

A Cognitive-Agent Based Geospatial Data Distribution System

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Abstract: Geospatial information is usually contained in large datasets. There may be many simultaneous users of these datasets. Some of those users, like first responders to emergencies, may have priority needs. A distributed cognitive-agent architecture is proposed that allows individuals to self-associate into communities of interest and to share data with an access priority tuned for their community. Users can join and leave a community at will without disturbing the rest of the community. The architecture has a core infrastructure to provide for transactional updates and the synchronization of those updates with all subscribers. The core infrastructure also provides a deep archive and governance structure.

Designed using an Internet overlay routing concept, the architecture provides for data neutrality, application specific schema mapping, promiscuous caching, data redundancy, and long-term persistence. Rights management is an integral part of the architecture because not all information will be available to the public, either for proprietary or security concerns.

The architecture supports client-server applications at the end-nodes so that standards like those created by the Open Geospatial Consortium (OGC) and the International Standards Organization (ISO) are supported. The architecture assumes that requests are fulfilled to two main steps. First a plan is created where the user can nominate multiple instances of resources to be utilized. A second phase executes the plan, optimizing the availability of resources at run-time. The plans can be saved and reused.