Grand Challenges in GIScience: UCGIS experiences 2006-2010

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Outline

- UCGIS Background in Brief
- 2006-2007 early work on grand challenges
- 2008-2010 current work on grand challenges

UCGIS Background in Brief

What is UCGIS?

- The University Consortium for Geographic Information Science (UCGIS) is an organization of 70+ institutional members representing universities and colleges, federal agencies, industry partners, and international affiliates.

Who is UCGIS?

- UCGIS delegates from the 70+ institutional members are scholars representing disciplines including cartography, cognitive science, computer science, engineering and land surveying, environmental sciences, geodesy, geography, landscape architecture, and more...

What does UCGIS do?

UCGIS Mission…

- To serve as an effective, unified voice for the geographic information science research community;
- To foster multidisciplinary research and education; and
- To promote the informed and responsible use of geographic information science and geographic analysis for the benefit of society.

UCGIS information found at www.ucgis.org.

Early work…

Research Plenary
UCGIS Summer Assembly
Vancouver, WA
June, 2006

Challenges, Challenges…
for "Highlighting" the
UCGIS Research Agenda

Grand Challenge Criteria…

A Grand Challenge…

- has one or more well-defined (measurable) goals

- is very hard to do, but doable

- potentially affects millions, if not hundreds of millions of people

- is under-funded research at the current time in comparison to potential

- has productive next steps that are possible and substantially doable within next 5 years.

- would take multiple research projects, across many disciplines to address

Keith Clarke's UCGIS
Five Grand Challenges - 2006

- What is the cost to the nation of geospatial information that is inaccurate, over-accurate or out-of-date?

- What role can geospatial technologies play in eliminating geographic illiteracy?

- In what ways have we yet to exploit the superiority of digital maps over paper maps?

- Can we complete a digital earth by 2009?

- By how much can effective use of geospatial information improve human safety and welfare while reducing the associated costs?

UCGIS grand challenge examples circa 2006-2007

- How will UCGIS member institutions develop and evaluate in cooperation with FEMA a "Geospatial Security Net" as an assembly of geospatial technical, inter-organizational, and social components & activities that implement a regional network for disaster preparedness and response for the nation?

- How can we best articulate GIScience as a core of interdisciplinary science, supporting information integration across multiple disciplines in large research projects?

UCGIS Grand Challenge…

How can delegates, using collaborative activity, develop a firmer foundation for

GIScience Knowledge Web (GISKW) Grand Challenge

GISKW five components moving forward:

- GIScience & Technology Body of Knowledge (GIS&T) v2 (Sean Ahearn et al)

- Grand Challenge GIScience workshop (Dawn Wright et al)

- GIS&T Curriculum Pathways (Steve Prager et al)

- Virtual Organization Infrastructure (Shaowen Wang et al)

- Virtual Enterprise Project (Mike Gould and Toni Fisher et al.)

GISKW CI components should…

- Enable significant Cyber-GIS computing and data resources

- Foster development of a spatio-temporal programming language to address complex problems associated with geographic dynamics …
    - complex substantive space-time problems
    - complex collaborative space-time activity

- Support highly distributed participants involved with complex geospatial workflows

Of course, more to come… thank you!

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