IIP-Ecosphere

Next Level Ecosphere for
Intelligent Industrial Production

Service Integration: How to Configure Services

Gefördert durch:

Bundesministerium
für Wirtschaft
und Klimaschutz

IIP-Ecosphere Platform

Configure Services

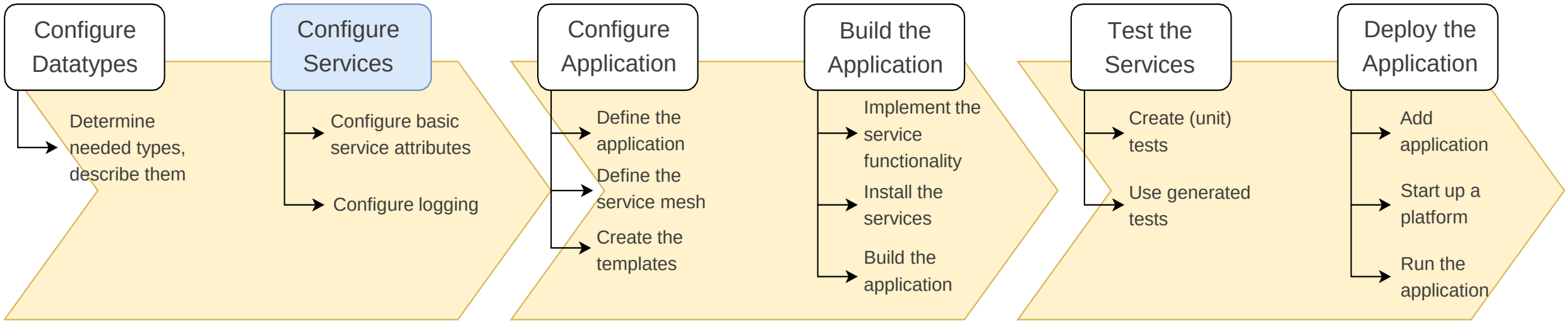


Table of Contents

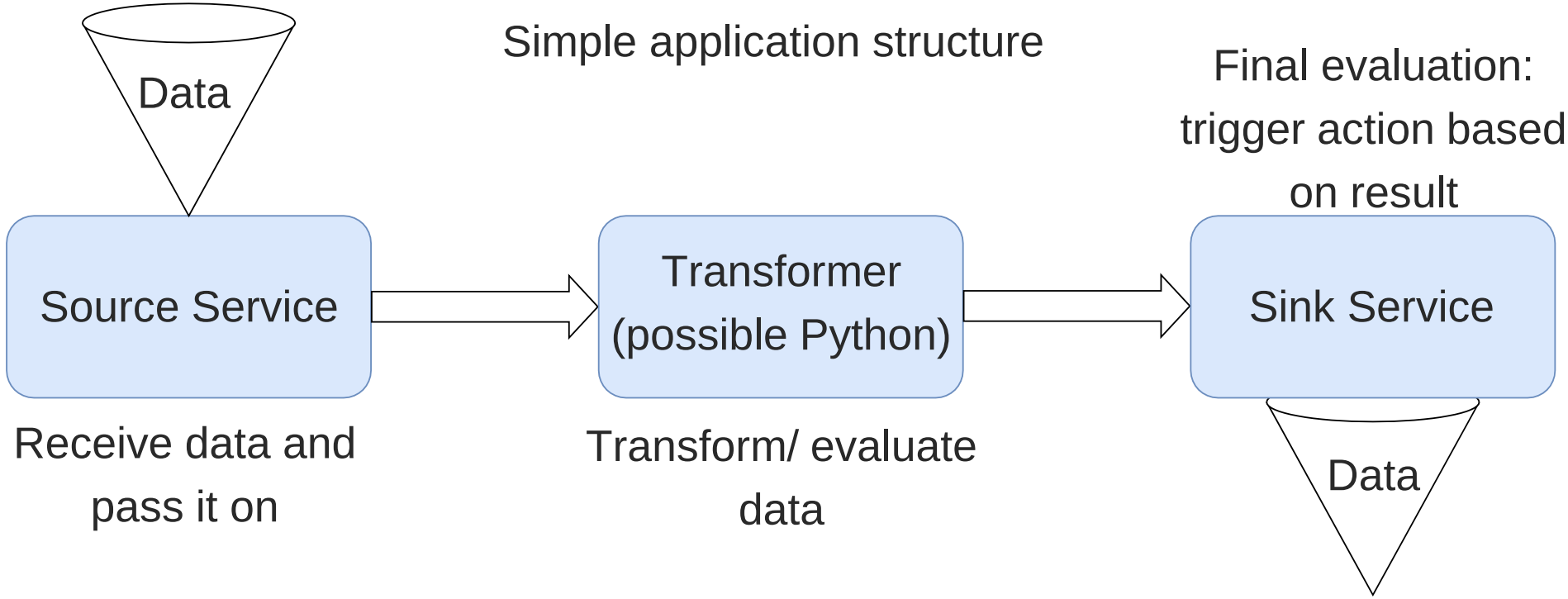
Prerequisites

- Required:
  - Installed the platform and its dependencies or the development container
  - Installed the IDE for IIP-Ecosphere Platform (provided Eclipse Version)
  - How to configure datatypes
- Optional:
  - Introduction to code generation

Table of Contents

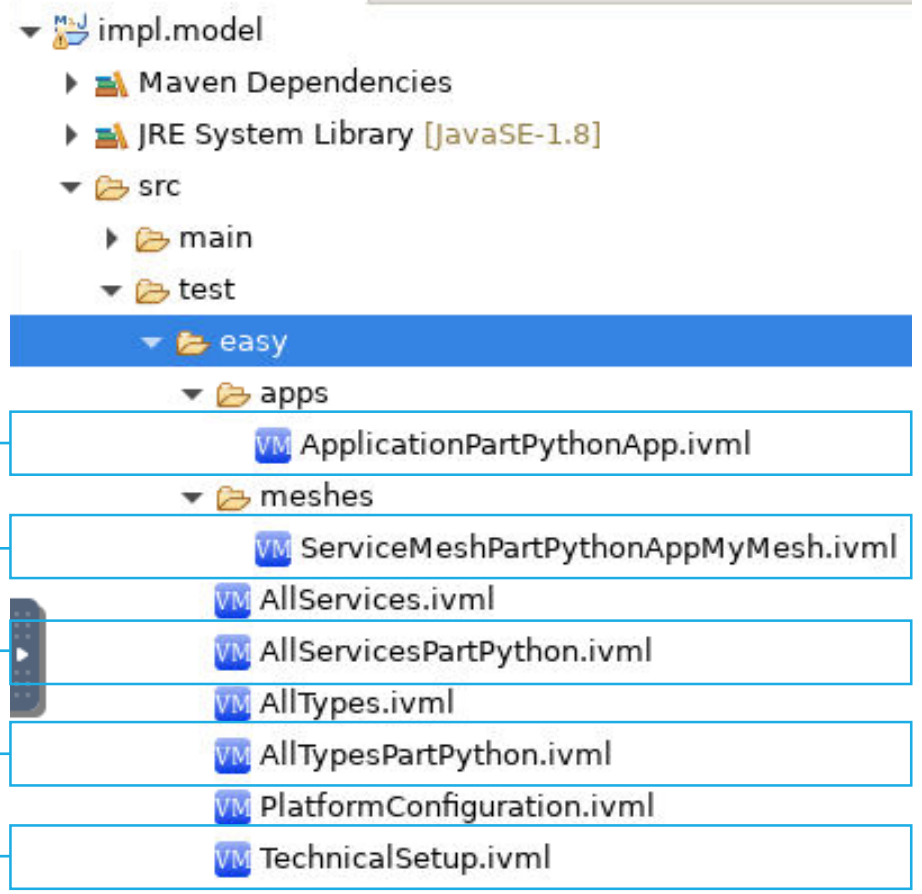
What are Services

- Example of an application made up from services
  - A selection of services chained together



Configuring Services (1)

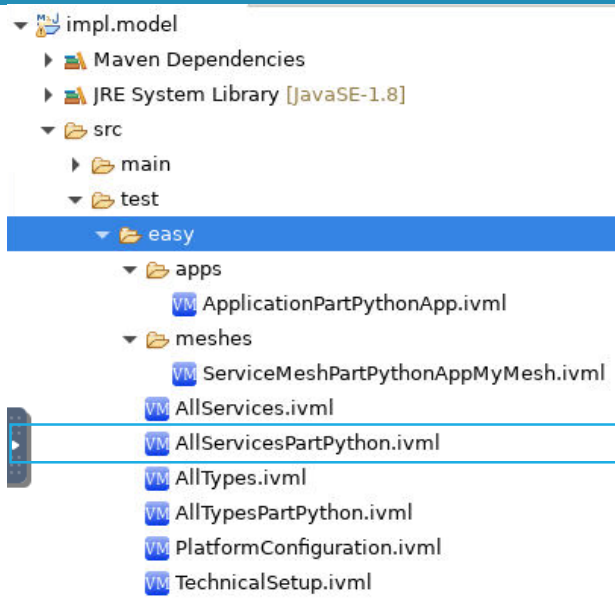
- The *.ivml* Files to configure the services and the application can be found in *“src/test/easy/….ivml”*



- Name and attributes of the application
- Define the service mesh
- Define the seperate services
- Define the needed datatypes
- Define the technical aspects

Configure Services (2)

- Define the services in the *AllServicesPart….ivml* file:

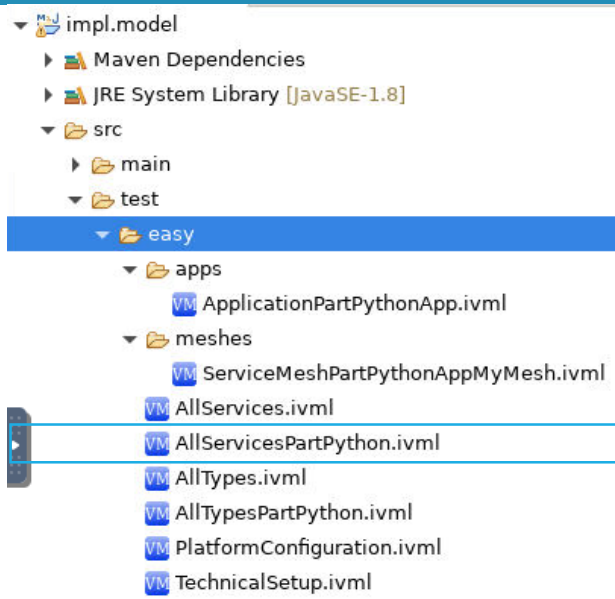



```
project AllServicesPartPython {

    import AllTypes;

    annotate BindingTime bindingTime = BindingTime::compile to .;

    Service source = JavaService {
        id = "Source",
        name = "Source",
        description = "",
        ver = "0.1.0",
        deployable = true,
        asynchronous = false,
        traceRcv = TraceKind::SYSOUT,
        traceSent = TraceKind::SYSOUT,
        class = "de.iip_ecosphere.platform.impl.shop.TestSource",
        artifact = "de.iip-ecosphere.platform.apps:TestTestAppServices:" + iipVer,
        kind = ServiceKind::SOURCE_SERVICE,
        output = {{type=refBy(InData)}}
    };
```

- **`Servicetype:`** `Python` or `JavaService` need to be distinguished as the setup is different
- **`id:`** The id through which a service can be accessed in the UI/CLI
- **`class:`** (ONLY JAVA) The class where the code for the service can be found. Will also be used to determine package on template generation

Configure Services (3)

- Define the services in the *AllServicesPart….ivml* file:

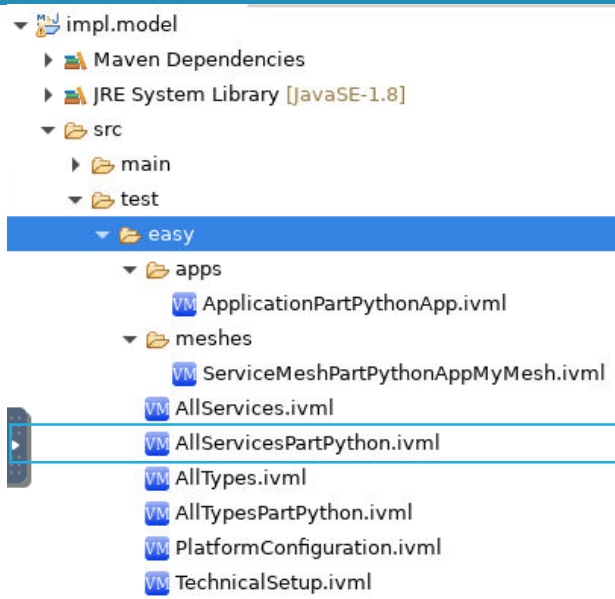



```
project AllServicesPartPython {

    import AllTypes;

    annotate BindingTime bindingTime = BindingTime::compile to .;

    Service source = JavaService {
        id = "Source",
        name = "Source",
        description = "",
        ver = "0.1.0",
        deployable = true,
        asynchronous = false,
        traceRcv = TraceKind::SYSOUT,
        traceSent = TraceKind::SYSOUT,
        class = "de.iip_ecosphere.platform.impl.shop.TestSource",
        artifact = "de.iip-ecosphere.platform.apps:TestTestAppServices:" + iipVer,
        kind = ServiceKind::SOURCE_SERVICE,
        output = {{type=refBy(InData)}}
    };
```

- **`artifact:`** (The same for all Services) The Maven artifact where the class can be found **`<mavenGroupID>:<artifactID>,`** the values for these can be read from the **`.pom`** of the templates after their creation
- **`kind:`** The type of service: `SOURCE_SERVICE`, `SINK_SERVICE` or `TRANSFORMATION_SERVICE` (there are more)

Configure Services (4)

- Define the services in the *AllServicesPart….ivml* file:
  - You might need to look at the name of the defined datatypes as they are needed to define in- and out-put of services

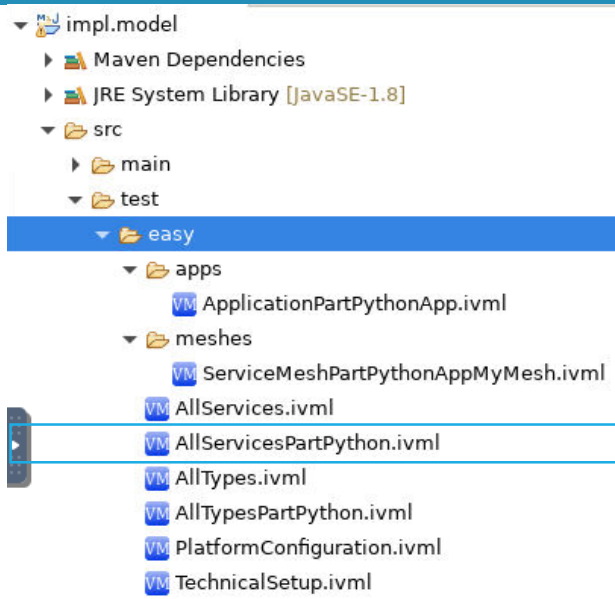



```
project AllServicesPartPython {

    import AllTypes;

    annotate BindingTime bindingTime = BindingTime::compile to .;

    Service source = JavaService {
        id = "Source",
        name = "Source",
        description = "",
        ver = "0.1.0",
        deployable = true,
        asynchronous = false,
        traceRcv = TraceKind::SYSOUT,
        traceSent = TraceKind::SYSOUT,
        class = "de.iip_ecosphere.platform.impl.shop.TestSource",
        artifact = "de.iip-ecosphere.platform.apps:TestTestAppServices:" + iipVer,
        kind = ServiceKind::SOURCE_SERVICE,
        output = {{type=refBy(InData)}}
    };
```

- **output:** The datatype we intend to pass on from this service. Usually self defined in the *AllTypesPart…ivml*
- **input:** The datatype we want this service to receive. Usually self defined in the *AllTypesPart…ivml*
- **Note:** Sources only support **output** and Sinks only support **input**

Configure Services (5)

- Define the services in the *AllServicesPart….ivml* file:

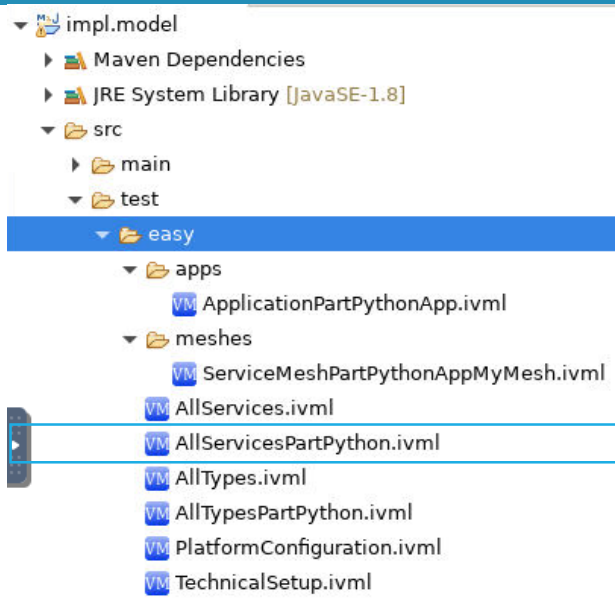



```
project AllServicesPartPython {

    import AllTypes;

    annotate BindingTime bindingTime = BindingTime::compile to .;

    Service source = JavaService {
        id = "Source",
        name = "Source",
        description = "",
        ver = "0.1.0",
        deployable = true,
        asynchronous = false,
        traceRcv = TraceKind::SYSOUT,
        traceSent = TraceKind::SYSOUT,
        class = "de.iip_ecosphere.platform.impl.shop.TestSource",
        artifact = "de.iip-ecosphere.platform.apps:TestTestAppServices:" + iipVer,
        kind = ServiceKind::SOURCE_SERVICE,
        output = {{type=refBy(InData)}}
    };
```

- **`asynchronous:`** defines whether or not this service acts asynchronous or synchronous
- **`traceRcv:`** Traces data reception by service.
  - `TraceKind::NONE:` No tracing
  - `TraceKind::LOG:` Using the logging framework
  - `TraceKind::TRACE:` Using AAS tracing
  - `TraceKind::SYSOUT:` Writing to the console
- **`traceSent:`** Trace data upon sending by service.

Configure Services (6)

- Define the services in the *AllServicesPart….ivml* file:
  - Example of a service in this case a python service
  - For further information on python services view the video “How to Create a Python Application”




```
Service pyth = PythonService {
    id = "PyService",
    name = "PyService",
    description = "",
    ver = "0.1.0",
    deployable = true,
    asynchonous = true,
    traceRcv = TraceKind::SYSOUT,
    traceSent = TraceKind::SYSOUT,
    input = {{type=refBy(InData)}},
    output = {{type=refBy(OutData)}},
    artifact = "de.iip-ecosphere.platform.apps:TestTestAppServices:" + iipVer,
    kind = ServiceKind::TRANSFORMATION_SERVICE,
    dependencies = {refBy(PYTHON39)}
};
```

- **kind:** Python services are always TRANSFORMATION_SERVICES as this is currently the only supported version

Summary

- What we learned
  - How to configure services
- How to go on
  - How to configure our application
  - How to build an application
  - How to test an application