

# A HIGH LEVEL INTRODUCTION TO OGSI

This high-level introduction will set the stage for the detailed technical discussion on OGSI. The OGSI specification defines a component model using a Web service as its core base technology, with WSDL as the service description mechanism and XML as the message format. As we know, Web services in general are dealing with stateless services, and their client interaction is mostly stateless. On the other hand, grid services are a long-running process, maintaining the state of the resource being shared, and the clients are involved in a stateful interaction with the services. There are two dimensions to the stateful nature of a Web service:

1. A service is maintaining its state information. These are normally classified as application state and in the case of grid service it directly maps to the state of the resource.
2. The interaction pattern between the client and service can be stateful. There are numerous architecture styles and programming models for defining these stateful interactions including BPEL4WS and REST (Fielding).

As of now, the OGSI is attempting to answer the first dimension of the state problem by creating a programming model for how and where an application/service resource state can be logically maintained, and how these states are exposed to the client. This does not mean, however, that the service contains all its physical state. The physical state may be held in the real resource being modeled as the grid service. This publicly known state can be a subset of the overall application state. We believe that the OGSI should address the stateful message exchange pattern in coordination with the stateful interaction specifications.

Figure 5.2 introduces a number of concepts surrounding OGSI, and its relation to Web services. The following list describes points of interest related to this model.

- Grid services are layered on top of Web services.
- Grid services contain application state factors, and provide concepts for exposing the state, which is referred to as the service data element.
- Both grid services and Web services communicate with its client by exchanging XML messages.
- Grid services are described using GWSDL, which is an extension of WSDL. GWSDL provides interface inheritance and open port type for exposing the service state information—referred to as service data. This is similar to interface properties or attributes commonly found in other distributed description languages.
- The client programming model is the same for both grid service and Web service. But grid services provide additional message exchange patterns such as the handle resolution through OGSi port types.
- The transport bindings are selected by the runtime. Message encoding and decoding is done for the specific binding and high-level transport protocol (SOAP/HTTP).

Figure 5.2. Typical Web service and grid service layers.

