



## **Broader Impacts For Research and Discovery Summit**

### Area #3

# Enhance Infrastructure For Research And Education

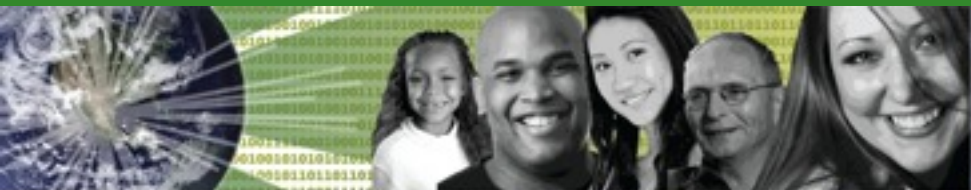




## Area 3: Enhance Infrastructure For Research And Education

### Speakers:

- *Shaowen Wang*, “TeraGrid Broader Impacts - A Perspective from Science Gateways”
- *Suzy Tichenor*, “Industrial Use of HPC”
- *Peter Steenkiste*, “The Wireless Emulator Testbed”
- *Andrew Bernat*, “The Broader Impact of Computing Research”
- *Tracy Camp*, “Wanted: A Dissemination Infrastructure”





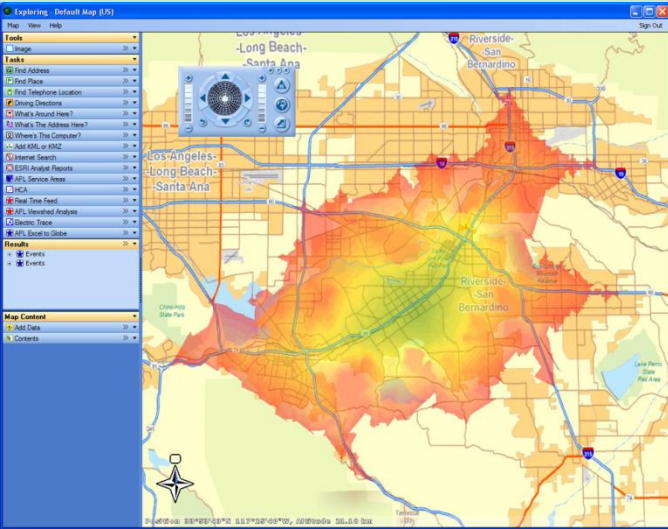
# TeraGrid Broader Impacts – A Perspective from Science Gateways

Shaowen Wang

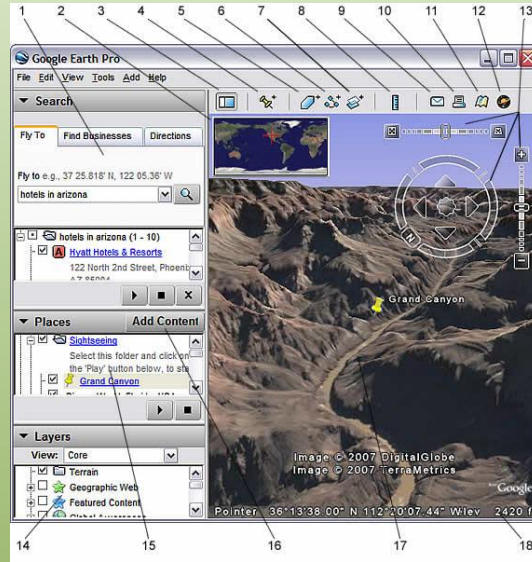
University of Illinois at Urbana-Champaign (UIUC)



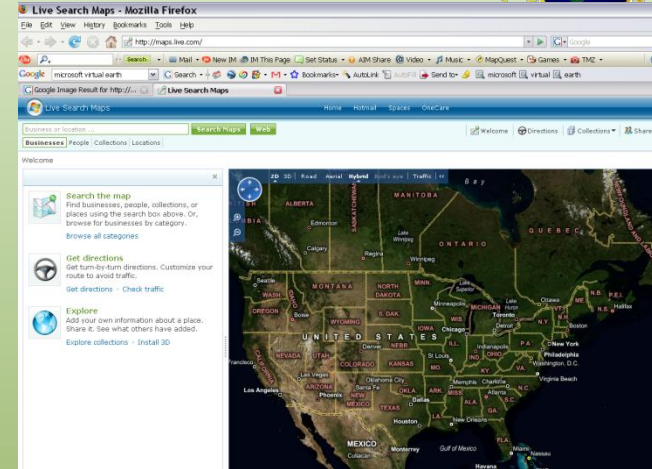
# My Research – CyberGIS



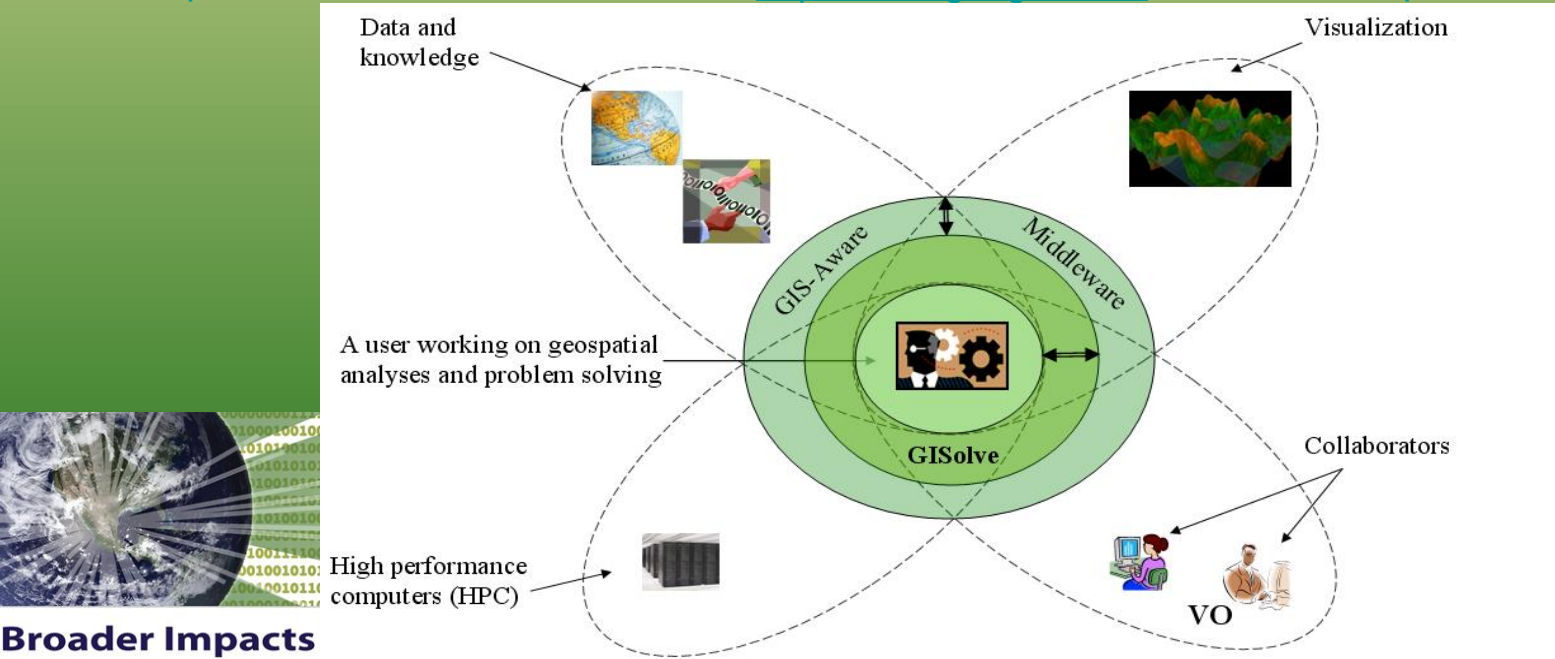
ESRI ArcGIS:  
<http://www.esri.com/>



Google Earth:  
<http://earth.google.com/>



Microsoft Bing Maps:  
<http://www.bing.com/maps/>



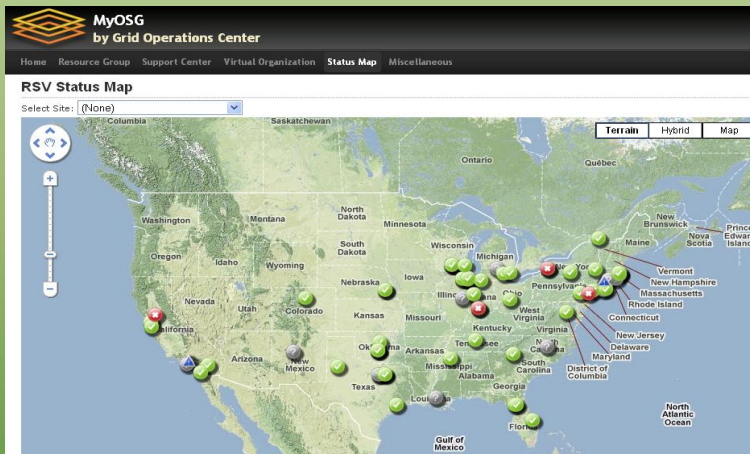
**Broader Impacts**

Shaowen Wang  
 UIUC



# My Broader Impact Focus

## GISolve



[www.opensciencegrid.org](http://www.opensciencegrid.org)



[www.teragrid.org](http://www.teragrid.org)



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# My Broader Impact Activities

- Develop inter- and multi-disciplinary curriculum
  - E.g. informatics courses crosscutting majors
- Partner with institutions that serve underrepresented groups
- Develop multi-user online environments for large numbers of students
- Mentor junior scholars
- Present research and education results to broad audiences
  - General public
  - Members of Congress
- Partner with federal agencies to integrate research into broader programs and activities of national interest



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# Connections

- Classroom
- Student research competition
- Education programs of conferences

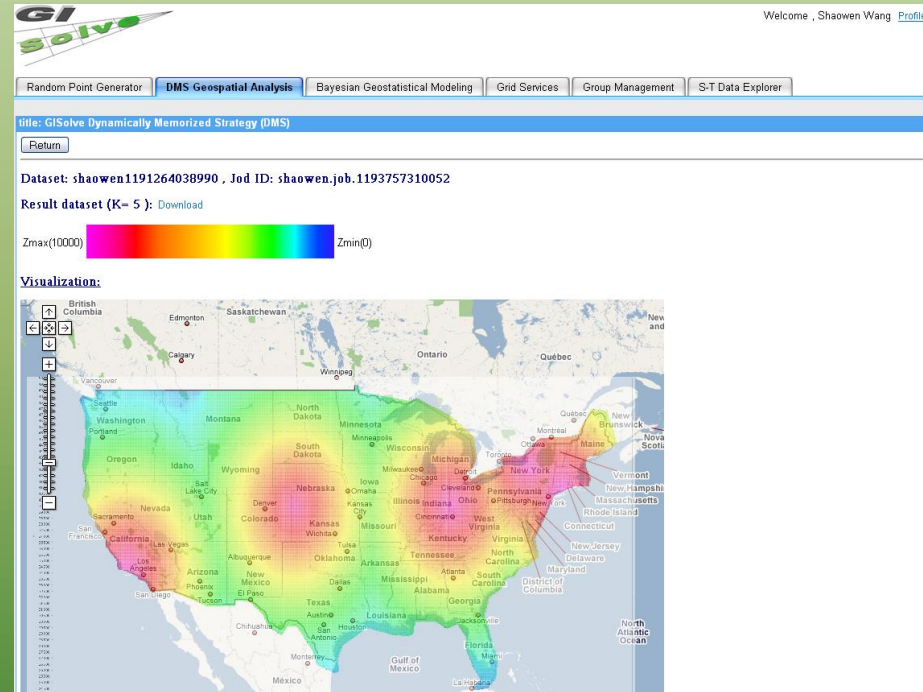


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# Broader Impact Activities help ...

“In the year of 2020, a world-wide outbreak of avian flu takes place mainly because the flu virus becomes able to be transmitted between humans. Millions of people have died in the world during the outbreak of a few months. In the US, many schools and public services are forced to be closed. Active monitoring of the flu incidents have been rigorously conducted to allocate sufficient medical resources to the areas where infected people can be treated timely. At the same time, scientific analyses are being dynamically performed to predict where new incidents might appear based on the distribution of existing incidents. These analyses are useful to prepare risky areas with sufficient medical resources.” (Quote from a problem specification for the high school students competition at the NSF TeraGrid’07 conference)



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# A GOOD Activity is ...

- Natural ingredient of research and education work

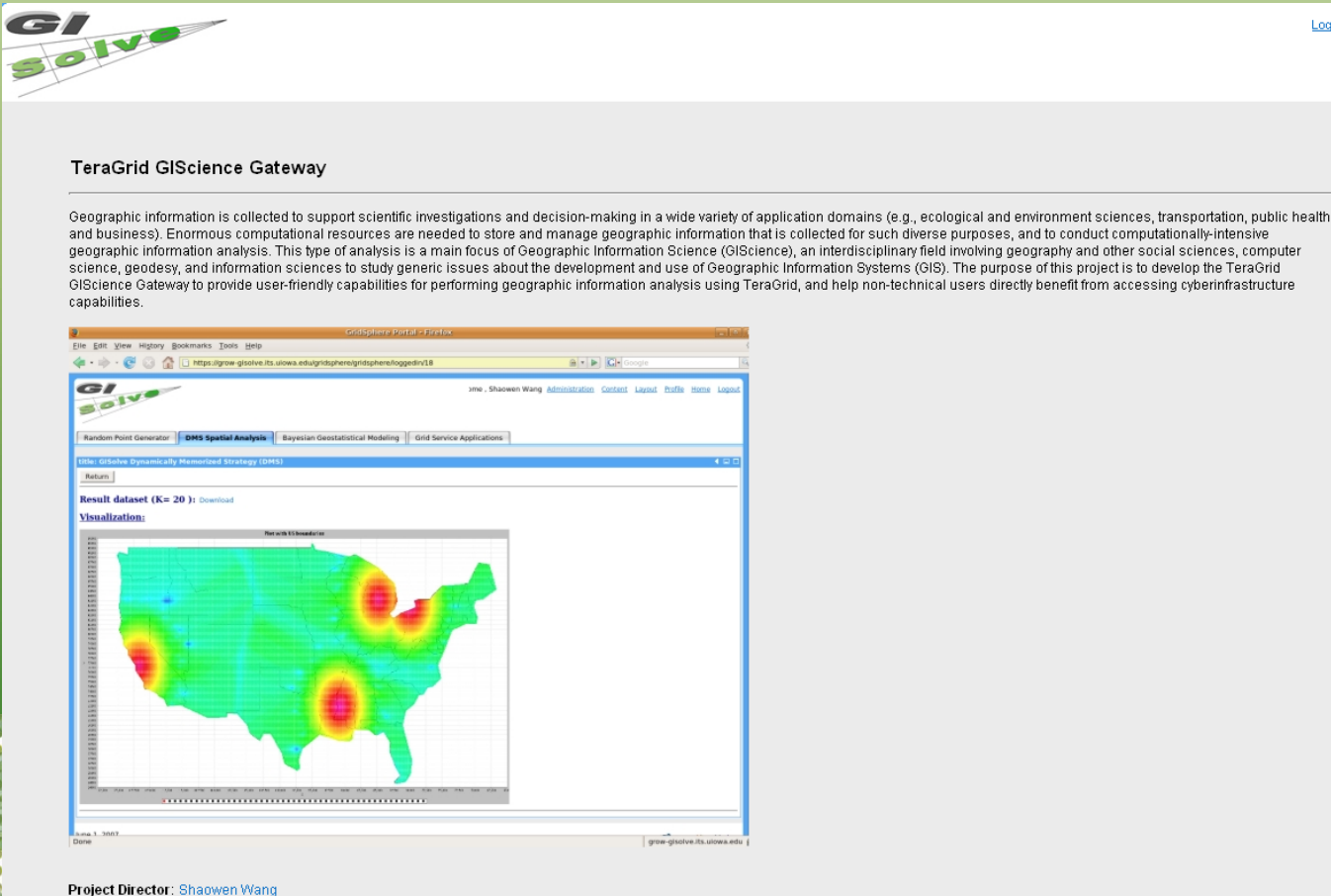


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# Join Us!

- TeraGrid GIScience Gateway ([www.gisolve.org](http://www.gisolve.org))

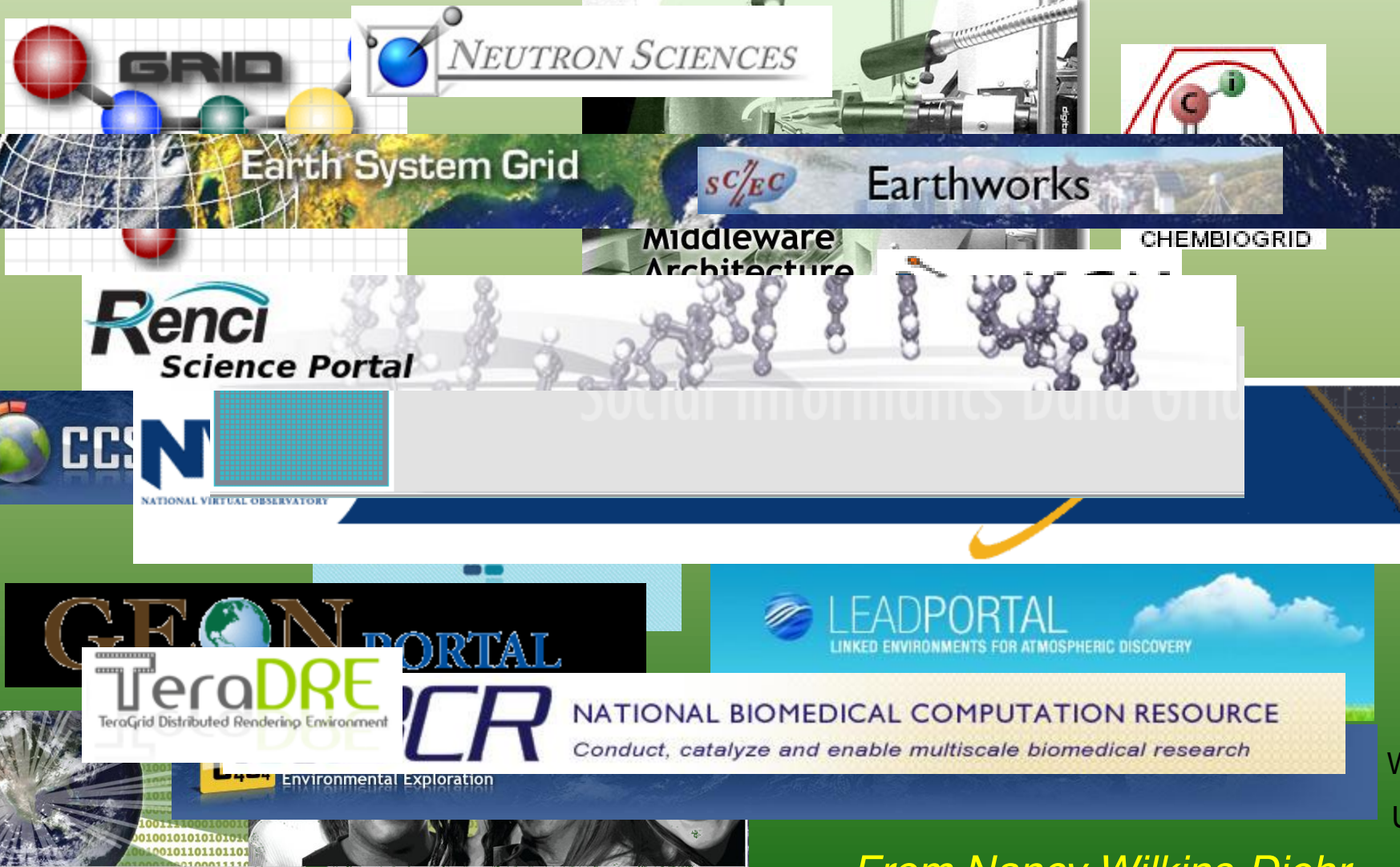


The screenshot shows the TeraGrid GIScience Gateway website. At the top left is the "GI Solve" logo, and at the top right is a "Login" link. The main heading is "TeraGrid GIScience Gateway". Below this is a paragraph of text: "Geographic information is collected to support scientific investigations and decision-making in a wide variety of application domains (e.g., ecological and environment sciences, transportation, public health, and business). Enormous computational resources are needed to store and manage geographic information that is collected for such diverse purposes, and to conduct computationally-intensive geographic information analysis. This type of analysis is a main focus of Geographic Information Science (GIScience), an interdisciplinary field involving geography and other social sciences, computer science, geodesy, and information sciences to study generic issues about the development and use of Geographic Information Systems (GIS). The purpose of this project is to develop the TeraGrid GIScience Gateway to provide user-friendly capabilities for performing geographic information analysis using TeraGrid, and help non-technical users directly benefit from accessing cyberinfrastructure capabilities." Below the text is a screenshot of a web browser displaying a GIS application. The browser window title is "GridSphere Portal - Firefox". The address bar shows "https://grow.gisolve.its.uiowa.edu/gridSphere/gridSphereToggedIn/18". The application interface includes a navigation menu with "Random Point Generator", "DMS Spatial Analysis", "Bayesian Geostatistical Modeling", and "Grid Service Applications". The "DMS Spatial Analysis" tab is active, showing a "Result dataset (K= 20)": Download and a "Visualization" section. The visualization is a heatmap of the United States, with a color scale from blue (low) to red (high). The map shows high values (red) in the Northeast and Southeast, and low values (blue) in the West. The date "June 3, 2007" and the URL "grow.gisolve.its.uiowa.edu" are visible at the bottom of the browser window.

Project Director: [Shaowen Wang](#)

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# Today, there are approximately 35 gateways using the TeraGrid



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*From Nancy Wilkins-Diehr*



# My Advice

- Always look for and capitalize upon broader impact opportunities that can be naturally linked to your research and education agenda



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# Contact Me!

- Thank you for your attention.
- Comments/questions?

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[www.gisolve.org](http://www.gisolve.org)

[www.teragrid.org](http://www.teragrid.org)



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