

# Tutorial: How to implement GWES Activity Plugins

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## Main steps:

### 1. Specify the mapping of the [GWorkflowDL](#) elements to your activity plugin

Example:

- edgeExpression -> parameter name
- content of token -> content of parameter
- operationCandidate.type -> type of plugin (e.g. wsgram, soap, rest, cli)
- operationCandidate.operationName -> name of operation, e.g., name of SOAP method or executable of command line program.
- operationCandidate.resourceName -> name of resource, e.g., URL of WSDL or hostname of Grid cluster.

### 2. Implement adapter class that extends the abstract class [Activity](#)

The sequence diagrams below show how the plugin is called by the GWES and which GWES methods should be called by the plugin.

The activity plugin should implement the following abstract methods:

- initiateActivity()
- startActivity()
- simulateActivity()
- suspendActivity()
- resumeActivity()
- abortActivity()
- restartActivity()
- cleanupActivity()

You can access the data content of related input and read tokens via the TransitionOccurrence (to) object. Use this data as input parameters for your activity. The output parameters should overwrite the corresponding output and write tokens of the TransitionOccurrence object.

Example for getting the input parameter:

```
// generate parameter map from read and input tokens
for(TokenParameter tp : to.tokens) {
    switch (tp.scope) {
        case READ:
        case INPUT:
            String parameterName = tp.edge.getExpression();
            String parameterValue = ((Element) tp.token.getData().get()).getValue().trim();
            parameter.put(parameterName, parameterValue);
            break;
    }
}
```

### 3. Compile jar file and deploy it

Put all jar files that are required by the activity plugin to the GWES classpath, e.g.:

```
$GWES_HOME/WEB-INF/lib/
```

### 4. Provide gwes.properties for the activity plugin

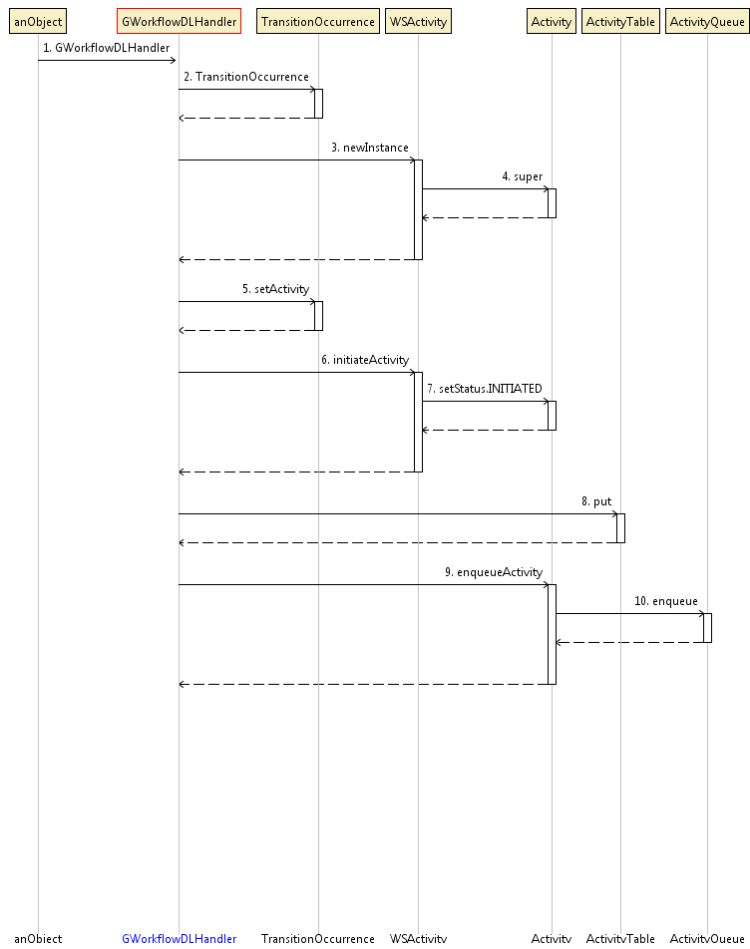
Example for telling GWES to use implementation

"de.fraunhofer.first.gwes.plugin.wsactivity.WSActivity" for invoking activities with operation type "soap":

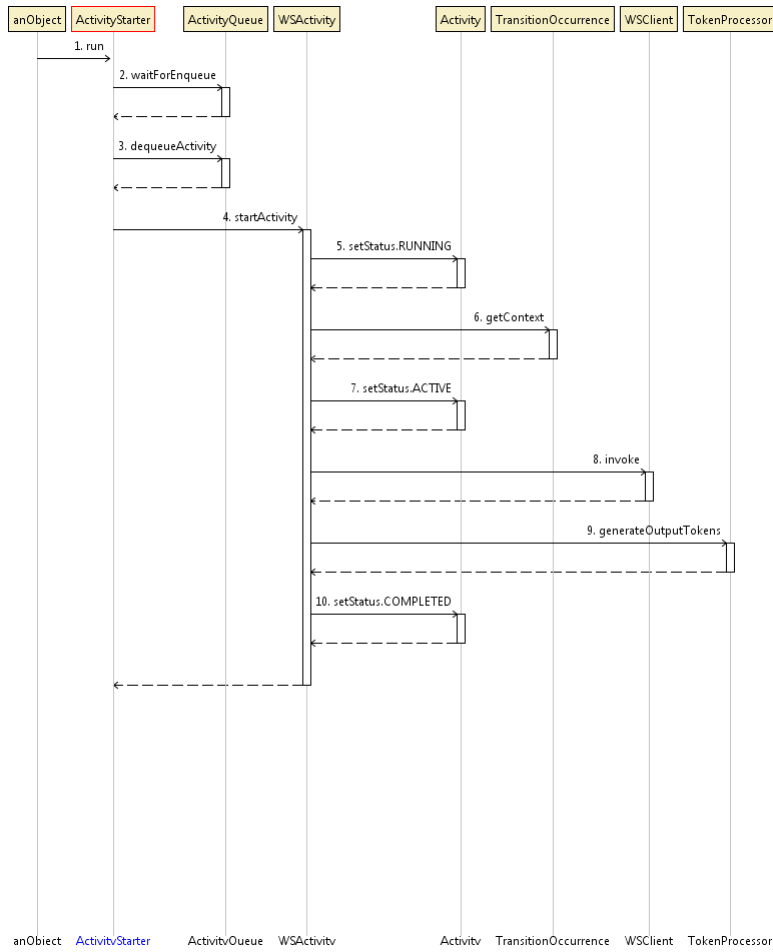
```
gwes.activity.soap.class=de.fraunhofer.first.gwes.plugin.wsactivity.WSActivity
```

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## Thread that initiates new activities



## Thread that starts new activities



## Thread for activity postprocessing

