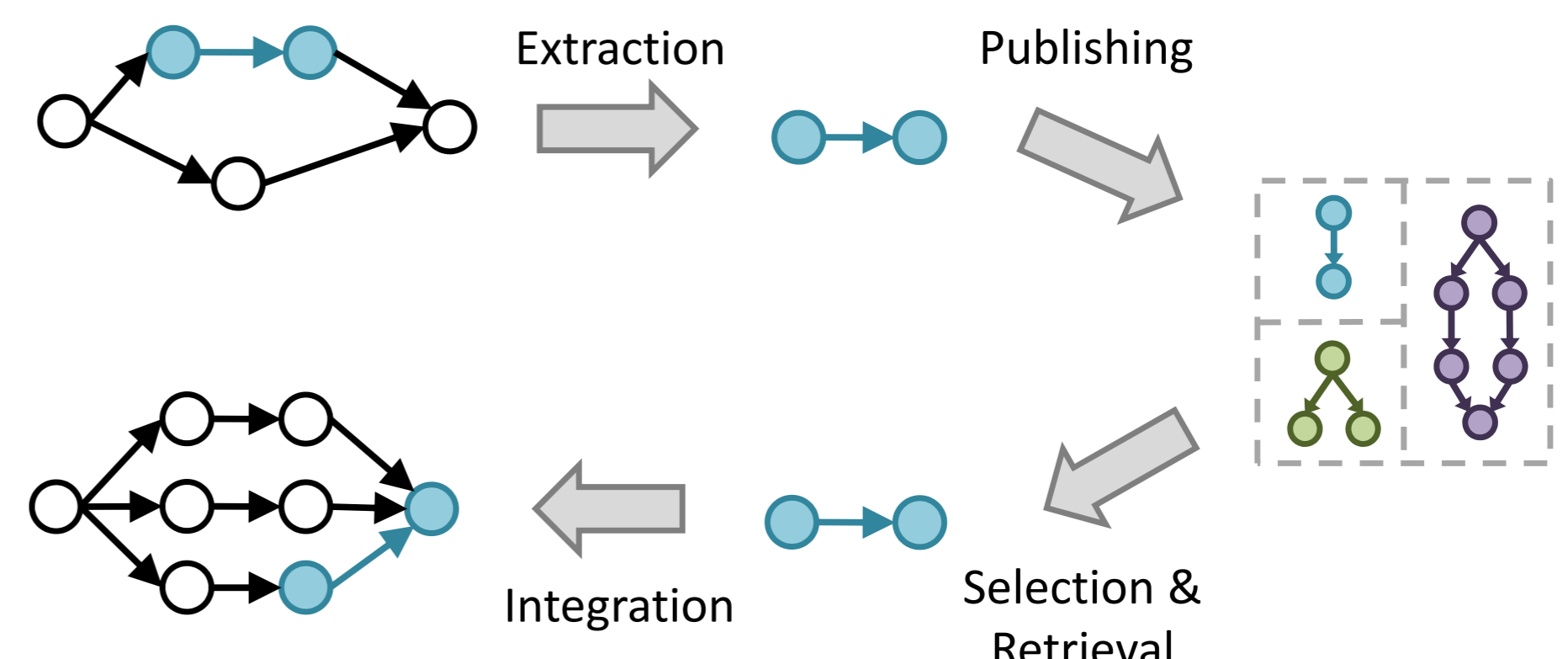


Reuse of Web Service Compositions

Ever more functionality of applications is provided for usage over corporate and public networks. Standardized technology stacks, like Web services, provide abstraction from the internal implementation. Coarse-grained units of Web service composition logic can be made reusable by capturing it as process fragment. Such fragments can be shared over the Web in distributed **Process Fragment Libraries** to simplify and accelerate the development of process-based service compositions. We present a process design framework that is integrated with a Web-based process fragment library. The framework enables extracting process fragments, publishing and sharing, search, retrieval, and their reuse.

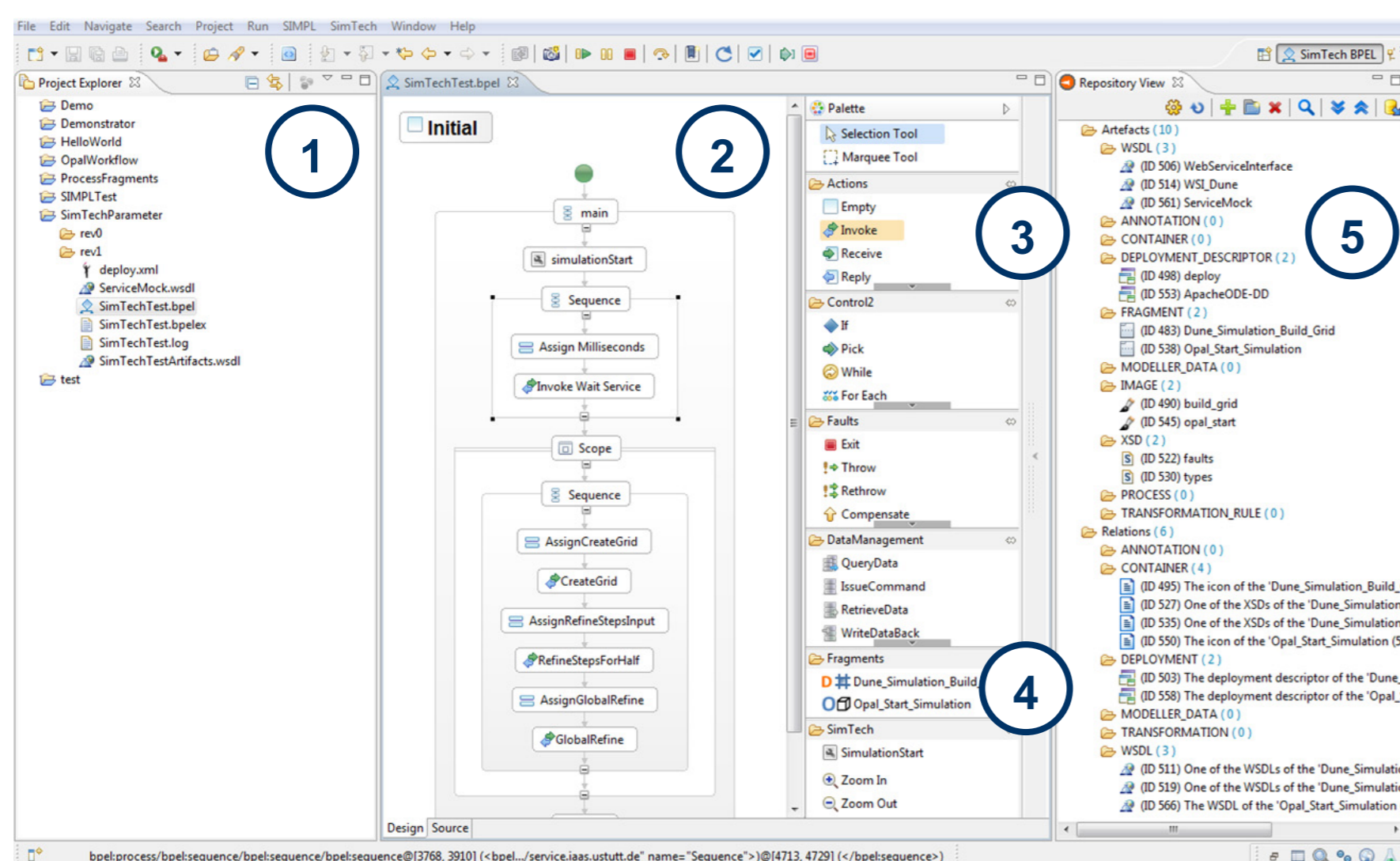
Process Fragment Sharing

- ⇒ **Extraction:** A connected process fragment is being determined based on selected activities. A new process file is generated, containing only the fragment and all required information of the composed Web services.
- ⇒ **Publishing:** Then, a set of SOAP messages is prepared and submitted to the process fragment library, each containing a file belonging to the fragment.
- ⇒ **Selection & Retrieval:** Search can be made using keywords, contained text, etc. A selected fragment can be downloaded for reuse in another process.
- ⇒ **Integration:** The activities in the fragment are added to the process, the WSDLs and XML schemas are added, and deployment descriptors are merged.



Process Design Environment

- ⇒ The **Project Explorer** (1) shows all files relevant for process design like processes and XML schemas.
- ⇒ The **Editor Pane** (2) displays the model of a process graphically. The user can select process logic and extract it as fragment. A fragment can be integrated by a simple drag-and-drop operation.
- ⇒ The **Editor Palette** (3) shows the standard elements that can be used in process design like activities for Web service invocation or loop controls.
- ⇒ The **Fragment Palette** (4) shows a list of fragments which are currently selected for usage.
- ⇒ The **Repository View** (5) reflects the contents of a selected process fragment library in form of a tree.



Integration Architecture

- ⇒ A **Process Design Environment**, which is based on the open source tool Eclipse BPEL Designer, is the main platform for Web service composition reuse.
- ⇒ A **Fragmento Eclipse plug-in** hosted on the process design environment integrates the library prototype Fragmento with Eclipse via Web service interfaces.
- ⇒ Multiple deployments of the **Fragmento Library** and underlying database cater for the process fragment sharing infrastructure.
- ⇒ **Fragmento's Web Interface** allows process fragment sharing over the Web without a rich client integration.

