Overview
Nowadays, with the broadening usage of distributed systems and Grid, the need for cooperation between many different heterogeneous organizations occurs. Such cooperation usually requires sharing of access to data, service and other tangible or intangible resources. To accomplish such cooperative efforts between organizations, an idea of the Virtual Organization (VO) emerged. In order to enable creation of such Virtual Organizations, it is necessary to allow the participants of the VO to negotiate an agreement concerning the rules of cooperation, which will be encoded in a machine processable format, which can be used to automatically configure the underlying Grid infrastructure to respect the new agreement.

Framework for Intelligent Virtual Organizations
The FiVO framework is based on the Service Oriented Architecture (SOA) technology, in particular the backbone of the system is the Enterprise Service Bus (ESB) technology, which provides communication layer between all the system components. All information is stored in a distributed semantic knowledge base (Grid Organizational Memory - GOM), which provides SOA compatible interface for management and evolution of knowledge in the Web Ontology Language (OWL) format.

Negotiation GUI
In order to facilitate the negotiation process, a custom interface application was created using Eclipse Rich Client platform, which allows negotiation using natural language or using ontology concepts directly.

Contract negotiation process
During the negotiation phase 2 roles are distinguished from the partners participating in the negotiations. First one, the VO Administrator is the lead participant who controls the negotiation process and VO Partner who creates, edits and accepts/rejects contract statements within Negotiation Tables.

Reference
1. FiVO Website: http://fivo.cyf-kr.edu.pl

Communication between FiVO components proceeds via Apache ActiveMQ (JMS messages) and the connection between DCNS Client and GOM goes through Web Services (Apache CXF).

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Distributed Contract Negotiation System for Virtual Organizations
PL-Grid

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