

# Migratory Adaptive User Interfaces

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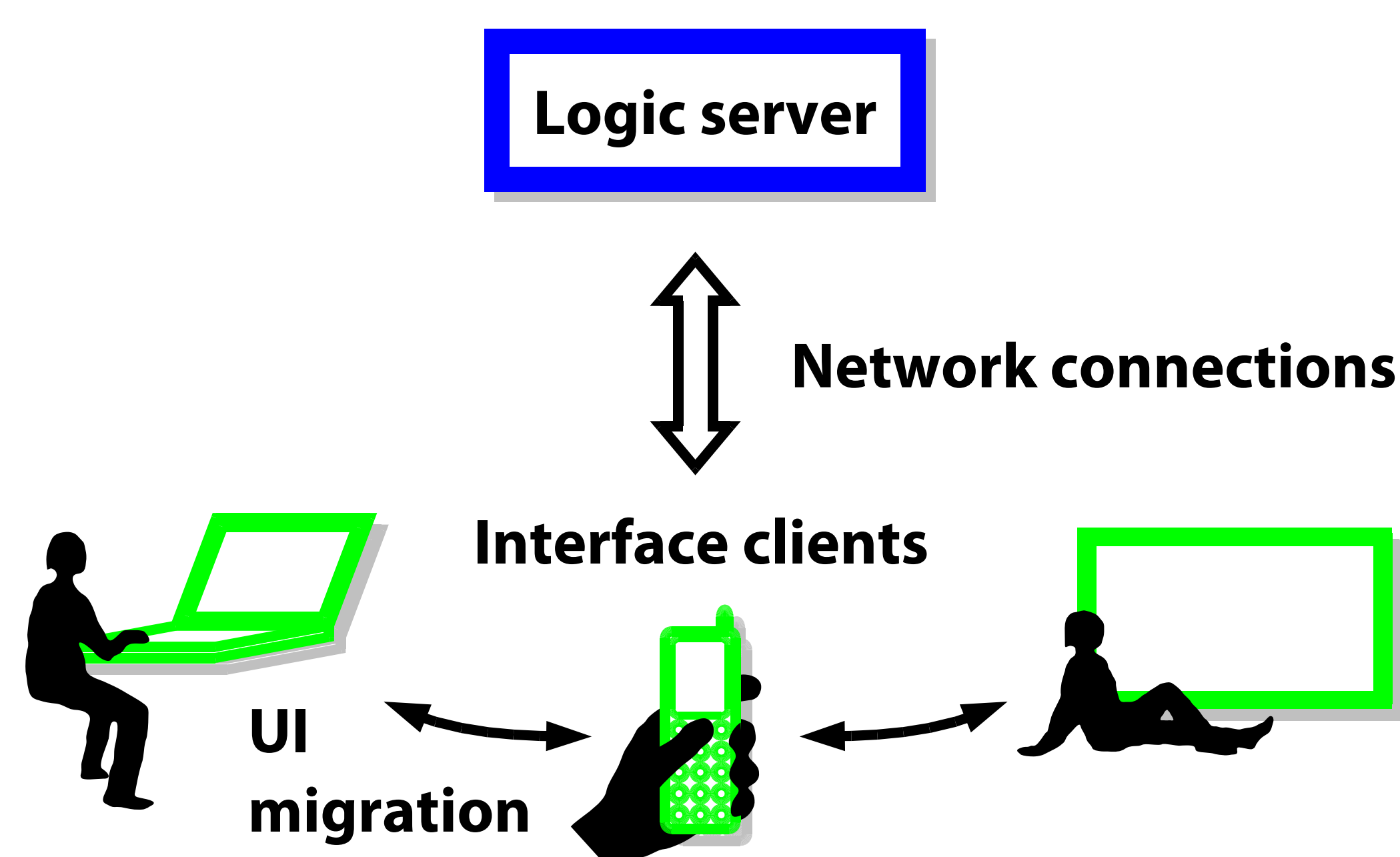
## Demands

Constant improvements of technology have brought a large variety of platforms, and have made **users' new demands** about for interactive services:

- To use services through different devices and modalities depending on their use contexts.
- To change devices and take their tasks from one to another, which is called **user interface (UI) migration**.

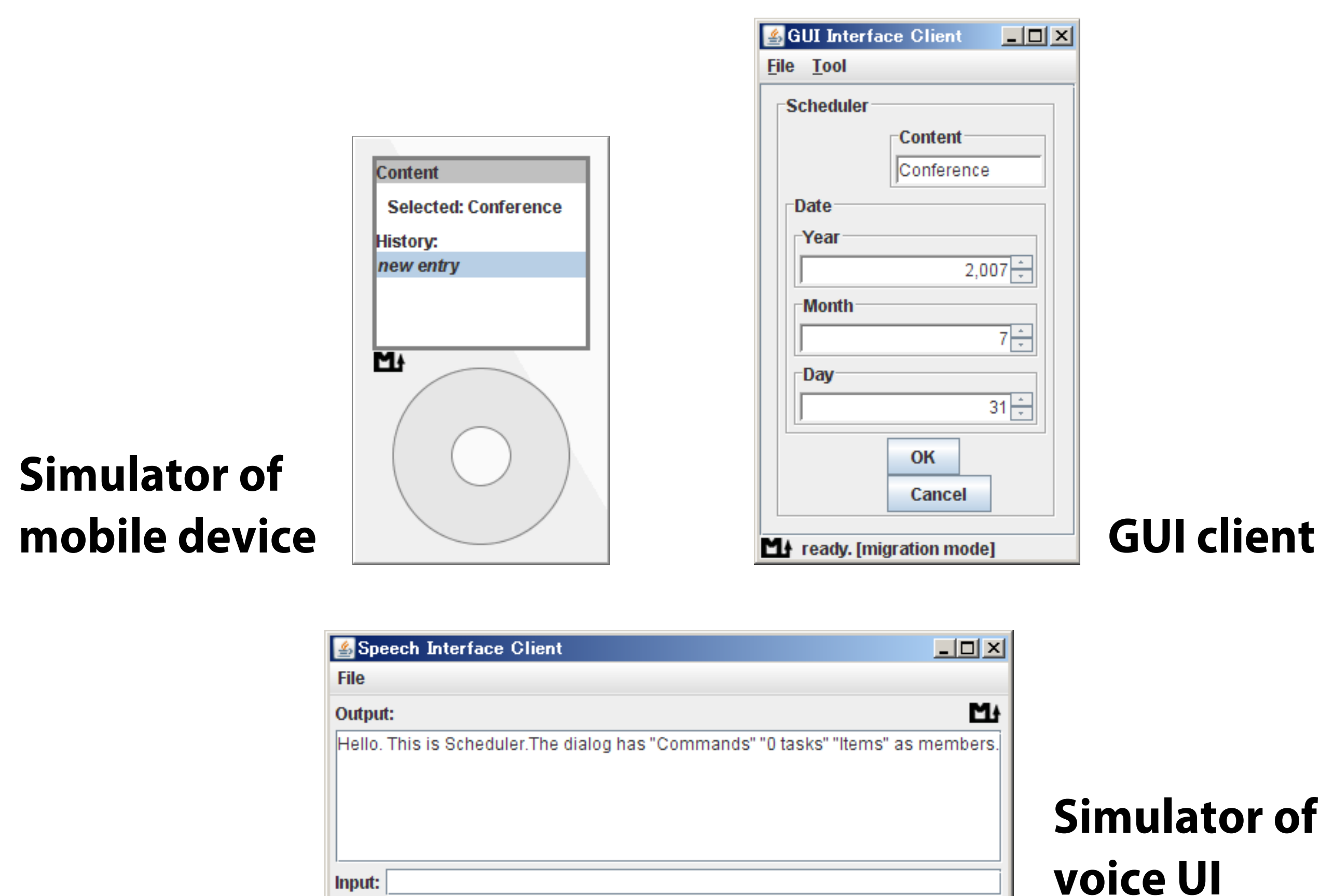
Our UI architecture, **Interface client/ logic server (ICLS)** is:

- targeting **dialog-based interactive services** like web applications,
- supporting **UI migration** and the simultaneous use of multi devices,
- offering **adaptive UIs** for devices and services with **declaration of meanings** in logical descriptions.

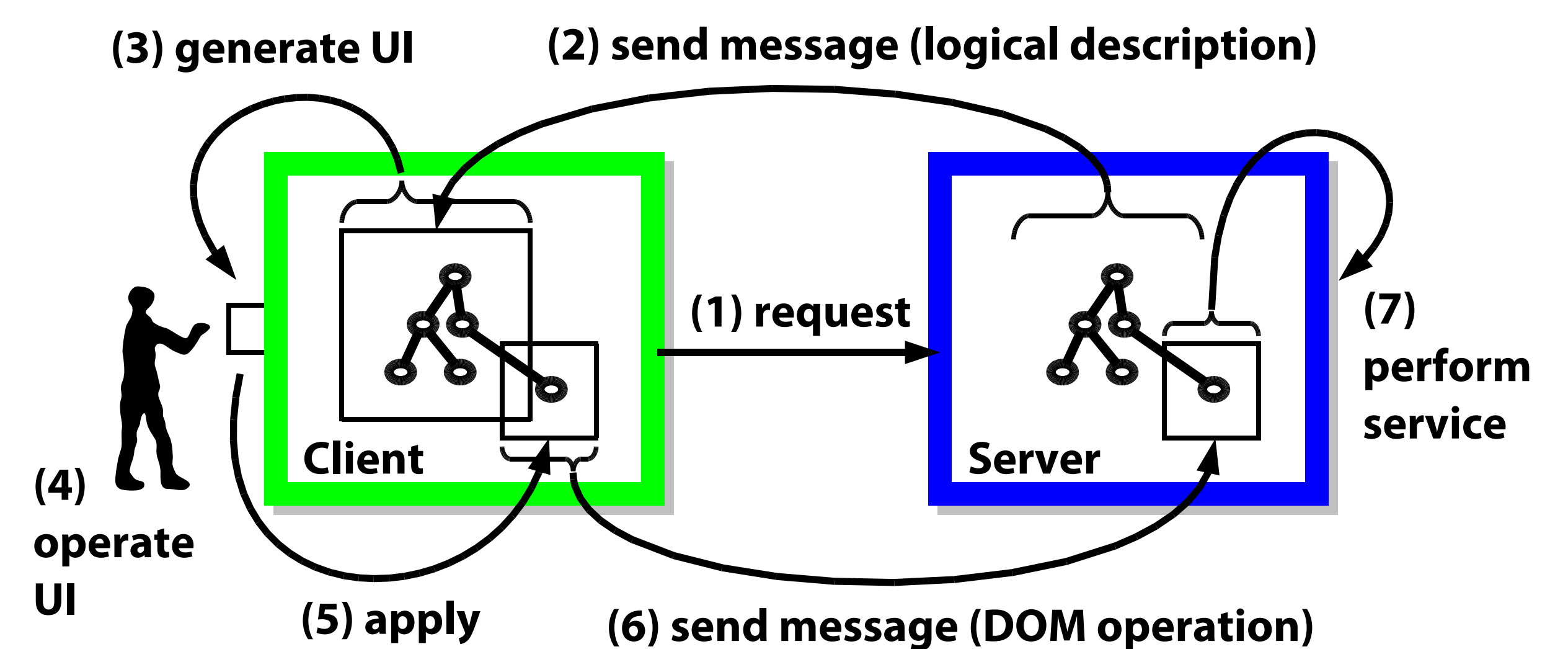


## Implementations

We implemented ICLS as a framework, which is a **class library written in Java language (JDK 1.6) with a semantic web library Jena**. In order to verify the feasibility of the ICLS specification and the stability of the communication protocol, we developed three interface clients and two logic servers.



## Architecture



1. A session of a service starts by a **request** from a client to a server.
2. After that, the client **receives a logical description** from the server.
3. The client constructs DOM tree, and **generate a UI** based on the tree.
4. After the UI generated on the client, the user can **operate the UI**.
5. The client **changes the DOM tree** corresponding to the user's UI operations.
6. The client **sends this DOM changes** as messages to the server.
7. The server **performs the service** according to the message from the client.

## Logical Description

We use XML documents written in **abstract interaction description language (AIDL)** as logical descriptions of UIs. In AIDL, arbitrary UI structures and their **current state (meaning the history of users' operations)** are described as **selection acts**, which represent essential function of UI elements, and are grouped composing an **interaction tree**.

Selection acts consist of three elements:

- a **type** (a set of choices),
- a **meaning** (a purpose in a service),
- a **state** (a current state).

We introduce one of semantic web technologies, **resource description framework (RDF)** for expressing meanings of interactions on certain services with RDF classes.

