptions`
- `<outputFile>`:
  Combination of `singleInputFile.inputFile` and `singleInputFile.curlFileSuffix.`
- `<curlBaseUrl>`:
  If defined the `singleInputFile.curlBaseUrl` will be used, otherwise the `inputListFile.curlBaseUrl` will be used.
- `<singleCurlUrl>`:
  `singleInputFile.curlUrl`
- `<curlUrlAddon>`:
  `inputListFile.curlUrlAddon`

To activate the curl execution the `curlUrl` parameter of the single list file definition and the `curlBaseUrl` parameter must be defined. Otherwise, the existing static file will be used.

### 5.2.3 How to use it

To understand how the curl pre-processor is working you can have a look into the `samples` directory. Most of the examples are based on the pre-processor to fetch data for dedicated scenarios via api.

As an example, we can have a look into the jsonplaceholder example. The jsonplaceholder api is a REST training API which could be used by developers to learn how to work with such api's.

The api has some random data and is based on the following data model:

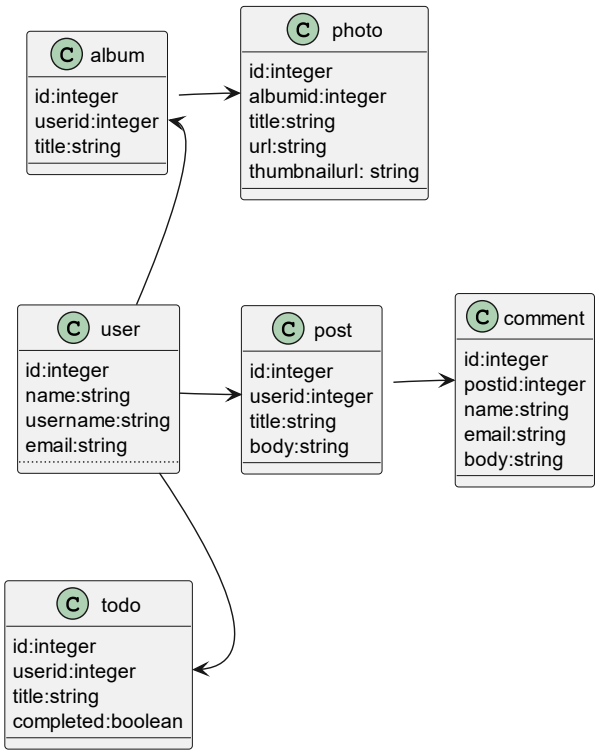



*Figure 24 jsonplaceholder data model*

The input list file `placeholder_inputlist_curl.json` collects and visualised data based on one user id. The id of the user can be defined via command line parameter.

```
json2puml /parameterfile:placeholder_parameter_curl.json
      /curlparameter:userid=1
json2puml /parameterfile:placeholder_parameter_curl.json
      /curlparameter:userid=3
```

In the following steps the `userid = 1` will be used as a baseline for the shown example data.

#### *5.2.3.1 Global definition*

```
  "curlBaseUrl": "https://jsonplaceholder.typicode.com/",
  "curlUrlAddon": null,
  "curlOptions": "-f",
  "summaryFile": "placeholder_summary_${name}",
```

The global definition of the input list file only defines

- `"curlBaseUrl": "https://jsonplaceholder.typicode.com/"`
  This URL will be the basis for all URL calls
- `"summaryFile": "placeholder_summary_${name}"`
  The generated summary file will contain the name of the defined user based on the curl parameter `${name}`. This parameter will be filled after the data for the defined user has been fetched.

#### *5.2.3.2 Inputfile "users.json"*

The first file to be fetched will contain the data of the defined user.

##### 5.2.3.2.1 Configuration

```
{
      "inputFile": "users.json",
      "curlFileSuffix": "_${userid}",
      "curlUrl": "/users/${userid}",
      "curlOptions": null,
      "curlOutputParameter": [
        {
          "${name}": "name"
        }
      ]
    },
```

##### 5.2.3.2.2 Filename

The generated filename will be `users_1.json` (based on the parameters `inputFile` and `curlFileSuffix`) .

##### 5.2.3.2.3 Command

The following command will be executed:

```
curl -f --URL https://jsonplaceholder.typicode.com/users/1
     --output users_1.json
```

##### 5.2.3.2.4 Json Result (reduced)

```
{
 "id" : 1,
 "name" : "Leanne Graham",
 "username" : "Bret",
 "email" : "Sincere@april.biz"
}
```

##### 5.2.3.2.5 Output curl parameter

The name of the user with the id 1 will be fetched from the attribute "`name`".

As a result, the following curl parameters values are valid after the call:

| Variable | Value |
|---|---|
| **${userid}** | 1 |
| **${name}** | Leanne Graham |

This `${name}` parameter will then be used to generate the name of the summary file: “`placeholder_summary Leanne Graham.json`”

#### *5.2.3.3 Inputfile “albums.json”*

This file will contain the albums related to the defined user.

##### 5.2.3.3.1 Configuration

```
{
      "inputFile": "albums.json",
      "curlFileSuffix": "_${userid}",
      "curlUrl": "albums?userId=${userid}",
      "curlOutputParameter": [
        {
          "name": "${albumid}",
          "value": "id",
          "maxValues": "2"
        }
      ]
    },
```

##### 5.2.3.3.2 Filename

The generated filename will be `albums_1.json` (based on the parameters `inputFile` and `curlFileSuffix`).

##### 5.2.3.3.3 Command

The following command will be executed:

```
curl -f --URL https://jsonplaceholder.typicode.com/albums?userId=1
     --output albums_1.json
```

#### 5.2.3.3.4 Json Result (reduced)


```
[
 {
  "userId" : 1,
  "id" : 1,
  "title" : "quidem molestiae enim"
 },
 {
  "userId" : 1,
  "id" : 2,
  "title" : "sunt qui excepturi placeat culpa"
 },
 {
  "userId" : 1,
  "id" : 3,
  "title" : "omnis laborum odio"
 },
 {
  "userId" : 1,
  "id" : 4,
  "title" : "non esse culpa molestiae omnis sed optio"
 },
 {
  "userId" : 1,
  "id" : 5,
  "title" : "eaque aut omnis a"
 },
 {
  "userId" : 1,
  "id" : 6,
  "title" : "natus impedit quibusdam illo est"
 },
 {
  "userId" : 1,
  "id" : 7,
  "title" : "quibusdam autem aliquid et et quia"
 },
 {
  "userId" : 1,
  "id" : 8,
  "title" : "qui fuga est a eum"
 },
 {
  "userId" : 1,
  "id" : 9,
  "title" : "saepe unde necessitatibus rem"
 },
 {
  "userId" : 1,
  "id" : 10,
  "title" : "distinctio laborum qui"
 }
]
```


#### 5.2.3.3.5 Output curl parameter

The list of album id's is fetched from the attribute "`id`". To reduce the number of fetched parameters (and based on that make the generated image better readable) the optional parameter `"maxValues": "2"` is used to limit the number of fetched variables to 2,

The albums of the user with the id 1 will be fetched from the attribute "`id`".

As a result, the following curl parameters values are valid after the call:

| Variable | Value |
|---|---|
| **${userid}** | 1 |
| **${name}** | Leanne Graham |
| **${albumid}** | 1 |
| **${albumid}** | 2 |

#### *5.2.3.4 Inputfile "photos.json"*

With this file the photos which are related to the albums fetched in the second steps will be collected.

##### 5.2.3.4.1 Configuration

```
{
      "inputFile": "photos.json",
      "curlFileSuffix": "_${userid}_${albumid}",
      "curlUrl": "photos?albumId=${albumid}",
      "curlOutputParameter": []
    },
```

##### 5.2.3.4.2 Filename

The `curlFileSuffix` and the `curlUrl` parameter are containing the reference to two curl parameters: `${userid}` and `${albumid}`. When a curl parameter is part of these attributes then the curl command will be execute on a permutation of all values of the used curl parameters.

The generated filenames will be `photos_1_1.json` and `photos_1_2.json` (based on the parameters `inputFile` and `curlFileSuffix`).

##### 5.2.3.4.3 Command

In this scenario this will lead to the two following commands:

```
curl -f --URL https://jsonplaceholder.typicode.com/photos?albumId=1
      --output photos_1_1.json
curl -f --URL https://jsonplaceholder.typicode.com/photos?albumId=2
      --output photos_1_2.json
```

#### 5.2.3.4.4 Json Result (reduced)


```
[
  {
    "albumId": 1,
    "id": 1,
    "title": "accusamus beatae ad facilis cum similique qui sunt",
    "URL": "https://via.placeholder.com/600/92c952",
    "thumbnailUrl": "https://via.placeholder.com/150/92c952"
  },
  {
    "albumId": 1,
    "id": 2,
    "title": "reprehenderit est deserunt velit ipsam",
    "URL": "https://via.placeholder.com/600/771796",
    "thumbnailUrl": "https://via.placeholder.com/150/771796"
]
```



```
[
  {
    "albumId": 2,
    "id": 51,
    "title": "non sunt voluptatem placeat consequuntur rem incidunt",
    "URL": "https://via.placeholder.com/600/8e973b",
    "thumbnailUrl": "https://via.placeholder.com/150/8e973b"
  },
  {
    "albumId": 2,
    "id": 52,
    "title": "eveniet pariatur quia nobis reiciendis laboriosam ea",
    "URL": "https://via.placeholder.com/600/121fa4",
    "thumbnailUrl": "https://via.placeholder.com/150/121fa4"
  }
]
```


#### 5.2.3.4.5 Output curl parameter

For this file no curl output parameter are defined.

### *5.2.3.5 Further files*

- The `posts.json` will be fetched based on the `${userid}` and deliver a list of `${postid}`
- The `comments.json` will be fetched based on the `${postid}`
- The `todos.json` will be fetched based on the `${userid}`.

### 5.2.4 API Security / OAuth

#### *5.2.4.1 Curl authentication parameter*

When using API's it is quite often necessary to define user credentials for the API calls.

In principle these credentials can be configured as part of the input list file or as normal curl parameter. From a security point this is not a good solution.

- The input list file is designed to be handled via source code repository, so that multiple users can work with these definitions.
  And in a source code repository it is the best practice to not have any user credentials in the files.
- The generated curl commands are logged in execution log files and in the summary file list. This log files should also not contain any user credentials.

To solve this problem json2puml support a second type of curl parameter, the curl authentication parameter.

The important difference is that the content of curl authentication parameters are not written into the log files or into the summary file list.

To simplify the definition of curl authentication parameters the curl authentication file can be used to configure the parameters per base URL.

Based on the current base URL of the current file the curl authentication file is searched and only these parameters which are defined for the matching URL will be used for replacing (See also 5.2.5.4 Curl authentication file and 6.8 Curl authentication file)

).

#### *5.2.4.2 OAuth Example*

One common scenario for API security is the OAuth standard.

In this case the first step is to get a security token from an OAuth API call and this token is used in all further API calls of the same system.

Such a scenario can easily be configured in the json2puml curl pre-processor.

The following samples of the input list file and the curl authentication file showing how this could be configured.

Curl authentication file:

```
[
  {"baseUrl": "https://mytmfserer.com",
   "parameter":  [
    {"${authentication}": "${Json2PumlTMFAuthentication}"}]
  },
  {"baseUrl": "https://www.myotherserver.com",
   "parameter":  [
    {"${userid}": "json2puml"},{"${password}": "json2puml"}]
  }
]
```

Input list file:

```
{
 "definitionFile": "tmfdefinition.json",
 "curlBaseUrl": "https://mytmfserer.com",
 "summaryFileName": "summary_customer_${customer_number}",
 "input": [
    {
     "inputFile": "oauthToken.json",
     "leadingObject": "token",
     "curlFormatOutput": "true",
     "curlUrl": "oauth2/v1/accesstoken?grant_type=client_credentials",
     "curlOptions": "--header \"Authorization: Basic
      ${authentication}\" --request POST",
     "curlCache": "3500",
     "generateOutput": "false",
     "curlOutputParameter": [
      {"${access_token}": "access_token"}
     ]
    },
    {
     "inputFile": "customer.json",
     "leadingObject": "customer",
     "curlFormatOutput": "true",
     "curlUrl": "customerManagement/v1/customer/${customer_number}",
     "curlOptions": "--header \"Authorization: Bearer ${access_token}\"
      --request GET",
     "curlCache": "0",
     "generateOutput": "true"
    },
    {
     "inputFile": "billingaccount.json",
     "leadingObject": "account",
     "curlFormatOutput": "true",
     "curlUrl":
      "accountManagement/v1/billingAccount/?filters=relatedParty.id==$
      {customer_number}",
     "curlOptions": "--header \"Authorization: Bearer ${access_token}\"
      --request GET",
     "curlCache": "0",
     "generateOutput": "true"
    }
 ]
}
```

Step 1:

With the first configured file the OAuth token for this run will be fetched.

```
    {
     "inputFile": "oauthToken.json",
     "leadingObject": "token",
     "curlFormatOutput": "true",
     "curlUrl": "oauth2/v1/accesstoken?grant_type=client_credentials",
     "curlOptions": "--header \"Authorization: Basic
      ${authentication}\" --request POST",
     "curlCache": "3500",
     "generateOutput": "false",
     "curlOutputParameter": [
      {
       "${access_token}": "access_token"
      }
     ]
    },
```

The generated curl command will look like:

```
curl --header \"Authorization: Basic ${authentication}\" --request
      POST -url
      https://mytmfserer.com/oauth2/v1/accesstoken?grant_type=client_c
      redentials -o oauthToken.json
```

The parameter ${authentication} will be fetched from the curl authentication file from the record with the base url matching the current base URL. The found value is `${Json2PumlTMFAuthentication}`. This value is then checked against the operating system environment variables, and here a value like "`myHiddenSecretPassword`" may be configured.

This will lead to the following curl command

```
curl --header \"Authorization: Basic myHiddenSecretPassword\" --
      request POST -url
      https://mytmfserer.com/oauth2/v1/accesstoken?grant_type=client_c
      redentials -o oauthToken.json
```

As the returned token is valid for one hour the "`curlCache":3590` configuration is used to reduce the handling time a little bit, when the input list file is executed multiple times.

The fetched result file `oauthToken.json` may look like:

```
{
  "refresh_token_expires_in" : "0",
  "token_type" : "Bearer",
  "issued_at" : "1667420998563",
  "client_id" : "HLwYzbGBiiP1Iyib1vLJ4GusgkkvyW30",
  "access_token" : "aemPdLssnGoLxhEmRlsxtJNUkSCB",
  "application_name" : "123cgfaf-579f-4bed-a92e-f0cc59af1234",
  "expires_in" : "3599",
  "refresh_count" : "0",
  "status" : "approved"
}
```

Now the configuration of the `curlOutputParameter`

```
    "curlOutputParameter": [
     {
      "${access_token}": "access_token"
     }
```

is needed to get the returned bearer token out of the file.

`${access_token} = aemPdLssnGoLxhEmRlsxtJNUkSCB`

This bearer token is then used in the following API calls which are fetching the wanted data.

The configuration `"generateOutput": "false"` prevents additionally that the content of the `oauthToken.json` file is integrated into the summary result file.

Step 2:

```
   {
    "inputFile": "customer.json",
    "leadingObject": "customer",
    "curlFormatOutput": "true",
    "curlUrl": "customerManagement/v1/customer/${customer_number}",
    "curlOptions": "--header \"Authorization: Bearer ${access_token}\"
     --request GET",
    "curlCache": "0",
    "generateOutput": "true"
   },
```

The curl command will look like:

```
curl --header \"Authorization: Bearer ${access_token}\" --request GET
     -url
     https://mytmfserer.com/customerManagement/v1/customer/${customer
     _number} -o customer.json
```

Based on hte command line curl parameter `${customer_number}=123456` and the fetched parameter `${access_token} = aemPdLssnGoLxhEmRlsxtJNUkSCB` the executed command line will look like:

```
curl --header \"Authorization: Bearer aemPdLssnGoLxhEmRlsxtJNUkSCB\" -
      -request GET -url
      https://mytmfserer.com/customerManagement/v1/customer/123456  -o
      customer.json
```

Step 3:

This can be repeated for the next file (and any further files)

```
    {
     "inputFile": "billingaccount.json",
     "leadingObject": "account",
     "curlFormatOutput": "true",
     "curlUrl":
      "accountManagement/v1/billingAccount/?filters=relatedParty.id==$
      {customer_number}",
     "curlOptions": "--header \"Authorization: Bearer ${access_token}\"
      --request GET",
     "curlCache": "0",
     "generateOutput": "true"
    }
```

This will lead to the following final curl command:

```
curl --header \"Authorization: Bearer aemPdLssnGoLxhEmRlsxtJNUkSCB\" -
      -request GET -url
      https://mytmfserer.com/accountManagement/v1/billingAccount/?filt
      ers=relatedParty.id==123456  -o billingaccount.json
```

### 5.2.5 How to define curl parameter

Curl parameters can be defined based on the following ways:

- Curl command line parameter
- Curl parameter file
- Curl output parameter
- Curl authentication file

#### *5.2.5.1 Curl parameter via command line*

##### 5.2.5.1.1 Normal curl parameter

The allows to define curl parameters at the command line. A command line parameter will overwrite the value of a similar parameter from the curl parameter file.

The curl command line parameters can be defined via the `/curlparameter` command line parameter.

It is possible to define multiple command line curl parameter by repeating the `/curlparameter` call.

A command line curl parameter must be defined using the `<name>=<value>` pattern.

5.2.5.1.2 Curl authentication parameter

The curl authentication parameter can be defined in a similar way using the command line parameter `/curlauthenticationparameter`.

#### *5.2.5.2 Curl parameter file*

The curl parameter file can contain one single json record. Every element of this record will be interpreted as a name value pair for the curl parameter list.

The curl parameter file can be defined via the `curlparameterfile` command line parameter.

See 6.7 Curl parameter file

#### *5.2.5.3 Curl output parameter*

The curl output parameter definition allows to use a dedicated attribute of a curl result file as a new curl parameter for further curl calls.

As an example: As command line parameter the product name is defined as curl parameter. This product name is used as a filter for the first curl call. From the returned file the primary key of the product is fetched as a new curl parameter “`productid`”. This `productId` is then used in the next call to fetch further details of the product from a different API.

A curl output parameter will overwrite the curl parameters with the same name coming from the curl parameter file or the curl command line parameter.

See 6.5.5.12 curlOutputParameter

#### *5.2.5.4 Curl authentication file*

The curl authentication file allows to separate the user specific authentication parameter (like personalized tokens, clientId and clientSecret) from the list definition.

This allows to have for a team a common list definition to fetch the details of the api independent of the developer specific authentication parameters.

The corresponding authentication parameter will be fetched based on `baseUrl` of the current curl call and handled like the other curl parameter before executing the curl call.

The curl parameter file can be defined via the `curlauthenticationfile` command line parameter and the `Json2PumlCurlAuthenticationFile` environment variable.

Authentication parameters will not be written to any logfile and not to the standard out.

### 5.2.6 See 6.7.1 Data model

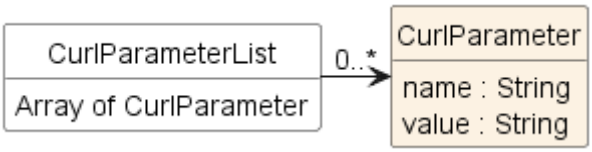



*Figure 34 Curl parameter file data model*

The curl parameter list is a list of name value pairs which are defining the values to be used by the curl pre-processor (See 5.2.1 Curl parametrisation)

### 5.2.7 Curl Parameter

The curl parameter will be used by the curl pre-processor to fetching data based on the defined curl parameters (See 5.2 Curl pre-processor).

The curl parameter can be defined in three different formats:

1. String
   `"<parameter name>=<parameter value>"`
2. Simple json record
   `{"<parameter name>": "<parameter value>"}`
3. Full json record
   ```
   {"name": "<parameter name>",
    "value": "<parameter value>"}
   ```

#### *5.2.7.1 name*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| name | 1 | String | |
| Description | | | |
| This parameter defines the name of the of the curl parameter.<br>Curl parameter names are defined using the following pattern: `${<name>}`.<br>In the configuration they can defined only using the name or using the full pattern. | | | |

#### *5.2.7.2 value*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Value | 0..1 | String | |
| Description | | | |
| This parameter defines the value of the curl parameter which is replacing the parameter name in the curl commands. | | | |

Curl authentication file

#### *5.2.7.3 Environment variables*

For further flexibility it is also possible to fill the curl parameter values via environment variables of the operating system.

It allows to work with source code repository-based configuration files and runtime environment tools like docker and Kubernetes to use one configuration files in multiple environments.

This is supported in the following area:

- `curlbaseurl`
- `curlparameter.value`

## 5.3 Converter

### 5.3.1 Basic Flow

The generator is working recursively on JSON structures. Based on the content of the JSON structure a list of objects and a list of relations between these objects will be identified.

The objects are created as PlantUML “class” and the relations as PlantUML links between two classes.

If multiple files are handled the objects and relations of these files are merged into one big result set.

To uniquely identify an object and to build the relations between these objects an object type and an object identifier will be defined based on the property names and values of the JSON structure.

The converter follows the following high-level structure.

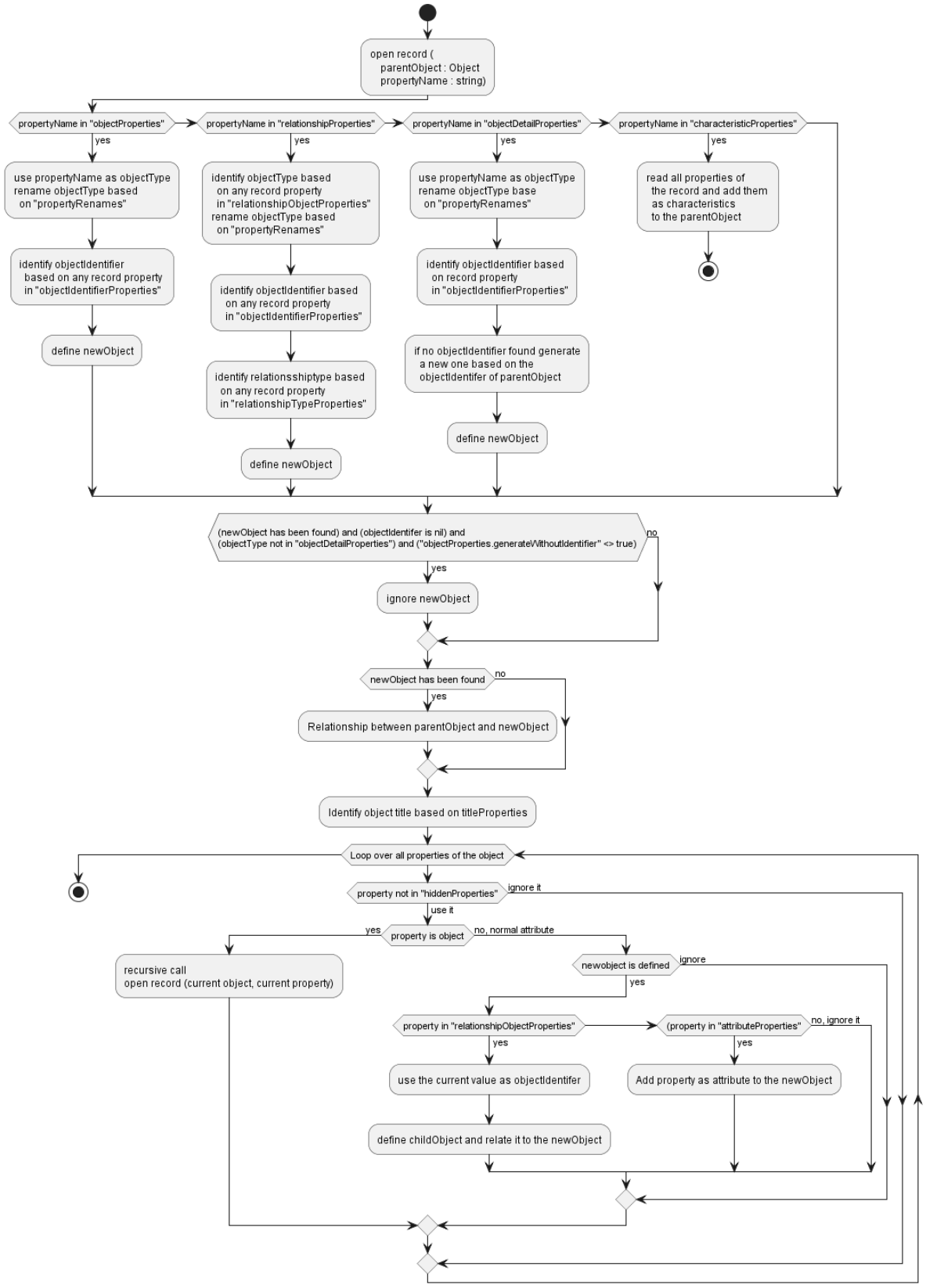



*Figure 25: Basic flow how the converter is working*

### 5.3.2 Object Identification

An object in the generated result will be identified by the following patterns:

- An object can have a type and an identifier.
- Based on the configuration parameter "`identifyObjectByTypeAndIdent`" only the ident or ident and type are used to identify an object. (See 6.6.9.4 identifyObjectsByTypeAndIdent)
- The type of an object will be identified by the following rules:
    - First the name of the record property or if it is the leading record, the name of the command line parameter "`leadingObject`".
    - If the JSON record contains a property matching one of the "`objectTypeProperties`" (See also 6.6.9.11 objectTypeProperties) the corresponding value is used.
    - The type of the object can be mapped to consolidated values using the "`objectTypeRenames`" parameter (See 6.6.9.12 objectTypeRenames). This allows to harmonize the object names.
    - If the objects are unique based on the identifier only it can happen that the object is found at different places in the JSON structure.
      In this case it is possible that object type is different for the different places.
      E.g., in TMF there is the pattern of the "`relatedParty`", which is a reference to a party object. If this is pointing to an `individual` object then this JSON object could have the object type "`individual`", but both are sharing the same "`identifier`".
      In this case the order of the elements in the configuration parameter "`objectProperties`" is used to define if the object type can be overwritten or not.
      E.g., the objectProperties list contains the value (in this order) "`individual, party, relatedParty, engagedParty`". When an object is found at two places with the types "`relatedParty`" and "`individual`" the object will have the type "`individual`".
- When for an object no identifier can be found and the `objectTypeProperties.generateWithoutIdentifier` is not set to true this object will be ignored and not created (See 6.6.10.2 generateWithoutIdentifier).

### 5.3.3 Object Relationships

The systems build relationship between objects based on the hierarchy of the JSON structure.

Whenever a detailed record in a JSON object is found and the detail is identified as an object the relationship between the new object and the parent object will be established.

The relationship will be built on the unique identifier of the two objects (5.3.2 Object Identification). If an object with the identification is defined/used at many places in the JSON structures multiple relations will be shown to this object.

For every relationship a relationship type can be defined. This type and the name of the property which has defined the relationship will be shown as text near the relationship arrow and in the from / to relationship lists.

Based on the name of the property and the relationship type it is possible to defined based on the parameter “`relationshipTypeArrowFormats`” (See 6.6.9.18 relationshipTypeArrowFormats) how the arrows should be painted.

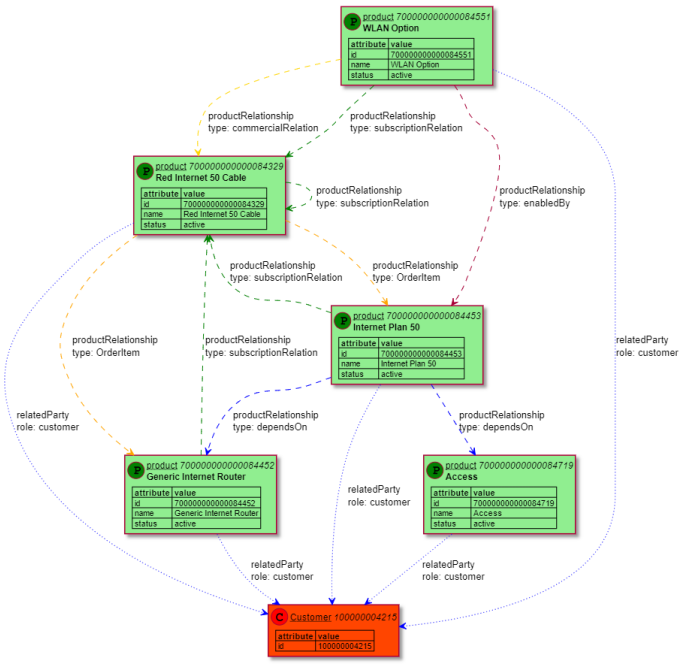



*Figure 26 Object relationship example*

### 5.3.4 Detail Objects / Characteristic properties

Based on the parameter "`generateWithoutIdentifier`" objects are normally only created when the identifier has been found for this object.

But often in JSON an object has detail records with additional information’s which are describing this object but are not own objects with own identifiers.

To show these information’s also in the diagrams there are two different ways to handle this.

#### *5.3.4.1 Detail Objects*

Detail objects will be created as separated object, but without identifier.

Detail objects will be shown in the from / to relationships, and detail objects can have own detail objects and they can have characteristics.

Detail objects will be identified based on the parameter “`objectDetailProperties`” (See 6.6.9.15 objectDetailProperties)

Detailobjects will be visualized with a diamond at the relationship:

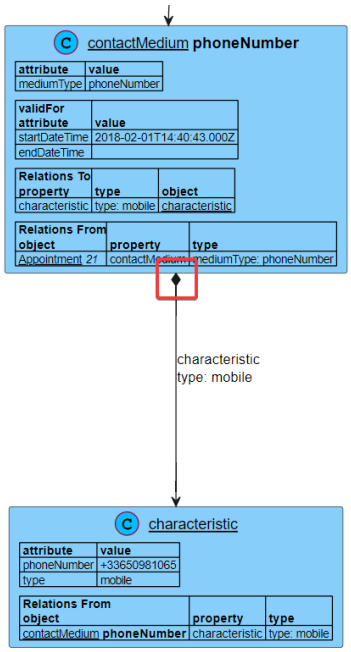



*Figure 27 Visualisation of a detailed object*

#### *5.3.4.2 Characteristics properties*

Characteristic properties will be included into the parent object similar to the attributes list.

There are two different type of characteristic properties:

- List
  This is valid if the property is an array.
  For the list mode it is possible to define the three different properties of the list to be included into the characteristic list, a "`name`" property, a "`value`" property and an additional "`info`" property.
- Record
  The property name will be used as "name" and the property value as "value" for the characteristic table.

For each characteristic property a new table in the generated object will be created.

A characteristic property cannot have further details and the converter will not create any relationships for objects which are "under/behind" a characteristic property).

Characteristic properties will be identified based on the parameter "`characteristicProperties`". (See 6.6.9.20 characteristicProperties)

**Example:**

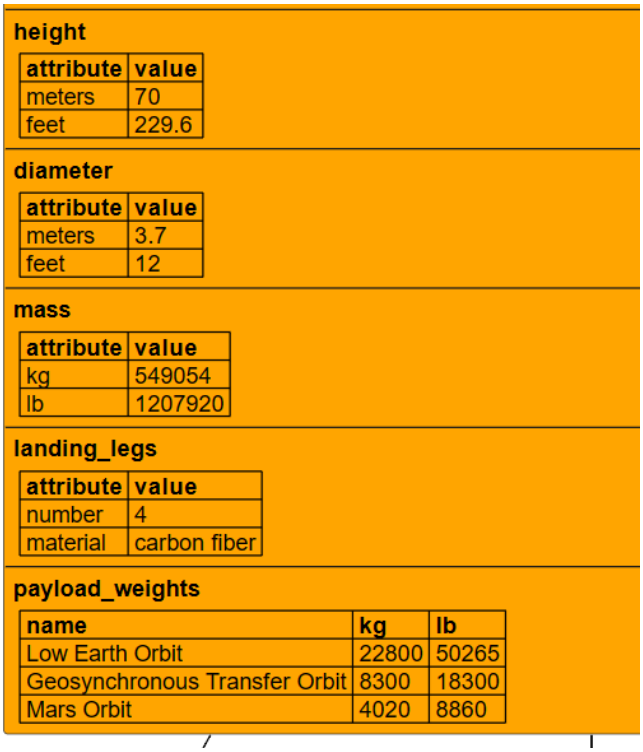
Json Data

```
{
 "height" : {
  "meters" : 70,
  "feet" : 229.6
 },
 "diameter" : {
  "meters" : 3.7,
  "feet" : 12
 },
 "mass" : {
  "kg" : 549054,
  "lb" : 1207920
 },
 "landing_legs" : {
  "number" : 4,
  "material" : "carbon fiber"
 },
 "payload_weights" : [
  {
   "id" : "leo",
   "name" : "Low Earth Orbit",
   "kg" : 22800,
   "lb" : 50265
  },
  {
   "id" : "gto",
   "name" : "Geosynchronous Transfer Orbit",
   "kg" : 8300,
   "lb" : 18300
  },
  {
   "id" : "mars",
   "name" : "Mars Orbit",
   "kg" : 4020,
   "lb" : 8860
  }
 ],
  "name" : "Falcon 9",
 "type" : "rocket",
 "active" : true,
 "stages" : 2,
 "boosters" : 0
}
```

Characteristic Configuration:

```
"characteristicProperties":  [
     "height",
     "mass",
     "diameter",
     "thrust",
     {"parentProperty": "payload_weights", "type": "list",
      "nameProperty": "name", "valueProperty": "kg", "infoProperty":
      "lb"}
  ],
```

Generated Image:




### 5.3.5 Filtering

The generator has the possibility to filter out / to allow only objects based on the command line parameter /`identfilter` and /`titlefilter`. (See 4.1.2 Command Line Parameters)

When these parameters are defined only objects will be shown where the ident or title matches one of the filter criteria, or which are directly linked to these matching objects.

When both parameters are defined an object is shown when one of the filters is matching.

### 5.3.6 leadingObject

The converter is based on names of properties in a JSON file. These names are mapped to objects and other attributes based on the configuration. Only for known properties/objects a class structure in the PlantUML output will be generated.

Most of the JSON data structures are without a leading property name, because this information can be determined from the API call executed.

As the converter did not have this context the name must be defined as command line parameter or as part of the single file definition.

Example

The JSON file has been generated based on a TMF632 `GET /individual` API call, then the object name should be defined as `/leadingobject=individual`.

For a TMF 629 based API call `GET /customer` it should be `/leadingobject=customer`.

### 5.3.7 Generated Outcome

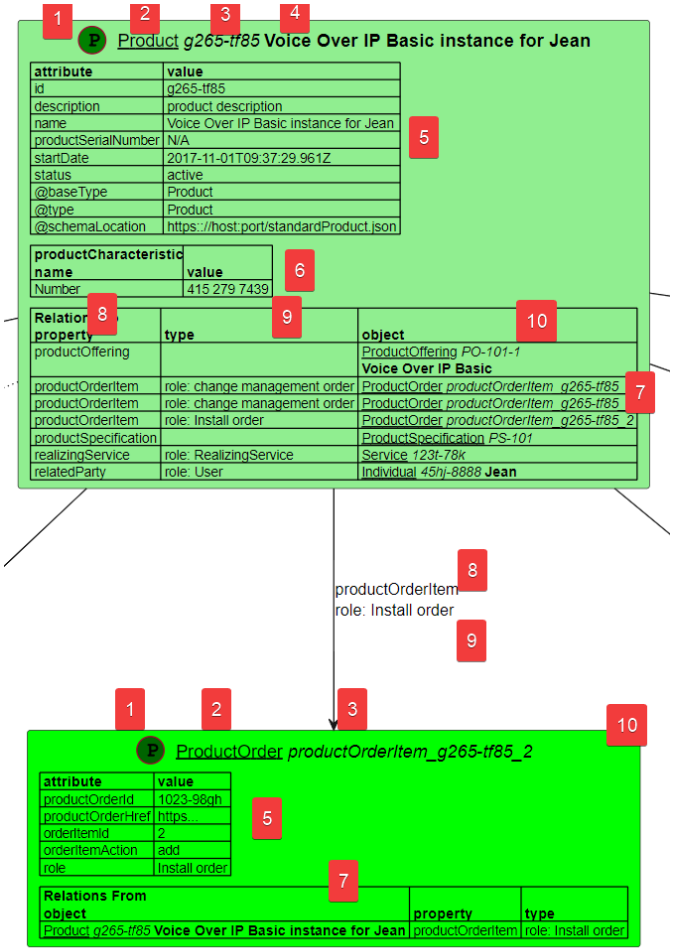



*Figure 28 Generated Output Example*

1. Object Icon
   Color is based on 6.6.14.2 iconColor
2. Object Type
   Based on 6.6.9.11 objectTypeProperties, 6.6.9.10 objectProperties
3. Object Ident
   Based on 6.6.9.13 objectIdentifierProperties
4. Object Title
   Based on 6.6.9.14 objectTitleProperties
5. List of Object Attributes
   Based on 6.6.9.9 attributeProperties
6. Characteristics
   Based on 6.6.9.20 characteristicProperties

7. From / To Relationship Lists
8. Relationship Property
9. Relationship Type
   Based on 6.6.9.17 relationshipTypeProperties
10. Object information of the related object

## 5.4 Operational Modes

### 5.4.1 Single File

In this mode only files based on one filter will be converted.

When the single file mode is used normally the `leadingobject` parameter needs to be defined additionally.

See 5.3.6 leadingObject

### 5.4.2 List File

The list file mode allows to generate the PlantUML and image outputs for a list of JSON files.

The list file allows to fetch the source files before converting by calling the curl command (See 5.2 Curl pre-processor ).

It allows also to generate a combined output file which combines the data of all found input files.

### 5.4.3 Detail / Summary generation

The modes are defining if for every input file or only for the summary files the generator is executed.

Both modes can be independently activated or deactivated.

#### *5.4.3.1 Generate Summary*

This mode merges all found source file in to one summary JSON file and converts this summary file.

See 6.2.2.9 Generate Summary

#### *5.4.3.2 Generate Details*

This mode means that for every found input file (base on the single file or list file parameter) the converter will be started and the defined images will be created.

See 6.2.2.10 Generate Details

## 5.5 Generated Files

All files generated by the system will be stored based on the following pattern:

```
<baseOutputPath>\<outputPath>\
     <filename><curlFileSuffix><outputSuffix>.<Extension>
```

The `<curlFileSuffix>` is only used when a curl result file will be generated.

### 5.5.1 Variable replacement

The output path and output suffix configuration can be configured using a set of dynamic variables which allows to structure the generated directories and filenames based on additional parameters or file details.

Each found replace string will be replaced by the corresponding variable contents.

Possible Parameters:

- `<file>`
  will be replaced with the value of the `file` variable
  When the `curlFileSuffix` parameter is used, then this will be not included into the replaced value, only filename coming from the `inputFile` parameter will be used.
  (See 6.2.2.1 File)
- `<job>`
  will be replaced with the value of the `job` variable
  (See 6.2.2.2 Job)
- `<group>`
  will be replaced with the value of the `group` variable
  (See 6.2.2.3 Group)
- `<detail>`
  will be replaced with the value of the `detail` variable
  (See 6.2.2.4 Detail)
- `<option>`
  will be replaced with the value of the `option` variable
  (See 6.2.1.2 Option)

Additionally, it is possible to use the curl parameters which are known at this point in time.

The string replacements are supported for the following configuration parts:

- outputPath (5.5.3 Output path)
- outputSuffix (5.5.4 Output suffix)
- summaryFileName (5.5.5 Summary file

Example:

<table>
<tr><td>Configuration</td><td>

```
"group" : "${launch}"
"outputPath" : "<job>\<group>\<file>"
"outputSuffix" : ".<option>"
"curlFileSuffix" : ".${rocketid}"
```

</td></tr>
<tr><td>Input</td><td>

| Parameter | Value |
|---|---|
| **baseOutputPath** | C:\data\output\ |
| **inputFile** | rocket.json |
| **${rocketid}** | 4711 |
| **inputListFile** | spacex_inputlist_launches.json |
| **${launch}** | latest |
| **option** | Full |

</td></tr>
<tr><td>Variables</td><td>

| Parameter | Value |
|---|---|
| **group** | latest |
| **outputpath** | spacex_inputlist_launches\latest |
| **outputSuffix** | .full |
| **curlFileSuffix** | .4711 |

</td></tr>
<tr><td>Generated File</td><td>C:\data\output\spacex_inputlist_launches\latest\<br>rocket.4711.full.png</td></tr>
</table>

### 5.5.2 Base Output path

The base output path is defined as variable `baseOutputPath` (See 6.2.2.6 Base output path).

Based on the variable definition the value can be based on command line parameters or global configurations. If none of these is defined the base output path will be calculated based on the path of the parameter or input files.

All files generated in one run will be generated in this base output path.

### 5.5.3 Output path

The base output path is defined as variable `outputPath` (See 6.2.2.7 Output path).

Using the parameter "`outputPath`" it is possible to structure the generated files based on a various set of variables.

The output path can be defined absolute or relative.

- An absolute path will be used without any changes
- A relative path will be added to the `baseOutputPath` variable.

Examples

| baseOutputPath | outPutPath | Result |
|---|---|---|
| **C:\data\json** | output | C:\data\json\output |
| **C:\data\json** | D:\myoutput | D:\myoutput |

The generator tries to create the output path if it does not exist. If this fails an error will be raised.

### 5.5.4 Output suffix

The output suffix will be added to the end of the original filename.

The generated output suffix is based on the variable output suffix (See 6.2.2.5 Output suffix)

The output suffix allows the similar replacement like the output path using `<job>`, `<group>`, `<option>` and `<detail>`.

This could be used to separate the generated files from the original source files and to separate them if multiple options or filters have been used to generate them.

### 5.5.5 Summary file

A summary file will be generated when more than one json files will be handled and the `generateSummary` variable (See 6.2.2.9 Generate Summary) is active.

This summary file name will be calculated based on `summaryfilename` variable (See 6.2.2.8 Summary filename).

The summary file will be generated in the defined output path directory.

### 5.5.6 Zip File

The zip file will be generated when the `outputFormat` contains the format `zip` or when the `post /json2pumlRequestZip` microservice is used.

The zip file contains all files which were generated with the current `json2puml` execution.

### 5.5.7 PlantUML source File

The PlantUML file will be generated in the defined output path directory.

The filename will be the same then the input file which is converted. The file extension of the filename will be replaced with “`puml`”.

### 5.5.8 PlantUML output files

The PlantUML output file will be generated in the defined output path directory.

The filename will be the same then the input file which is converted. The file extension of the filename will be replaced with the format specific extensions “`png`”, “`svg`” and “`pdf`”.

# 6 Configuration

All configuration files are JSON based.

If a configuration file has not a valid JSON structure an error will be shown and the program will stop.

## 6.1 File overview

The application can be configured based on a set of json based configuration files.

### 6.1.1 Global configuration file

This file contains the system wide configuration of

- global filenames
- global folders
- Definitions of the service application (e.g., Port number)

See 6.3 Global configuration file

### 6.1.2 Parameter file

This file allows to define a set of command line parameters into one file to have a simplified option to call the converter. The same file can be used as an input to the microservice based converter.

See 6.4 Parameter file

### 6.1.3 Input list file

This file allows to define a list of files to converted.

See 6.1.3 Input list file

### 6.1.4 Converter definition file

This file contains the different configurations how the JSON structures should be interpreted and converted.

See 6.6 Converter definition file

### 6.1.5 Converter definition option file

This file contains a single format option which allows to use a separate configuration option without modifying the main converter definition file.

### 6.1.6 Curl parameter file

This file can be used to have the curl parameters for a conversion defined in a file independent of the parameter file. This allows to call the same curl pre-processor without modifying the parameter file and having for every call separate curl parameter files.

See 6.7 Curl parameter file

### 6.1.7 Curl authentication file

This file contains authentication secrets to be used by the curl pre-processor.

See 6.8 Curl authentication file

## 6.2 Variables

The system is based on some variables which could be configured / defined at various places.

The parameters will be searched at various places in ascending order. When a parameter is found at a defined place it will be used otherwise the next place will be searched.

### 6.2.1 Generator

#### *6.2.1.1 Description*

The `description` variable can be used to generate an additional description into the legend of the generated image.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /description |
| **2** | Parameter file | {description} |

#### *6.2.1.2 Option*

The `option` variable defines which format definition of the converter definition will be used to convert the json data. The variable can be used in the `output path` and `output suffix` variables as a replace variable `<option>`.

| Rank | Place | Detail |
|---|---|---|
| **1** | Format option file | {option name} |
| **2** | Format option file | Constant “single” |
| **3** | Command line | /option |
| **4** | Parameter file | {option} |
| **5** | Input list file | {option} |
| **6** | Converter definition file | {defaultOption} |

### 6.2.2 Generated folder and file names

#### *6.2.2.1 File*

The variable can be used in the `output path` and `output suffix` variables as a replace variable `<file>` of the current handled input file. The filename will be returned without folder names and the file extention.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /inputfile |
| **2** | Parameter file | Inputfiles.inputfile |
| **3** | Input list file | Input.inputFile |

#### *6.2.2.2 Job*

The variable can be used in the `output path` and `output suffix` variables as a replace variable `<job>`.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /job |
| **2** | Parameter file | {job} |
| **3** | Input list file | {job} |
| **4** | Input list file | <Name of input list file> |

#### *6.2.2.3 Group*

The variable can be used in the `output path` and `output suffix` variables as a replace variable `<group>`.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /group |
| **2** | Parameter file | {group} |
| **3** | Inputlist file | {group} |

#### *6.2.2.4 Detail*

The variable can be used in the `output path` and `output suffix` variables as a replace variable `<detail>`.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /detail |
| **2** | Parameter file | {detail} |
| **3** | Input list file | {detail} |

#### *6.2.2.5 Output suffix*

The variable is added at the end of every generated file. In combination with the variables `<job>`, `<group>`, `<detail>` and `<option>` one definition set could be used to generate better readable output file names.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /detail |
| **2** | Parameter file | {outputSuffix} |
| **3** | Input list file | {outputSuffix} |

#### *6.2.2.6 Base output path*

The variable defines where the base directory for generating all files.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /baseoutputpath |
| **2** | Global configuration file | {baseOutputPath} |
| **3** | Input list file | Path part of the filename of the input list file. |
| **4** | Parameter file | Path part of the filename of the parameter file |
| **5** | | Current directory where the executable has been started. |

In a service application the ThreadId of the current OS thread will be added to the base output path to prevent file collisions when the application is handling multiple requests at the same time.

#### *6.2.2.7 Output path*

The variable allows to define an additional path which will be added to the `base output path`. In combination with the variables `<file>`, `<job>`, `<group>`, `<detail>` and `<option>` this can be used to structure the generated files when multiple executions are executed.

#### *6.2.2.8 Summary filename*

The variable defines the name of the generated summary file.

| Rank | Place | Detail |
|---|---|---|
| **1** | Parameter file | {summaryFile} |
| **2** | Input list file | {summaryFile} |
| **3** | Default | “summary” |

#### *6.2.2.9 Generate Summary*

The variable defines if a summary of all input files should be generated into one combined file.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /generatesummary |
| **2** | Parameter file | {generateSummary} |
| **3** | Input list file | {generateSummary} |

| Rank | Place | Detail |
|---|---|---|
| **4** | Default | When generateSummary and generateDetails are not defined then generateSummary is true when the number of input files is greater than one. |

#### *6.2.2.10 Generate Details*

The variable defines if for every input file a separate result file should be generated.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /generatedetails |
| **2** | Parameter file | {generateDetails} |
| **3** | Input list file | {generateDetails} |
| **4** | Default | When generateSummary and generateDetails are not defined then generateDetails is true when the number of input files is one. |

#### *6.2.2.11 Output formats*

The variable defines which files should be generated and converted.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /outputformats |
| **2** | Parameter file | {outputFormats} |
| **3** | Input list file | {outputFormats} |

The outputFormats can be defined as a comma separated list or as an array of strings.

The following format names are supported:

| Format | Description | PlantUML parameter |
|---|---|---|
| **png** | Generates a png graphic file | -png |
| **svg** | Generates a svg graphic file | -svg |
| **pdf** | Generates a pdf file containing the graphic | -pdf |
| **puml** | Adds the generated PlantUml script file to the zip file. | |
| **json** | Adds the json source file (when generated / fetched via curl) to the zip file. | |
| **log** | Adds the converter log file to the zip file. | |
| **zip** | Generates a zip file as a summary containing all generated files | |
| **filelist** | Generates a json file containing the list of generated files. When the source file is curl based the curl command will also be added to the list file. | |

| | | |
|---|---|---|
| | The list file will be added to the zip file. | |

### 6.2.3 Configuration files

#### *6.2.3.1 Configuration filename*

The variable defines the name of the global configuration file (See 6.1.1 Global configuration file ).

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /configurationfile |
| **2** | Environment | %Json2PumlConfigurationFile% |

#### *6.2.3.2 Curl Authentication filename*

The variable defines the name of the curl authentication file (See 6.1.7 Curl authentication file).

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /curlauthenticationfile |
| **2** | Global configuration file | {curlAuthenticationFile} |
| **3** | Environment | %Json2PumlCurlAuthenticationFile% |

#### *6.2.3.3 Input list filename*

The variable defines the name of the input list file (See 6.1.3 Input list file).

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /inputlistfile |
| **2** | Parameter file | {inputlistfile} |

#### *6.2.3.4 Converter definition filename*

The variable defines the name of the converter definition file (See 6.1.4 Converter definition file).

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /definitionfile |
| **2** | Parameter file | {definitionfile} |
| **3** | Input list file | {definitionfile} |
| **4** | Global configuration file | {defaultDefinitionFileName} |

### 6.2.4 System Environment

#### *6.2.4.1 PlantUML jar filename*

The variable defines where the PlantUML jar file is installed in the current system environment. This path is used when calling java from the PlantUML post processor.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /plantumljarfile |
| **2** | Global configuration file | {plantumlJarFile} |
| **3** | Environment | %PlantUmlJarFile% |

#### *6.2.4.2 Java runtime parameter*

The variable is added as additional parameter to the java command line from the PlantUML post processor.

| Rank | Place | Detail |
|---|---|---|
| **1** | Command line | /javaruntimeparameter |
| **2** | Global configuration file | {javaRuntimeParameter} |

## 6.3 Global configuration file

### 6.3.1 Data model

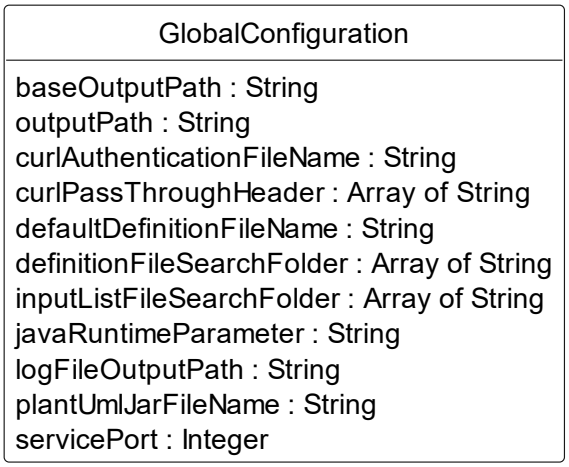



*Figure 29 Data model global configuration file*

### 6.3.2 Global Configuration

#### *6.3.2.1 baseOutputPath*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| baseOutputPath | 0..1 | String | |
| Description | | | |
| This defines the base directory in the operating system where the output files should be generated.<br>When this parameter is not defined, the base output path will be calculated based on the current parameter or input list file.<br>(See 6.2.2.6 Base output path and 5.5.2 Base Output path) | | | |

#### *6.3.2.2 outputPath*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| outputPath | 0..1 | String | |
| Description | | | |
| This defines the default outputPath variable.<br><br>(See 5.5.3 Output path and 6.2.2.7 Output path) | | | |

#### *6.3.2.3 curlAuthenticationFile*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlAuthenticationFile | 0..1 | String | |
| Description | | | |
| This defines the path to the curlAuthenticationFile variable.<br><br>(See 6.2.3.2 Curl Authentication filename and 6.8 Curl authentication file) | | | |

#### *6.3.2.4 curlPassThroughHeader*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlPassThroughHeader | 0..* | String | |
| Description | | | |
| This parameter is only valid for the service applications.<br>It defines a list of http-headers which are read from the incoming service call and handed over to the outgoing service calls. | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| This could be used for example to transport trace-id's following the open telemetry standard.<br><br>Example:<br>`"curlPassThroughHeader": ["traceid", "x-b3-traceid"],` | | | |

#### *6.3.2.5 defaultDefinitionFileName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| defaultDefinitionFileName | 0..1 | String | |
| Description | | | |
| The parameter defines a default value for the converter definition file variable.<br><br>(See 6.1.4 Converter definition file and 6.2.3.4 Converter definition filename) | | | |

#### *6.3.2.6 definitionFileSearchFolder*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| definitionFileSearchFolder | 0..* | String | |
| Description | | | |
| This parameter is used in two different scenarios:<br>1. converter definition filename variable:<br>This parameter defines a list of folders for searching the defined definition file. The parameter is used when the input file is not found base on the defined filename variable. Then all folders defined in this parameter are checked if the file can be found.<br>This allows to define a definition file only by it's name without knowing in which exact folder it is placed.<br>2. Support the `get /definitionfilelist` operation of the service application<br>The resultset of this operation is based on all files found in the configured folders and filter conditions.<br><br>Example: | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|

```
  "definitionFileSearchFolder": [
   "e:\\json2puml\\definition\\",
   "e:\\json2puml\\samples\\tmf\\*definition*.json",
   "e:\\json2puml\\samples\\jsonplaceholder\\*definition*.json",
   "e:\\json2puml\\samples\\swapi\\*definition*.json",
   "e:\\json2puml\\samples\\tvmaze\\*definition*.json"
]
```

(See 6.1.4 Converter definition file and 6.2.3.4 Converter definition filename)

#### *6.3.2.7 inputListFileSearchFolder*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| inputListFileSearchFolder | 0..* | String | |
| Description | | | |

This parameter is used in two different scenarios:

1. input list filename variable:
   This parameter defines a list of folders for searching the defined definition file. The parameter is used when the input file is not found base on the defined filename variable. Then all folders defined in this parameter are checked if the file can be found.
   This allows to define a definition file only by it's name without knowing in which exact folder it is placed.
2. Support the `get /inputlistfilelist` operation of the service application
   The resultset of this operation is based on all files found in the configured folders and filter conditions.

Example:

```
  "inputListFileSearchFolder": [
   "e:\\ json2puml\\samples\\curl\\*inputlist*.json",
   "e:\\ json2puml\\samples\\jsonplaceholder\\*inputlist*.json",
   "e:\\ json2puml\\samples\\swapi\\*inputlist*.json",
   "e:\\ json2puml\\samples\\tvmaze\\*inputlist*.json"]
```

(See 6.1.3 Input list file and 6.2.3.3 Input list filename)

#### *6.3.2.8 javaRuntimeParameter*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| javaRuntimeParameter | 0..1 | String | |
| Description | | | |

This parameter defines the `javaRuntimeParameter` variable.

(See 6.2.4.2 Java runtime parameter)

#### 6.3.2.9 logFileOutputPath

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| logFileOutputPath | 0..1 | String | |
| Description | | | |
| This parameter defines the folder where the global log files will be generated. | | | |

#### 6.3.2.10 plantUmlJarFileName

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| plantUmlJarFileName | 0..1 | String | |
| Description | | | |
| This parameter defines the `plantumlJarFileName` variable.<br><br>(See 6.2.4.1 PlantUML jar filename) | | | |

#### 6.3.2.11 servicePort

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| servicePort | 0..1 | Integer | |
| Description | | | |
| This parameter defines http port on which the microservice is listening for requests. This parameter is used only for the service applications. | | | |

## 6.4 Parameter file

The parameter file allows to put most of the command line parameters into one configuration file. This allows to simplify and standardise the execution of converter runs (See 4.1.2 Command Line Parameters).

### 6.4.1 Additionally the parameter file can be used as input for the calls to the service application using curl (See 4.2.3 How to use it via curl

A simple command to see if the application is successfully running is:

```
curl -X GET <hostname>:<configured port>/api/ inputlistfile
```

When the service application is running on the local machine it can look like:

```
curl -X GET http://localhost:9090/api/inputlistfile
```

You will find additional sample command file for using the service application in the `sample\service` folder.

Service operations)

### 6.4.2 Data model

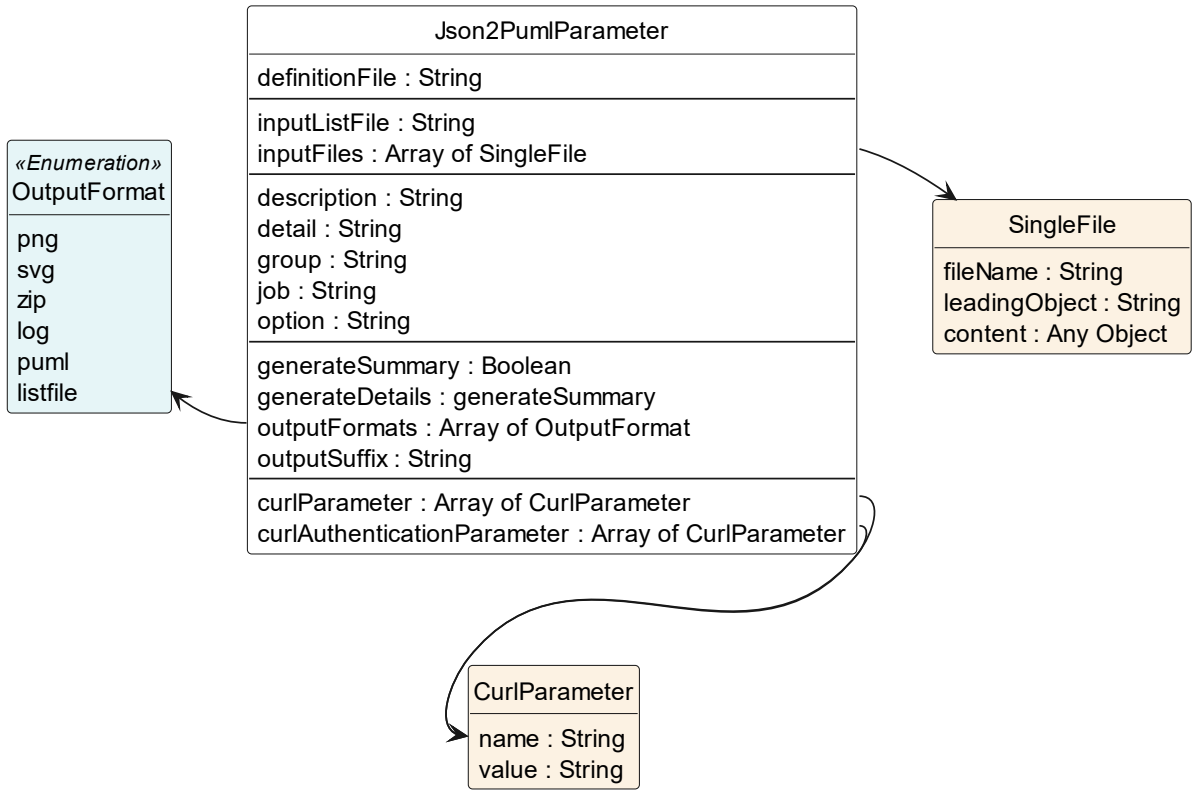



*Figure 30 Data model parameter file*

### 6.4.3 Json2PumlParameter

#### *6.4.3.1 definitionFile*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| definitionFile | 0..1 | String | |
| Description | | | |
| The parameter defines the converter definition file variable.<br>The converter definition file will be used by the json2puml converter and contains the mappings for the input files.<br>(See 6.1.4 Converter definition file and 6.2.3.4 Converter definition filename) | | | |

#### *6.4.3.2 description*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| description | 0..1 | String | |
| Description | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| The parameter defines the description variable.<br>The description variable is added to the legend of the generated image and allows to add an additional description to the image.<br>(See 6.2.1.1 Description) | | | |

#### *6.4.3.3 group*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| group | 0..1 | String | |
| Description | | | |
| The parameter defines the group variable.<br>The group variable can be used for a customized generation of output folders and filenames.<br>(See 6.2.2.3 Group and 5.5 Generated Files) | | | |

#### *6.4.3.4 detail*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| detail | 0..1 | String | |
| Description | | | |
| The parameter defines the detail variable.<br>The detail variable can be used for a customized generation of output folders and filenames.<br>(See 6.2.2.4 Detail and 5.5 Generated Files) | | | |

#### *6.4.3.5 job*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| job | 0..1 | String | |
| Description | | | |
| The parameter defines the job variable.<br>The job variable can be used for a customized generation of output folders and filenames.<br>(See 6.2.2.2 Job and 5.5 Generated Files) | | | |

#### *6.4.3.6 option*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| option | 0..1 | String | |
| Description | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| The parameter defines the option variable.<br>The option variable is used to define which converter definition is used to convert the input files.<br>(See 6.2.1.2 Option and 6.6.2 Identifying an Option ) | | | |

#### *6.4.3.7 inputListFile*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| inputListFile | 0..1 | String | |
| Description | | | |
| The parameter defines the input list file variable.<br>The input list file variable defines which input list file is used to identify the files to be converted.<br>(See 6.1.3 Input list file and 6.2.3.3 Input list filename) | | | |

#### *6.4.3.8 inputFiles*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| inputListFile | 0..* | SingleFile | |
| Description | | | |
| The parameter allows to define a fixed list of files / file contents to be converted.<br>Each record in this will be seen as a single file definition.<br>(See 6.4.4 Single File) | | | |

#### *6.4.3.9 generateSummary*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| generateSummary | 0..1 | Boolean | |
| Description | | | |
| This flag defines the generateSummary variable and is used to define if a combined summary file for all input files should be generated or not.<br>(See 6.2.2.8 Summary filename) | | | |

#### *6.4.3.10 generateDetails*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| generateDetails | 0..1 | Boolean | |
| Description | | | |
| This flag defines the generateDetails variable and is used to define if for every input file a single result file should be generated or not. | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| (See 6.2.2.10 Generate Details) | | | |

#### *6.4.3.11 outputFormats*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| outputFormats | 0..* | String | |
| Description | | | |
| This parameter defines the outputFormats variable.<br>The outputFormats variable determines which files should be generated.<br>(See 6.2.2.11 Output formats) | | | |

#### *6.4.3.12 outputSuffix*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| outputSuffix | 0..1 | String | |
| Description | | | |
| This parameter defines the outputSuffix variable.<br>The outputSuffix variable is used to add dynamic suffix to any generated output file. This allows for example to add the converter option to the files to generate the files with different options without overwriting the files.<br>(See 6.2.2.5 Output suffix and 5.5.4 Output suffix) | | | |

#### *6.4.3.13 curlParameter*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlParameter | 0..* | CurlParameter | |
| Description | | | |
| This parameter allows to define curl parameters for configuring the curl pre-processor.<br>(See 5.2 Curl pre-processor) | | | |

#### *6.4.3.14 curlAuthenticationParameter*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlAuthenticationParameter | 0..* | CurlParameter | |
| Description | | | |
| This parameter allows to define curl authentication parameters for configuring the curl pre-processor.<br>(See 5.2 Curl pre-processor) | | | |

### 6.4.4 Single File

The single file object defines a single file to be converted.

There are two ways to define the file:

- Using a file existing on the local filesystem
- Defining the json data of a file as content.

When the content parameter contains a valid json structure this data is used as file content and the filename parameter will be used to determine the name of the file which then will be used for the generation of the output files.

The content parameter is mainly defined to support the microservice based application where already existing files needs to be transferred to the json2puml server (See 4.2 Service Application).

When no valid json content is defined the file defined in the filename parameter must be existing on the local filesystem, otherwise the file will be ignored.

#### *6.4.4.1 fileName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| fileName | 1 | String | |
| Description | | | |
| This parameter defines the filename of the file | | | |

#### *6.4.4.2 leadingObject*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| leadingObject | 0..1 | String | |
| Description | | | |
| This parameter defines the object type of the top level objects of this file.<br>(See 5.3.6 leadingObject) | | | |

#### *6.4.4.3 content*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Content | 0..1 | AnyObject | |
| Description | | | |
| The content parameter can be any valid JSON structure which then will be used as the content of the defined file. | | | |

### 6.4.5 Curl Parameter

The curl parameter will be used by the curl pre-processor to fetching data based on the defined curl parameters (See 5.2 Curl pre-processor).

The curl parameter can be defined in three different formats:

4. String
   "<parameter name>=<parameter value>"
5. Simple json record
   {"<parameter name>": "<parameter value>"}
6. Full json record
   {"name": "<parameter name>",
    "value": "<parameter value>"}

#### *6.4.5.1 name*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| name | 1 | String | |
| Description | | | |
| This parameter defines the name of the of the curl parameter.<br>Curl parameter names are defined using the following pattern: ${<name>}.<br>In the configuration they can defined only using the name or using the full pattern. | | | |

#### *6.4.5.2 value*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Value | 0..1 | String | |
| Description | | | |
| This parameter defines the value of the curl parameter which is replacing the parameter name in the curl commands.<br>When the value contains ${<name>} strings, these strings will be replaced with operating system environment variables based on <name>. | | | |

## 6.5 Input list File

This file allows to define a list of files to converted.

It is also possible to configure curl calls to fetch the content of the json files directly from the source before converting the contents. For further details see 5.2 Curl pre-processor.

### 6.5.1 Data model

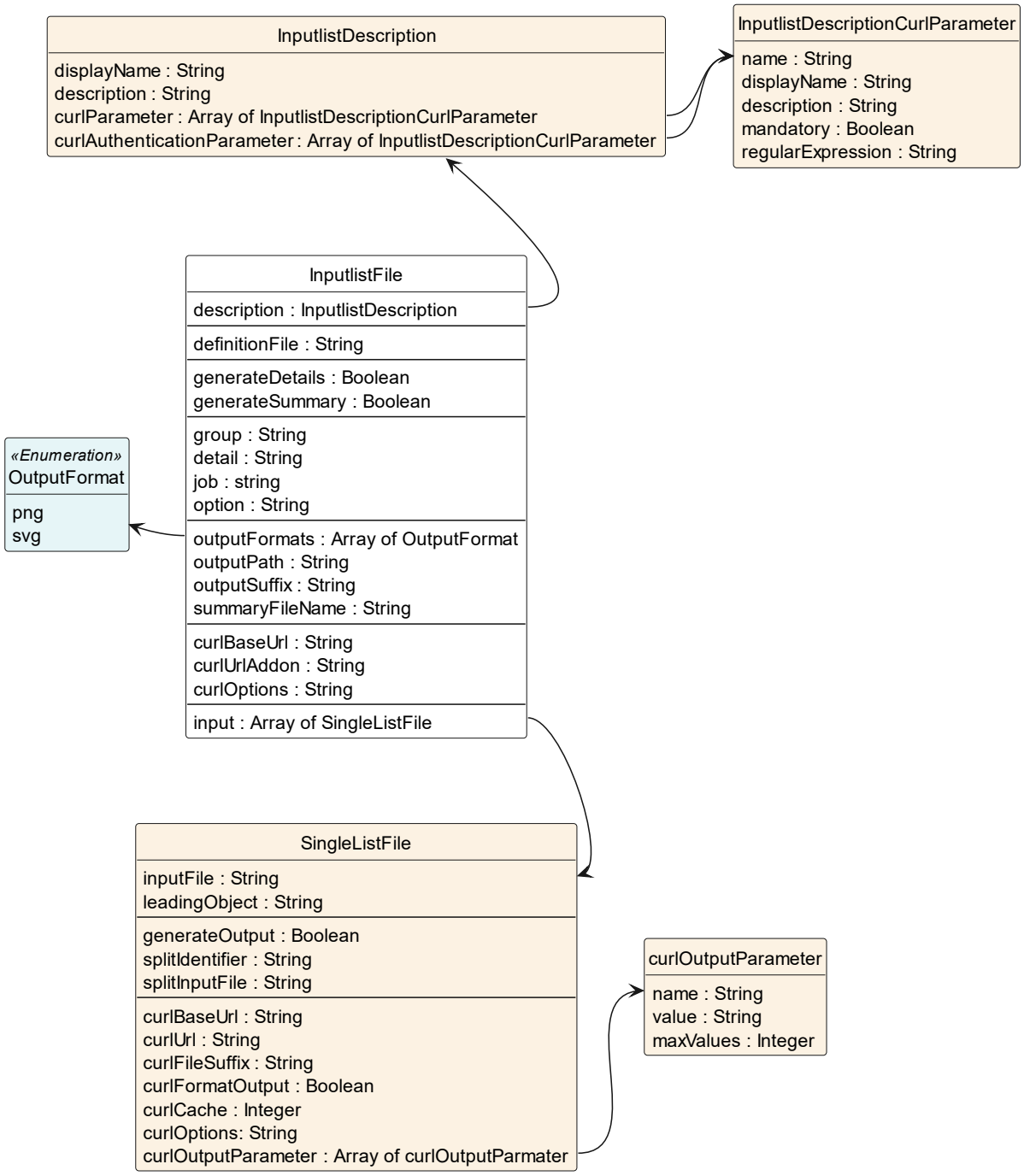



*Figure 31: Data model input list file*

### 6.5.2 InputListFile

#### *6.5.2.1 description*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Description | 0..1 | InputListDescription | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Description | | | |
| Object to describe the purpose and use of this input list file. This description is used in `get /inputlistfiles` operation (See 4.2.4.2 get /inputlistfiles) of the service application.<br>(See 6.5.3 InputListDescription) | | | |

#### *6.5.2.2 generateSummary*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| generateSummary | 0..1 | Boolean | |
| Description | | | |
| Flag to define if a combined summary file of all input files should be generated.<br>(See 6.2.2.8 Summary filename) | | | |

#### *6.5.2.3 definitionFile*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| definitionFile | 0..1 | String | |
| Description | | | |
| This property defines the definition file variable. It allows to define a default converter definition file to be used in this input list file.<br>(See 6.2.3.4 Converter definition filename) | | | |

#### *6.5.2.4 generateDetails*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| generateDetails | 0..1 | Boolean | |
| Description | | | |
| Flag to define if the generator should be executed for every single input file.<br>(See 6.2.2.10 Generate Details) | | | |

#### *6.5.2.5 group*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| group | 0..1 | String | |
| Description | | | |
| The parameter defines the group variable.<br>The group variable can be used for a customized generation of output folders and filenames.<br>(See 6.2.2.3 Group and 5.5 Generated Files) | | | |

#### *6.5.2.6 detail*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| detail | 0..1 | String | |
| Description | | | |
| The parameter defines the detail variable.<br>The detail variable can be used for a customized generation of output folders and filenames.<br>(See 6.2.2.4 Detail and 5.5 Generated Files) | | | |

#### *6.5.2.7 job*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| job | 0..1 | String | |
| Description | | | |
| The parameter defines the job variable.<br>The job variable can be used for a customized generation of output folders and filenames.<br>(See 6.2.2.1 File and 5.5 Generated Files) | | | |

#### *6.5.2.8 option*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| option | 0..1 | String | |
| Description | | | |
| The parameter defines the option variable.<br>The option variable is used to define which converter definition is used to convert the input files.<br>(See 6.2.1.2 Option and 6.6.2 Identifying an Option ) | | | |

#### *6.5.2.9 outputPath*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| outputPath | 0..1 | String | |
| Description | | | |
| The output path could be used to separate the generated files from the original source files.<br>The output path could be defined absolute or relative to the source file of the generation.<br>To structure the directories, it is possible to include the current option, group and detail into the folder name. | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| The following replacements are supported:<br>- <option><br>Replaced by the name of the use configuration option<br>- <group><br>Replaced by the corresponding value from the list definition file (See 6.5.2 InputListFile) or the corresponding command line parameter `/group` (See 4.1.2 Command Line Parameters)<br>- <detail><br>Replaced by the corresponding value from the list definition file (See 6.5.2 InputListFile) or the corresponding command line parameter `/detail` (See 4.1.2 Command Line Parameters)<br>Example:<br>`"outputPath": "output\\<group>\\<option>"` | | | |

#### *6.5.2.10 outputFormats*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| outputFormats | 0..* | OutputFormat | |
| Description | | | |
| This parameter defines the outputFormats variable.<br>The outputFormats variable determines which files should be generated.<br>(See 6.2.2.11 Output formats) | | | |

#### *6.5.2.11 outputSuffix*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| outputSuffix | 0..1 | String | |
| Description | | | |
| This parameter defines the outputSuffix variable.<br>The outputSuffix variable is used to add dynamic suffix to any generated output file. This allows for example to add the converter option to the files to generate the files with different options without overwriting the files.<br>(See 6.2.2.5 Output suffix and 5.5.4 Output suffix) | | | |

#### *6.5.2.12 summaryFileName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| summaryFileName | 0..1 | String | summary.json |
| Description | | | |
| The parameter defines the summary file variable.<br>Based on the name of generated summary will be build.<br>(See 6.2.2.8 Summary filename and 5.5.5 Summary file) | | | |

#### 6.5.2.13 *curlBaseUrl*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlBaseUrl | 0..1 | String | |
| Description | | | |
| Base URL which will be added before all curlUrl parameters (6.5.5.7 curlUrl) of the inputfile to define the full URL.<br>This allows to simplify the URL definition when multiple files from the same URL have to be fetched.<br>This parameter can be overwritten by the single file curlBaseUrl parameter (6.5.5.6 curlBaseUrl)<br>(See 5.2 Curl pre-processor) | | | |

#### 6.5.2.14 *curlUrlAddon*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlUrlAddon | 0..1 | String | |
| Description | | | |
| Additional URL part which will be added after all curlUrl parameters (6.5.5.7 curlUrl) of the inputfile to define the full URL.<br>This allows to simplify the URL definition when common definitions like authentications needs to be added to all URL's of the list file.<br>(See 5.2 Curl pre-processor) | | | |

#### 6.5.2.15 *curlOptions*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlOptions | 0..1 | String | |
| Description | | | |
| Additional parameter which will be added to all curl commands of the input list. This could be used to add common additional parameters like authentication information to the curl command.<br>(See 5.2 Curl pre-processor) | | | |

#### 6.5.2.16 *Input*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Input | 1..* | SingleListFile | |
| Description | | | |
| List of file definitions to be converted.<br>(See 6.5.3 SingleListFile) | | | |

### 6.5.3 InputListDescription

The description object is used by the `get /inputlistfiles` operation of the service application. It allows to give a description of the input list file and how it could be used and parametrized.

#### *6.5.3.1 displayName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| displayName | 0..1 | string | |
| Description | | | |
| Information to be displayed instead of the filename of the input list file.<br>This allows to give a more descriptive name to be shown. | | | |

#### *6.5.3.2 description*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Description | 0..1 | string | |
| Description | | | |
| Additional description for the current input list file.<br>This could be shown additionally to help a user understanding the purpose of the file (e.g. in a Mouse Over Notification) | | | |

#### *6.5.3.3 curlParameter*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlParameter | 0..* | InputListDescriptionCurlParameter | |
| Description | | | |
| This parameter explains which curl parameter are support or mandatory when working with the input list file.<br>(See 6.5.4 InputListDescriptionCurlParameter) | | | |

#### *6.5.3.4 curlAuthenticationParameter*

| Name | Cardi-nality | Datatype | Default |
|---|---|---|---|
| curlAuthenticationParameter | 0..* | InputListDescriptionCurlParameter | |
| Description | | | |
| This parameter explains which curl authentication parameter are support or mandatory when working with the input list file.<br>(See 6.5.4 InputListDescriptionCurlParameter) | | | |

### 6.5.4 InputListDescriptionCurlParameter

This object is used to describe curl (authentication) parameters which can be used or a mandatory when working with the current input list file.

#### *6.5.4.1 name*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| name | 1 | String | |
| Description | | | |
| This parameter defines the name of the of the curl parameter.<br>Curl parameter names are defined using the following pattern: `${<name>}`.<br>In the configuration they can defined only using the name or using the full pattern. | | | |

#### *6.5.4.2 displayName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| displayName | 0..1 | String | |
| Description | | | |
| Information to be displayed instead of the name of the curl parameter.<br>This allows to give a more descriptive name to be shown. | | | |

#### *6.5.4.3 description*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Description | 0..1 | string | |
| Description | | | |
| Additional description for the current curl parameter.<br>This could be shown additionally to help a user understanding the purpose of the parameter (e.g. in a Mouse Over Notification) | | | |

#### *6.5.4.4 mandatory*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| mandatory | 0..1 | Boolean | |
| Description | | | |
| Flag to define if the curl parameter is mandatory or not for the execution of the input list file. | | | |

#### *6.5.4.5 regularExpression*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| regularExpression | 0..1 | String | |
| Description | | | |
| The regular expression can be used to support a UI to restrict the input of the parameter values based on the requlat expression (e.g. ensure that a customer number is only based on numbers and has exact 10 digits). | | | |

### 6.5.5 SingleListFile

#### *6.5.5.1 inputFile*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| inputFile | 0..1 | String | |
| Description | | | |
| Filter to find the JSON input files. The path to the files can be relative or absolute defined.<br>Relative paths will be expanded based on the source path of the list input file.<br><br>When using the curl option, the filename is not allowed to have filters.<br>When using the curl option, the filename can be enhanced with curl parameter values.<br>See 0<br><br>Curl | | | |

#### *6.5.5.2 leadingObject*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| leadingObject | 0..1 | string | |
| Description | | | |
| Name of the leadingObject to be used for all input files found based on the “`inputFile`” parameter.<br>See 5.3.6 leadingObject | | | |

#### *6.5.5.3 generateOutput*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| generateOutput | 0..1 | Boolean | True |
| Description | | | |
| Flag to define if an output should be generated for this file or that it should be included into the summary file. | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| This parameter could when an oAuth call is used to fetch an access token with the first curl command and then use this token as parameter for all further curl commands. In this case the result of the oAuth token generation should not be included into the generated output.<br>See 0<br><br>Curl | | | |

#### *6.5.5.4 splitIdentifier*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| splitIdentifier | 0..1 | String | |
| Description | | | |
| This parameter allows to have “readable” filenames for the splitted data files. The identifier must be a property name of the splitted JSON structure. When the parameter is defined and a corresponding property has been found the value of this property will be used as the identifier which will be added to the filename. Otherwise, the fixed value “`split`” will be used as an identifier.<br>The property name can be defined using sub object names (e.g. `"splitIdentifier":"ticketType.name"`).<br>When the property is an JSON array the different values of this array will be concatenated to one identifier.<br><br>Example:<br><br>`{`<br>`"id": "875153820701008909",`<br>`"ticketType": [`<br>`{`<br>`"name": "Incident"`<br>`},`<br>`{`<br>`"name": "Admin"`<br>`}`<br>`],`<br><br>The parameter `"splitIdentifier":"ticketType.name"`) would lead to an identifier “`Incident.Admin`”. | | | |

#### *6.5.5.5 splitInputFile*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| splitInputFile | 0..1 | Boolean | |
| Description | | | |
| This option can be used to split datafiles into more detailed datafiles. | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| This option is only possible/valid when the datafile has a JSON array on the highest level. If the top-level JSON structure is not an array the parameter will be ignored.<br>This option is only valid when generatedetails (See 6.2.2.10 Generate Details) is activated.<br>A common scenario for this use case is search/get results returning multiple objects of the same type. This option allows to generate detail data files and based on that generate separate images for every instance of the result set.<br>The generated filename of the splited files will be enhanced with an identifier and sequence number (to make the filename unique). The identifier will be based on the "`splitIdentifier`" parameter (See 6.5.5.4 splitIdentifier). | | | |

### *6.5.5.6 curlBaseUrl*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlBaseUrl | 0..1 | string | |
| Description | | | |
| Base URL which will be added before the curlUrl parameter (6.5.5.7 curlUrl) of the inputfile to define the full URL.<br>This parameter overwrites the curlBaseUrl parameter of the list filed (6.5.2.13 curlBaseUrl).<br>(See 5.2 Curl pre-processor) | | | |

### *6.5.5.7 curlUrl*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlUrl | 0..1 | string | |
| Description | | | |
| Url to fetch the json file from.<br>(See 5.2 Curl pre-processor) | | | |

### *6.5.5.8 curlFileSuffix*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlFileSuffix | 0..1 | string | |
| Description | | | |
| The curlFileSuffix will be added to the filename of the generated outputfile.<br>This allows to have more flexibility in generating the output files.<br>The curlFileSuffix can contain curl parameter replacement to build the filenames based on the current parameter values (e.g. customer number which is the input criteria of the api).<br>(See 5.2 Curl pre-processor) | | | |

#### 6.5.5.9 curlFormatOutput

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlFormatOutput | 0..1 | Boolean | False |
| Description | | | |
| Flag to define if the curl output file should be formatted.<br>(See 5.2 Curl pre-processor) | | | |

#### 6.5.5.10 curlCache

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlCache | 0..1 | Integer | 0 |
| Description | | | |
| Number of seconds while the generated curl result file will be cached and not refreshed.<br>(See 5.2 Curl pre-processor) | | | |

#### 6.5.5.11 curlOptions

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlOptions | 0..1 | string | |
| Description | | | |
| Additional parameters added to the curl command when fetching the json data.<br>(See 5.2 Curl pre-processor) | | | |

#### 6.5.5.12 curlOutputParameter

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| curlOutputParameter | 0..1 | <anyRecord> | 0 |
| Description | | | |
| The curlOutputParameter can be any simple json record structure (no subobjects). This parameter defines which additional curl parameter should be read from the current output file and been added to the list of curl parameter.<br>For each element of this record the name will be used as curl parameter name and the value will be used to fetch the curl parameter value from the current output file.<br>For reading the value the path can be defined using a recursive `<name>.<subname>.<subsubname>` pattern.<br><br>Example output file: | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|

```
{
  "id": 1,
  "name": "Leanne Graham",
  "email": "Sincere@april.biz",
  "location": {
    "zipcode": "92998-3874",
    "geo": {
      "lat": "-37.3159",
      "lng": "81.1496"
    }
  }
}
```

Example curlOutputParameter:

```
{
  "name": "name",
  "geo_lat": "location.geo.lat",
  "geo_lng": "location.geo.lng"
}
```

This would lead to the following curl parameters:

| Parameter | Value |
|---|---|
| **${name}** | Leanne Graham |
| **${geo_lat}** | -37.3159 |
| **${geo_lng}** | 81.1496 |

These curl parameter values can now be used as curl input parameter for the next curl executions of further files.

(See 5.2 Curl pre-processor)

### 6.5.6 Simple List File Example

```
{
  "generateSummary":"true",
  "generateDetails":"false",
  "group":"customer",
  "input": [
    {
      "inputFile": "TMF629*.json",
      "leadingObject": "customer"
    },
    {
      "inputFile": "TMF632*.json",
      "leadingObject": "individual"
    },
    {
      "inputFile": "TMF666*.json",
      "leadingObject": "account"
    },
    {
      "inputFile": "TMF670.json",
      "leadingObject": "paymentMethod"
    }
  ]
}
```

## 6.6 Converter definition file

The converter definition file contains the different configurations how the JSON structures should be interpreted and converted.

For every type of structures, it can be necessary to have independent configuration files.

E.g., having one definition file for some TMF based API's and a different configuration file for an SAP based API.

### 6.6.1 Merging of options

The configuration file allows to have multiple options configured how the system is working. For example, there could be one option which only shows the attributes of the objects and in another option also the characteristics and relations will be shown for an object.

To simplify the configuration a mechanism of having a base configuration which then is merged with the chosen configuration option.

Normally in the base configuration all things are configured which are needed to classify and structure the outcome. Also, the object specific format configuration is defined here as a default.

The target configuration is built in that way, that first the base configuration is read and this configuration is merged with the chosen specific configuration.

Merging means for simple attributes that the value is overwritten by the value of the specific option when it's defined, otherwise the default value stays.

For list properties there are two ways to merge the data.
The default way is to merge the content of the specific list to the values of base configuration. It is also possible to define that the specific list replaces the values of the base configuration.

The merge mode is the default mode. In the merge mode only the values to be merged are needed, the replace mode must be identified with "`operation`" and contains the new values in the "`list`" property.

Example Merge Mode:

```
{
  "option": "detailed",
  "definition": {
    "allowedProperties": [
      "*"
     ]
    }
  }
},
```

In this example for an option “detailed” the value “*” is added to the list of the base configuration.

Example Replace Mode:

```
{
  "option": "short",
  "definition": {
    "allowedProperties": {
      "operation": "replace",
      "list": [
        "id",
        "*name",
        "status"
      ]
    }
  }
},
```

In this example for an option “short” the list values of the base configuration are replaced by three new value “id”, “*name” and “status”.

The merging mechanism works similar also for the “objectFormat” property. (See 6.6.12 ObjectFormat)

### 6.6.2 Identifying an Option

To identify the option which should be used the following order is executed:

The command line parameter /option (See 4.1.2 Command Line Parameters) is used first. If this parameter is not defined the parameter “defaultOption” from the configuration file is used (See 6.6.5.4 defaultOption).

This value is then used to search in the “options” list of the configuration file (based on the “optionName” property of the options list (See 6.6.4.1 options).

The found specific option will then be merged with the baseOption, if no matching specific option is found, the baseOption will be used.

### 6.6.3 Data model

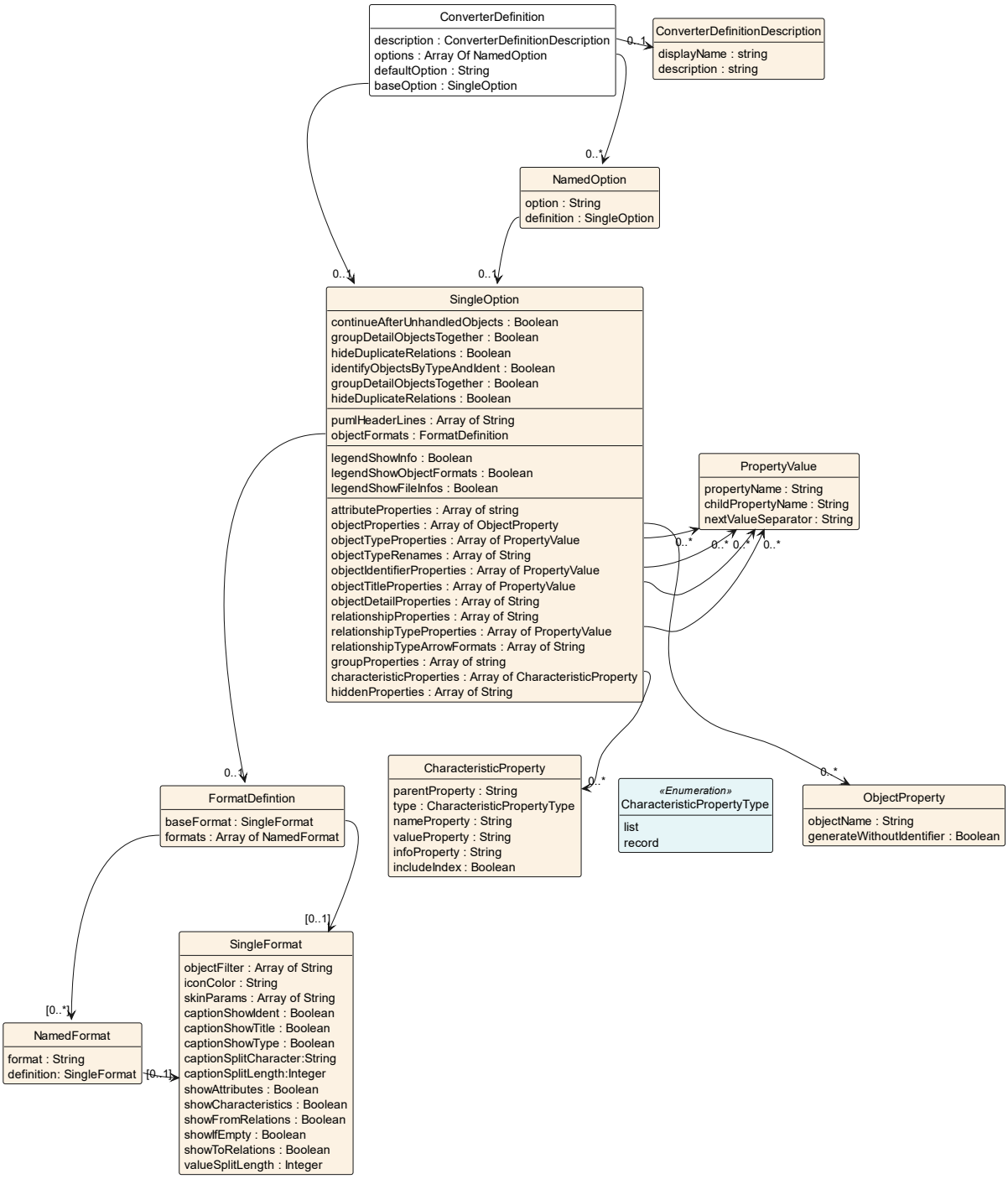



*Figure 32 Main Configuration Model*

### 6.6.4 Converterdefinition

#### *6.6.4.1 options*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Options | 0..* | **6.6.5 ConverterDefintionDescription**<br><br>**6.6.6 Record to define the informations which are returned when the definition file is found and returned for the service operation `get /definitionFile` or `get /inputListFile` (See 4.2.3 How to use it via curl**<br><br>A simple command to see if the application is successfully running is:<br><br>`curl -X GET <hostname>:<configured port>/api/ inputlistfile`<br><br>When the service application is running on the local machine it can look like:<br><br>`curl -X GET http://localhost:9090/api/inputlistfile`<br><br>You will find additional sample command file for using the service application in the `sample\service` folder.<br><br>Service operations)<br><br>*6.6.6.1 displayName*<br><br>Name \| Cardinality \| Datatype \| Default<br>displayName \| 0..1 \| string \|<br>Description<br>Information to be displayed instead of the filename of the converter definition file.<br>This allows to give a more descriptive name to be shown.<br><br>*6.6.6.2 description*<br><br>Name \| Cardinality \| Datatype \| Default<br>Description \| 0..1 \| string \|<br>Description | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| | | Additional description for the current converter definition file.<br>This could be shown additionally to help a user understanding the purpose of the file (e.g. in a Mouse Over Notification)<br><br>NamedOption | |
| Description | | | |
| This array defines the list of possible options which could be used for analysing and formatting the output.<br>Which option is used will be defined via the variable `option` (See 6.2.1.2 Option) | | | |

*6.6.6.3 baseOption*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| baseOption | 0..1 | SingleOption | |
| Description | | | |
| The property defines the base converter definition option. This definition is merged with the defined runtime option. (See 6.6.1 Merging of options) | | | |

*6.6.6.4 defaultOption*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| defaultOption | 0..1 | String | |
| Description | | | |
| Name of the option which should be used when option is not defined via any other way (See 6.2.1.2 Option). | | | |

### 6.6.7 ConverterDefintionDescription

### 6.6.8 Record to define the informations which are returned when the definition file is found and returned for the service operation `get /definitionFile` or `get /inputListFile` (See 4.2.3 How to use it via curl

A simple command to see if the application is successfully running is:

```
curl -X GET <hostname>:<configured port>/api/ inputlistfile
```

When the service application is running on the local machine it can look like:

```
curl -X GET http://localhost:9090/api/inputlistfile
```

You will find additional sample command file for using the service application in the `sample\service` folder.

Service operations)

#### *6.6.8.1 displayName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| displayName | 0..1 | string | |
| Description | | | |
| Information to be displayed instead of the filename of the converter definition file. This allows to give a more descriptive name to be shown. | | | |

#### *6.6.8.2 description*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Description | 0..1 | string | |
| Description | | | |
| Additional description for the current converter definition file.<br>This could be shown additionally to help a user understanding the purpose of the file (e.g. in a Mouse Over Notification) | | | |

### 6.6.9 NamedOption

Record to define an entry in the options list. Each entry is defined by a `optionName` and the corresponding `definition`.
(See 6.6.1 Merging of option)

#### *6.6.9.1 optionName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| optionName | 0..1 | String | |
| Description | | | |
| Name of the option | | | |

#### *6.6.9.2 baseOption*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| definition | 0..1 | SingleOption | |
| Description | | | |
| The definition contains the option specific values which should be merged with the base configuration. | | | |

### 6.6.10 PropertyValue

Record to define how the related information should be calculated.

This record could be used to define the following objects details:

- 6.6.11.14 objectTitleProperties
- 6.6.11.11 objectTypeProperties
- 6.6.11.13 objectIdentifierProperties
- 6.6.11.17 relationshipTypeProperties

When only the "`propertyName`" is defined the attribute names are not needed and only the value could be stored. This allows a simplified storage structure of the definition file.

To calculate the information for every record in the corresponding list the "`propertyName`" is searched in the current JSON object.

If a corresponding property is found the value of this property is used as the expected information. When the property "`nextValueSeparator`" is not defined for the current list record, the search is stopped. When the "`nextValueSeparator`" is defined the search will be continued. When an additional value is found the values will be concatenated with the "`nextValueSeparator`" of the previous search record.
This is also the case when the found property is an array. Then if the "`nextValueSeparator`" is defined the values of the array will be combined to calculate the information.

The "`childPropertyName`" supports that the found property is again an object record. Then the search is recursively iterating through the sub objects to find the information.

Example:

```
"objectTitleProperties": [
 "characteristicValue.value",
 "name",
 "fullName",
 {"propertyName": "ticketType",
       "childPropertyName": "name",
       "nextValueSeparator": "."},
 {"propertyName": "transition.sourceStatus",
       "childPropertyName": "name",
       "nextValueSeparator": "->"},
 {"propertyName": "transition.targetStatus",
       "childPropertyName": "name",
       "nextValueSeparator": ""}
],
```

Explanation:

The object title will be calculated when

1. the object is of type “characteristicValue” and has a simple property “value”.
2. the object has a simple property “name” or “fullName”
3. the object has a complex property “ticketType” and this object has a simple child property “name”. If the property is an array the values will be concatenated using “.” as a separator.
4. the object is of type “transition”
   The next two items are defined as a combination.
   The first part of the name is coming from the complex property “sourceStatus” and the child property “name” combined with the separator “=>” and the second part of the name coming from the complex property “targetStatus” and the child property “name” .

Samples:

| No | JSON | Outcome |
|---|---|---|
| 1a | `"characteristic": { "name": "Product", "value": "Voice Over IP Basic",` | "Voice Over IP Basic" |
| 1b | `"product": { "name": "Product", "value": "Voice Over IP Basic",` | N/A<br>(because of the not matching object type product) |
| 2 | `"product": { "id": "g265-tf85", "name": "VOIP", "fullName": "Voice Over IP Basic" "productSerialNumber": "N/A",` | “VOIP”<br>“fullName” is ignored because the “name” is coming first in the definition list. |
| 3 | `"ticketType": [ { "name": "Incident" }, { "name": "Admin" }, { "name": "Escalation" } ]` | “Incident.Admin.Escalation” |

| No | JSON | Outcome |
|---|---|---|
| **4** | `"transition": { "sourceStatus": { "name": "Draft" }, "targetStatus": { "name": "New" }, }` | “Draft->New” |

#### *6.6.10.1 propertyName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| propertyName | 1 | String | |
| **Description** | | | |
| Name of the property where the information is searched.<br>The name can be defined as `<objectType>.<propertyName>` or as `<propertyName>`. If no object type is defined the propertyName is checked against all object types.<br>Wildcards are supported. | | | |

#### *6.6.10.2 childPropertyName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| childPropertyName | 0..1 | String | |
| **Description** | | | |
| When the defined property is a complex property the `childPropertyName` must be defined to identify the detail property which contains the data.<br>This search is working recursively through the structure of found property.<br><br>Example:<br>`"escalation": { "id": "escalation_9913", "ticket": { "id": "ticket_4711", "ticketType": [ { "name": "Incident" }, { "name": "Admin" }, { "name": "Escalation" } ] }` | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| To get the name of the escalation the following definition could be done.<br><br>**propertyName** \| **childPropertyName** \| **nextValueSeparator**<br>escalation.ticket \| ticketType.name \| .<br><br>The result will be "`Incident.Admin.Escalation`". | | | |

#### *6.6.10.3 nextValueSeparator*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| nextValueSeparator | 0..1 | String | |
| Description | | | |
| When this property is filled the search will be continued and if an additional matching property is found they will be concatenated using the defined separator. | | | |

### 6.6.11 SingleOption

#### *6.6.11.1 continueAfterUnhandledObjects*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| continueAfterUnhandledObjects | 0..1 | Boolean | False |
| Description | | | |
| Defines if the generator should continue the search for the children of a property when the property has been identified as an object but no identifying attribute has been found. | | | |

#### *6.6.11.2 groupDetailObjectsTogether*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| groupDetailObjectsTogether | 0..1 | Boolean | False |
| Description | | | |
| This parameter allows to generate "`together`" objects in PlantUML to group the detail objects (See 6.6.11.15 objectDetailProperties) to their parent objects. PlantUML then tries to draw the grouped objects nearer together and not to distribute them. Sometimes based on the grouping PlantUML generates duplicate lines which made the diagrams hard to read. | | | |

#### 6.6.11.3 hideDuplicateRelations

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| hideDuplicateRelations | 0..1 | Boolean | True |
| Description | | | |
| Defines if relations between two objects which have the same attributes ("`from object`", "`to object`", "`relationshipTypeProperty`" and "`replationshipType`") should be hidden or generated. | | | |

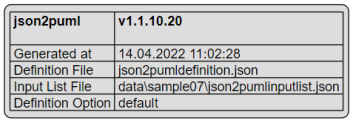
#### 6.6.11.4 identifyObjectsByTypeAndIdent

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| identifyObjectsByTypeAndIdent | 0..1 | Boolean | False |
| Description | | | |
| Defines if the objects should be identified and linked based on the object type and the object ident of the object or only based on the object ident.<br>To use the object ident only is only possible/valid if the identifiers are unique over all object types.<br>When including the type also the type must be included in the data of an included property.<br>(See 5.3.2 Object Identification) | | | |

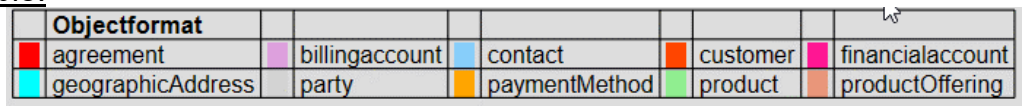
#### 6.6.11.5 hideEmptyObjects

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| hideEmptyObjects | 0..1 | Boolean | False |
| Description | | | |
| Defines if empty objects (without any attributes, characteristics and relationships) should be hidden or not. | | | |

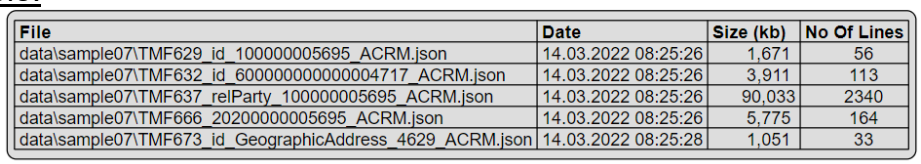
#### 6.6.11.6 legendShowInfo

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| legendShowInfo | 0..1 | Boolean | True |
| Description | | | |
| Defines if the common information block should be generated into the legend of the drawing.<br>Example:<br>  | | | |

### 6.6.11.7 *legendShowObjectFormats*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| legendShowObjectFormats | 0..1 | Boolean | True |
| Description | | | |
| Defines if the object format color list should be generated into the legend of the drawing.<br>Example:<br>  <br> | | | |

### 6.6.11.8 *legendShowFileInfos*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| legendShowFileInfos | 0..1 | Boolean | True |
| Description | | | |
| Defines if the input file information list should be generated into the legend of the drawing.<br>Example:<br>  <br> | | | |

### 6.6.11.9 *attributeProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| attributeProperties | 0..* | String | |
| Description | | | |
| List of properties for which the values should be handled as an attribute of the object.<br>Only when the name of the properties matches a value in the list (wildcards are supported) the value will be added.<br>To include all properties, add the value "*" to the list. | | | |

### 6.6.11.10 *objectProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectProperties | 0..* | ObjectProperty | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Description | | | |

List of properties which should be handled as an object.
ObjectProperty is a record which contains two attributes: “`objectName`” and “`generateWithoutIdentifier`”. When “`generateWithoutIdentifier`” is not defined only a value can be used to define the objectname without the propertyname.
Example:

```
"objectProperties": [
 "account",
 "party",
 {"objectName": "productTerm",
      "generateWithoutIdentifier": "true"},
 {"objectName": "contactMedium",
      "generateWithoutIdentifier": "true"}
],
```

#### *6.6.11.11 objectTypeProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectTypeProperties | 0..* | PropertyValue | |
| Description | | | |

List of properties which should be handled as the type of an object.
The value of the property will be used as object type of the object.
Using the “`objectTypeRenames`” parameter (See 6.6.11.12 objectTypeRenames) the object type could be renamed.
(See 5.3.2 Object Identification)

#### *6.6.11.12 objectTypeRenames*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectTypeRenames | 0..* | String | |
| Description | | | |

List of name replacements to be used for object type. (See 5.3.2 Object Identification)
The format of the rename property is:
“`<oldname>=<newname`”.

Example:

| Name | Cardinality | Datatype | Default |
|---|---|---|---|

```
"objectTypeRenames": [
 "compositeProduct=product",
 "defaultPaymentMethod=paymentMethod",
 "place=geographicAddress",
 "email=contactMedium",
]
```

#### *6.6.11.13 objectIdentifierProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectIdentifierProperties | 0..* | PropertyValue | |
| Description | | | |
| List of properties which should be handled as the identifier of an object.<br>The value of the property will be used as identifier of the object.<br>(See 5.3.2 Object Identification) | | | |

#### *6.6.11.14 objectTitleProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectTitleProperties | 0..* | PropertyValue | |
| Description | | | |
| List of properties which should be handled as the title of an object.<br>The title is an optional attribute which could be shown in the header of the objects and as part of the from / to relationship description. | | | |

#### *6.6.11.15 objectDetailProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectDetailProperties | 0..* | String | |
| Description | | | |
| List of properties which will be handled as detail object.<br>(See 5.3.4 Detail Objects / Characteristic properties) | | | |

#### *6.6.11.16 relationshipProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| relationshipProperties | 0..* | String | |
| Description | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| List of properties which should be handled to identify typed relations to another object. A relationship property can, but most not be defined as a separate object. Based on the parameter "`relationshipTypeProperties`" a type of the relationship could be identified.<br>(See 5.3.3 Object Relationships) | | | |

#### *6.6.11.17 relationshipTypeProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| relationshipTypeProperties | 0..* | String | |
| Description | | | |
| List of properties which should be handled as the type of a relationship.<br>(See 5.3.3 Object Relationships) | | | |

#### *6.6.11.18 relationshipTypeArrowFormats*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| relationshipTypeArrowFormats | 0..* | PropertyValue | |
| Description | | | |

Mapping definition how an arrow should be formatted based on the property name which has defined the relationship and the optional type of the relationship.
The format has to be defined using the following pattern:

```
<relationship pattern>[.<relationship type>]=<PlantUML arrow format>
```

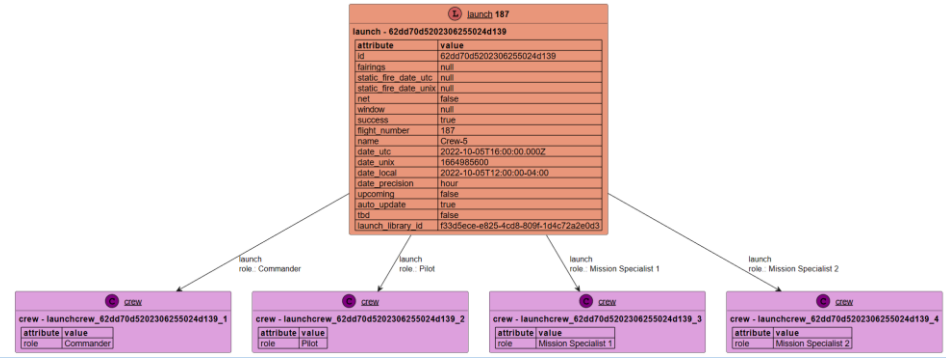
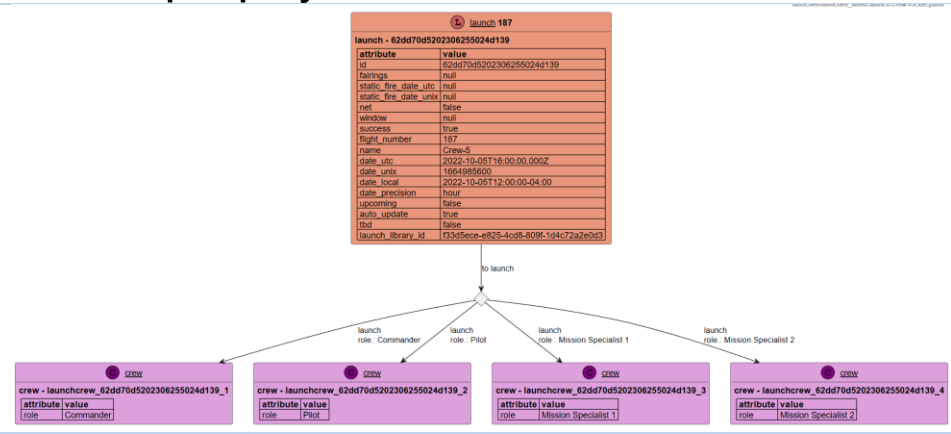
Example:

```
"relationshipTypeArrowFormats": [
  "relatedparty=[dotted]",
  "relatedparty.customer=[#blue,dotted]",
  "relatedparty.individual=[#lightgrey,dotted]",
  "relatedparty.organisation=[#grey,dotted]",
  "engagedparty=[dotted]",
  "engagedparty.individual=[#lightgrey,dotted]",
  "engagedparty.organisation=[#grey,dotted]"
]
```

(See 5.3.3 Object Relationships)

#### *6.6.11.19 groupProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| groupProperties | 0..* | String | |
| Description | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| A group property allows to structure the generated output in that way that an additional diamond shape is created which groups the relations of the related detail objects of the same type.<br><br>Example:<br>**Without GroupProperty**<br>  <br>launch 187<br>launch - 62dd70d5202306255024d139<br>attribute / value<br>id 62dd70d5202306255024d139<br>fairings null<br>static_fire_date_utc null<br>static_fire_date_unix null<br>net false<br>window null<br>success true<br>flight_number 187<br>name Crew-5<br>date_utc 2022-10-05T16:00:00.000Z<br>date_unix 1664985600<br>date_local 2022-10-05T12:00:00-04:00<br>date_precision hour<br>upcoming false<br>auto_update true<br>tbd false<br>launch_library_id f33d5ece-e825-4cd8-809f-1d4c72a2e0d3<br>launch role.: Commander<br>launch role.: Pilot<br>launch role.: Mission Specialist 1<br>launch role.: Mission Specialist 2<br>crew<br>crew - launchcrew_62dd70d5202306255024d139_1<br>attribute / value<br>role Commander<br>crew<br>crew - launchcrew_62dd70d5202306255024d139_2<br>attribute / value<br>role Pilot<br>crew<br>crew - launchcrew_62dd70d5202306255024d139_3<br>attribute / value<br>role Mission Specialist 1<br>crew<br>crew - launchcrew_62dd70d5202306255024d139_4<br>attribute / value<br>role Mission Specialist 2<br>**With GroupProperty**<br>  <br>launch 187<br>launch - 62dd70d5202306255024d139<br>attribute / value<br>id 62dd70d5202306255024d139<br>fairings null<br>static_fire_date_utc null<br>static_fire_date_unix null<br>net false<br>window null<br>success true<br>flight_number 187<br>name Crew-5<br>date_utc 2022-10-05T16:00:00.000Z<br>date_unix 1664985600<br>date_local 2022-10-05T12:00:00-04:00<br>date_precision hour<br>upcoming false<br>auto_update true<br>tbd false<br>launch_library_id f33d5ece-e825-4cd8-809f-1d4c72a2e0d3<br>to launch<br>launch role.: Commander<br>launch role.: Pilot<br>launch role.: Mission Specialist 1<br>launch role.: Mission Specialist 2<br>crew<br>crew - launchcrew_62dd70d5202306255024d139_1<br>attribute / value<br>role Commander<br>crew<br>crew - launchcrew_62dd70d5202306255024d139_2<br>attribute / value<br>role Pilot<br>crew<br>crew - launchcrew_62dd70d5202306255024d139_3<br>attribute / value<br>role Mission Specialist 1<br>crew<br>crew - launchcrew_62dd70d5202306255024d139_4<br>attribute / value<br>role Mission Specialist 2 | | | |

### *6.6.11.20 characteristicProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| characteristicProperties | 0..* | CharacteristicProperty | |
| Description | | | |
| List of properties which will be handled as characteristics.<br>(See 5.3.4 Detail Objects / Characteristic properties) | | | |

### *6.6.11.21 hiddenProperties*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| hiddenProperties | 0..* | String | |
| Description | | | |
| List of properties which will stop the recursive handling of the converter. | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| | | | |

#### *6.6.11.22 pumlHeaderLines*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| pumlHeaderLines | 0..* | String | |
| Description | | | |
| The “`pumlHeaderlines`” will be written at the beginning of the generated PlantUML file.<br>This allows to have generic formatting definitions.<br>Example:<br>`"pumlHeaderLines": [`<br>`"hide stereotype",`<br>`"skinparam HeaderFontSize 18"`<br>`],` | | | |

#### *6.6.11.23 objectFormats*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectFormats | 0..1 | ObjectFormat | |
| Description | | | |
| Format definition for the generated output. | | | |

### 6.6.12 ObjectProperty

The object properties can be written in a short and in a long format.

The short format contains only the `objectName` as a string (without property name). The `generateWithoutIdentifier` will then be the default value `false`. The long format is a json record containing both properties. This allows to simplify the definition of the object properties.

Example:

```
"characteristicProperties":  [
     "*pad.images",
     "height",
     "reddit",
     {"parentProperty": "xdragon", "type": "record", "includeIndex":
      "true"},
     {"parentProperty": "payload_weights", "type": "list",
      "nameProperty": "name", "valueProperty": "kg", "infoProperty":
      "lb"}
   ],
```

#### *6.6.12.1 objectName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectName | 0..1 | String | |
| Description | | | |
| List of properties which should be handled as an object.<br>The name of the property will be used as object type of the object.<br>Using the "`objectTypeRenames`" parameter (See 6.6.11.12 objectTypeRenames) the object type could be renamed.<br>(See 5.3.2 Object Identification) | | | |

#### *6.6.12.2 generateWithoutIdentifier*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| generateWithoutIdentifier | 0..1 | String | false |
| Description | | | |
| Flag to define if the objects of this type should be generated without having an identifier.<br>In this the identifier will automatically be generated based on the identifier of the parent object (enhanced with a unique number)<br>(See 5.3.2 Object Identification) | | | |

### 6.6.13 CharacteristicProperty

The characteristic property defines how a property which is identified as a characteristic should be handled. (See 5.3.4.2 Characteristics properties)

The characteristic properties can be written in a short and in a long format.

The short format contains only the `parentName` as a string (without property name). The `type` will then be the default value `record` and `includeIndex` will then be the default values `false`. The long format is a json record containing all properties. This allows to simplify the definition of the characteristic properties.

Example:

```
"objectProperties":  [
    "launch",
    "crew",
    {"objectName": "launchcrew","generateWithoutIdentifier": "true"},
    {"objectName": "launchcore","generateWithoutIdentifier": "true"},
    "capsule",
    "payload",
    "core"
]
```

#### *6.6.13.1 parentProperty*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| parentProperty | 1 | String | |
| Description | | | |
| Name of the property which should be handled as a characteristic | | | |

#### *6.6.13.2 type*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Type | 1 | CharacteristicPropertyType | record |
| Description | | | |
| Type of the characteristic<br>Possible values:<br>- list<br>- record | | | |

#### *6.6.13.3 nameProperty*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| nameProperty | 0..1 | String | |
| Description | | | |
| Name of the detailed characteristic which should be transferred in the name column of the characteristic list.<br>This parameter is only needed for the characteristic type “`list`”. | | | |

#### *6.6.13.4 valueProperty*

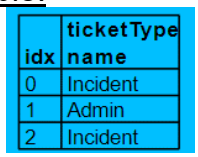
| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| valueProperty | 0..1 | String | |
| Description | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Name of the detailed characteristic which should be transferred in the value column of the characteristic list.<br>This parameter is only needed for the characteristic type “`list`”. | | | |

#### *6.6.13.5 infoProperty*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| nameProperty | 0..1 | String | |
| Description | | | |
| Name of the detailed characteristic which should be transferred in the additional info column of the characteristic list.<br>This parameter is only needed for the characteristic type “`list`”. | | | |

#### *6.6.13.6 includeIndex*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| includeIndex | 0..1 | Boolean | false |
| Description | | | |
| Flag to define if for each characteristic record the position/index of the record should be added to the generated list.<br>This property is only needed for the characteristic type “`list`”.<br>Example:<br>  | | | |



### 6.6.14 ObjectFormat

The objectFormat defines how the generated objects should be formatted.

To identify the object specific format first the `baseFormat` will be used. Then the `formats` list will be search based on the type of the object. If a named format is found this format will be merged with the base format (only the values which are defined in the named format will be overwritten).

(See 6.6.1 Merging of options)

#### *6.6.14.1 baseFormat*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| baseFormat | 0..1 | SingleFormat | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Description | | | |
| Default format definition which can be merged with an object specific format definition. | | | |

#### *6.6.14.2 formats*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| formats | 0..* | NamedFormat | |
| Description | | | |
| List of all named format definitions. | | | |

### 6.6.15 NamedFormat

#### *6.6.15.1 formatName*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| formatName | 1 | 6.6.16string | |
| Description | | | |
| Name of the format definition.<br>This name will be used as PlantUML creole to identify the format. | | | |

#### *6.6.15.2 definition*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Definition | 0..1 | SingleFormat | |
| Description | | | |
| Named format definition which will be merged with the base format definition to define the format for an object. | | | |

### 6.6.16 SingleFormat

Example:

```
"baseFormat": {
 "objectFilter": [],
 "iconColor": null,
 "skinParams": ["BackgroundColor=STRATEGY"],
 "captionShowIdent": "false",
 "captionShowTitle": "true",
 "captionShowType": "true",
 "captionSplitCharacter": "_",
 "captionSplitLength": "0",
 "showAttributes": "true",
 "showCharacteristics": "true",
 "showFromRelations": "false",
 "showIfEmpty": "false",
 "showToRelations": "false",
 "valueSplitLength": "100"
}
```

#### *6.6.16.1 objectFilter*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| objectFilter | 0..* | string | |
| Description | | | |
| List of object names for which the format should be used.<br>This allows to have multiple objects formatted with one format definition.<br>The property will be ignored in the `baseFormat` definition. | | | |

#### *6.6.16.2 iconColor*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| iconColor | 0..1 | string | |
| Description | | | |
| Name of the color which will be used to draw the icon in the object header.<br>You can use either PlantUML standard color name or RGB code. | | | |

#### *6.6.16.3 skinParams*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| skinParams | 0..* | string | |
| Description | | | |
| List of skinparams which will be added to the beginning of the PlantUML file to define the format. | | | |

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| The format of the definition is:<br>`<paramname>=<paramvalue>`<br>The result will be:<br>`<paramname> <formatname> <paramvalue>`<br>Example:<br>`"formatName": "troubleTicket",`<br>`"definition": {`<br>`"objectFilter":[`<br>`"troubleTicket",`<br>`"workorder"`<br>`],`<br>`"iconColor": "Cornflowerblue",`<br>`"skinParams":["BackgroundColor=deepskyBlue"]`<br>`}`<br>This would lead to<br>`skinparam class {`<br>`BackgroundColor<<troubleticket>> deepskyBlue`<br>`}` | | | |

#### *6.6.16.4 captionShowIdent*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| captionShowIdent | 0..1 | Boolean | True |
| Description | | | |
| Flag to define if the object identifier should be shown in the header of an object and in the object column of the from / to relations.<br>The ident will be shown in *italic*. | | | |

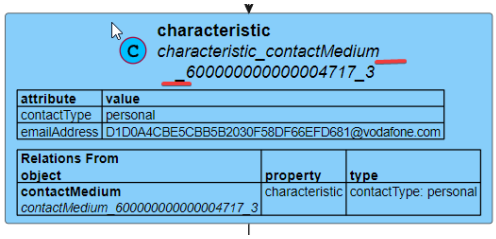
#### *6.6.16.5 captionShowTitle*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| captionShowTitle | 0..1 | Boolean | True |
| Description | | | |
| Flag to define if the object title should be shown in the header of an object and in the object column of the from / to relations.<br>The ident will be shown in **bold**. | | | |

#### 6.6.16.6 captionShowType

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| captionShowType | 0..1 | Boolean | True |
| Description | | | |
| Flag to define if the object type should be shown in the header of an object and in the object column of the from / to relations.<br>The ident will be shown underlined. | | | |

#### 6.6.16.7 captionSplitCharacter

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| captionSplitCharacter | 0..1 | String | |
| Description | | | |
| This parameter can be used to split object identifiers in multiple lines when they are too long. This reduces the size of the generated object boxes and improves the readability of the diagrams.<br>The identifier will be splitted in multiple lines whenever a "`captionSplitCharacter`" is found at a position greater than the "`captionSplitLength`".<br>Example:<br>`"captionSplitCharacter": "_",`<br>`"captionSplitLength": "20",`<br><br>Would lead to:<br>  <br>*Figure 33 Example of an object identifier split* | | | |



#### 6.6.16.8 captionSplitLength

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| captionSplitLength | 0..1 | Integer | 0 |
| Description | | | |
| Parameter to define if and when the generated caption (combination of type, ident and title) of an object should be split into multiple lines.<br>When the parameter is defined the split will be executed when a part of the caption is getting longer than the defined value. | | | |

#### 6.6.16.9 showAttributes

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| showAttributes | 0..1 | Boolean | True |
| Description | | | |
| Flag to define if the attribute list should be generated for the object.<br>(See5.3.6 5.3.7 Generated Outcome) | | | |

#### 6.6.16.10 showCharacteristics

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| showCharacteristics | 0..1 | Boolean | True |
| Description | | | |
| Flag to define if the characteristics lists should be generated for the object.<br>(See5.3.6 5.3.7 Generated Outcome) | | | |

#### 6.6.16.11 showFromRelations

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| showFromRelations | 0..1 | Boolean | True |
| Description | | | |
| Flag to define if the from relation list should be generated inside of the object.<br>(See5.3.6 5.3.7 Generated Outcome) | | | |

#### 6.6.16.12 showIfEmpty

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| showIfEmpty | 0..1 | Boolean | False |
| Description | | | |
| Flag to define if the object should be listed if no attributes, characteristics or relations are found.<br>This could happen if the object is only identified by its identifier as a single sub object of another object. | | | |

#### 6.6.16.13 showToRelations

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| showAttributes | 0..1 | Boolean | True |
| Description | | | |
| Flag to define if the to relation list should be generated inside of the object.<br>(See5.3.6 5.3.7 Generated Outcome) | | | |

## 6.7 Curl parameter file

### 6.7.1 Data model

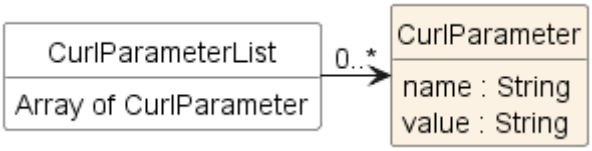



*Figure 34 Curl parameter file data model*

The curl parameter list is a list of name value pairs which are defining the values to be used by the curl pre-processor (See 5.2.1 Curl parametrisation)

### 6.7.2 Curl Parameter

The curl parameter will be used by the curl pre-processor to fetching data based on the defined curl parameters (See 5.2 Curl pre-processor).

The curl parameter can be defined in three different formats:

7. String
   `"<parameter name>=<parameter value>"`
8. Simple json record
   `{"<parameter name>": "<parameter value>"}`
9. Full json record
   ```
   {"name": "<parameter name>",
    "value": "<parameter value>"}
   ```

#### *6.7.2.1 name*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| name | 1 | String | |
| Description | | | |
| This parameter defines the name of the of the curl parameter.<br>Curl parameter names are defined using the following pattern: `${<name>}`.<br>In the configuration they can defined only using the name or using the full pattern. | | | |

#### *6.7.2.2 value*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Value | 0..1 | String | |
| Description | | | |
| This parameter defines the value of the curl parameter which is replacing the parameter name in the curl commands. | | | |

## 6.8 Curl authentication file

The curl authentication file allows to predefine curl authentication parameters based on a base URL. Separating these parameter in an additional file is a simple way to ensure that client credentials are not handled in normal configuration files (See 5.2.5.4 Curl authentication file)

### 6.8.1 Data model

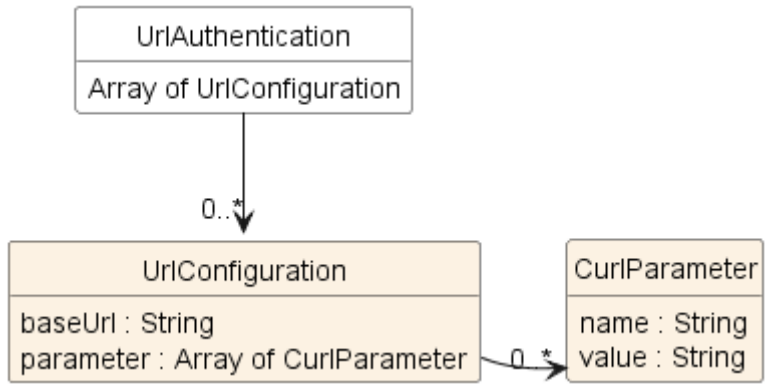



*Figure 35 Main Configuration Model*

### 6.8.2 UrlConfiguration

#### *6.8.2.1 baseUrl*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| baseUrl | 1 | String | |
| Description | | | |
| Defines the baseUrl value which will be compared with the curlBaseUrl value from the inputlist or inpurlistFile (See ) to find the corresponding curl authentication parameters. | | | |

#### *6.8.2.2 value*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Value | 0..1 | String | |
| Description | | | |
| This parameter defines the value of the curl parameter which is replacing the parameter name in the curl commands. | | | |

### 6.8.3 Curl Parameter

The curl parameter will be used by the curl pre-processor to define url based authentication parameters (See 5.2 Curl pre-processor).

The curl parameter can be defined in three different formats:

10. String
    `"<parameter name>=<parameter value>"`
11. Simple json record
    `{"<parameter name>": "<parameter value>"}`
12. Full json record
    ```
    {"name": "<parameter name>",
     "value": "<parameter value>"}
    ```

#### *6.8.3.1 name*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| name | 1 | String | |
| Description | | | |
| This parameter defines the name of the of the curl parameter.<br>Curl parameter names are defined using the following pattern: `${<name>}`.<br>In the configuration they can defined only using the name or using the full pattern. | | | |

#### *6.8.3.2 value*

| Name | Cardinality | Datatype | Default |
|---|---|---|---|
| Value | 0..1 | String | |
| Description | | | |
| This parameter defines the value of the curl parameter which is replacing the parameter name in the curl commands. | | | |

# 7 Appendix

## 7.1 Images