Development of an Online Volunteered Geographic Information System based on Semantic Web Technologies

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Introduction

- Although volunteered geographic information (VGI) applications have proven to be useful for gathering information about a crisis, these applications have provided only limited utilities for response coordination.
- One major problem of existing implemented VGI systems is heterogeneous data semantics.
The objective of this research is to propose a VGI system based on the state-of-the-art Geospatial Semantic Web technologies for the public and emergency responders, who usually do not have many GIS skills, to update the existing databases and automatically search for the needed information.
Sets of classes
object properties, datatyp properties

Initial partitions of classes
object properties, datatyp properties

refine the partitions of classes and object properties based on their structures

Continue refinement until the partitions stabilize

If partitions change

refining partitions based on the names of classes and object properties

Partitions do not change

Final partitions
A case study

In this case study, we intend to develop a prototype based on the aforementioned framework to overcome some of the problems met during the two storms in Connecticut.

We anticipate that the prototype will provide useful tools to allow users create and update data/information over the Internet.
The prototype is accessible from the website:
http://boyang.cs.uwm.edu:8080/newHaven/
Conclusion

- We propose a framework of an interoperable online VGI system based on Geospatial Semantic Web technologies for timely updating, aggregating, disseminating, and sharing information for disaster response.
- The implemented prototype shows great promise.
Conclusion

Although some geographic information provided by such a system may not have the same high quality as that from traditional authoritative sources, it still will be helpful to assist recovery workers because it allows new information, which may reflect the real disaster situation, to be incorporated and distributed in nearly real time.
Thank you!