Multiagent Systems and Semantic Services for Very Large-Scale Participatory Design

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There are a number of important societal problems that resist conventional, i.e., *centralized*, solutions. The problems affect the management of our economic systems, climate, energy systems, transportation systems, telecommunication systems, and infrastructure. They are characterized as being distributed and many-faceted, with a large number of interdependent components. For example, the routes of trains and automobile traffic are designed centrally and statically by transportation engineers, rather than designed in real time by the passengers being transported. Allowing the passengers to be responsible for the transportation system constitutes a form of design that is

- Large-scale, because of the size of the system being designed and the number of designers
- Spatially distributed, in terms of both the system and the designers
- Temporally distributed, because the design of the system evolves over time and the designers interact with it over a long time period
- Participatory, although not necessarily cooperative.

There are many similar examples where design is typically done in a centralized manner, but could be done much better in a distributed manner. How can this sort of design be supported? It requires a form of consensus, semantic mediation, and intelligent distributed support. In this talk I will describe how large-scale distributed design can be done with the aid of multiagent systems that produce consensus.