

Winning Web-Mapping Tool Fuses Cancer Data from Various Sources to Create Decision-Utility Map Products

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Welcome to GISWeekly! From March 29-April 7, I will be traveling to two conferences, one of them will be the Autodesk 2011 Media Day Event. Keep a lookout for blog entries during the next couple of weeks.

GISWeekly examines select top news, picks out worthwhile reading from around the web, and special interest items you might not find elsewhere. This issue will feature Industry News, Top of the News, Acquisitions/Agreements/Alliances, Announcements, New Products, Around the Web and Events Calendar.

GISWeekly welcomes letters and feedback from readers, so let us know what you think. Send your comments to me at giscafe-editor@IBSystems.com

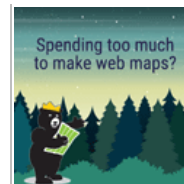
Best wishes,
Susan Smith, Managing Editor

Industry News Winning Web-Mapping Tool Fuses Cancer Data from Various Sources to Create Decision-Utility Map Products

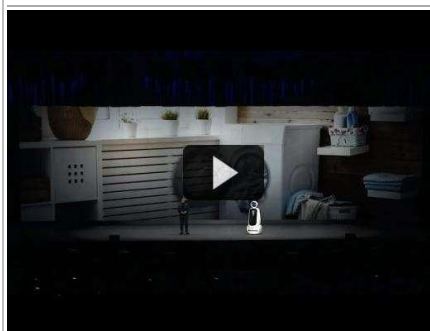
By Susan Smith

Interview with Tarek Rashed, Ph.D., chief scientist and president, Geospatial Applied Research Experts House (GSAREH).

Tarek Rashed, Ph.D., chief scientist and president, Geospatial Applied Research Experts House (GSAREH) and his colleague, Dr. Naci Dilekli, developed the winning application for the National Cancer Institute's (NCI) Enabling Community Use of Data for Cancer Prevention and Control Challenge, a part of the Health 2.0 Developer Challenge. held in late 2010. Dr. Rashed worked as a professor before embarking on development of applications. In this interview, Dr. Rashed outlines the goals and expectations of that application, as well as other work his organization is currently involved in.



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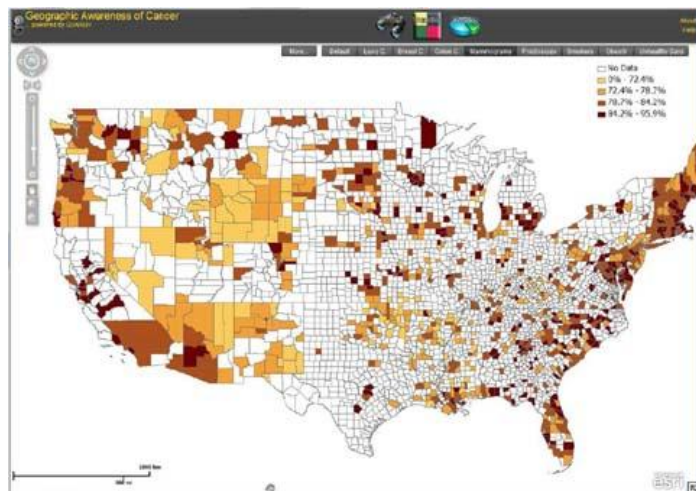
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Above is how the tool looks when it is first launched. If you would like to access cancer maps quickly, click on the buttons highlighted above.

When you click on Mammograms, for example, you will see a geographic distribution map of mammogram use. The data is organized according to counties.



Note that data might not be available for all the counties, as exemplified in the Mammograms map above.

Additional maps can be accessed by "More..." You can try to combine two maps using maps under that button.

GISWeekly: Can you give specifics about how you developed the winning application for the Health 2 Developer Challenges?

Tarek Rashed: The goal of the challenge was to present a wide range of multi-dimensional attributes to the public and decision makers with regard to the multiple facets of cancer data. The basic challenge was to develop a web-based mapping tool that fuses cancer data from multiple sources include NCI Atlas of Cancer Mortality, 1950-1994, National Center for Health Statistics (CDC), Community Health Status Indicators (CHSI) Dataset, 2009 from the US Department of Health and Human Services, the County Health Rankings, 2010 from the Mobilizing Action Toward Community Health (MATCH) project, and the Toxic Release Inventory, 2008 from Environmental Protection Agency.

The basic challenge was to develop, in less than 3 weeks, a tool that can fuse data from the above forces to collect the evidence that underpins policy making and to generate "decision-utility" map products that move data into action to inform policy in a way that policy makers will understand. To accomplish this we adopted a "utility-computing" approach to technology development – what this means is to "think like a politician" when designing the user interface to produce a tool that has enough interactive tools to engage policy makers and public but are provided in manner where strong, "beyond-mapping," analytical power can be accessed from a simple and user friendly interface.

We used ArcGIS Flex API which enabled us to enhance the usability of the system and tailor it to novice users who with limited exposure to GIS, for example we made efforts to make the main functions as visible as possible in the interface and develop short online tutorials on how to use the application, etc. The range of tools included the ability for the user to compare and contrast cancer data at both state and county levels, facilitate geographic query; ask questions and retrieve results directly on the map, conduct complex queries on multi variables (our tool has over 1000 county-level variables related to cancer), generate different kinds of charts, and produce user customized maps. We plan in the near future to add additional support analysis of longitudinal trends of cancer information over time, enhance map-making functionalities, and provide analytical tools such as statistical modeling tools and environmental exposure analysis.

GISWeekly: What aspects of GeoDesign, if any, might you find useful in your work?

TR: The very basic concept of GeoDesign, as I understand, is to provide an "interplay" or "feedback looping," coupling mechanisms between the creation of design proposals and their "simulated" impacts in geographic contexts so designers and planners would see on the spot what kind of changes they may bring about to real world or geographic settings through their plans. Although the bulk of applications presented in GeoDesign summits talked about physical

[International LiDAR Mapping Forum 2019](#) at Hyatt Regency Denver Colorado Convention Center, 650 15th Street Denver CO - Jan 28 - 30, 2019

[Defence Geospatial Intelligence \(DGI\) 2019](#) at Royal Lancaster London London United Kingdom - Jan 28 - 30, 2019

[DistribuTECH 2019](#) at Ernest N. Morial Convention Center New Orleans LA - Feb 5 - 7, 2019

[ArcGIS: Introduction](#) at Environmental and Natural Resource Building New Brunswick NJ - Feb 7 - 28, 2019

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urban or rural plans (such as change of land use or impact of new constructions), the concept of GeoDesign extends to include other change drivers such as policy, land use code, and a range of intervention agents. Here where I see the overlap and the value of bringing in GeoDesign principles to our tool. For example, the reasons we are planning to increase the analytical power of the tool and provide statistical modeling tools is to enable policy makers foresee the impact of intervention policy they may pursue (for example, raising awareness campaigning, or reducing the level of toxic release) on cancer levels in short & long terms. This is very analogous to the concept of immediate feedback loop underlying GeoDesign.

GISWeekly: How does your applied research work now differ from the work you and your colleague did as academics? And how does your background as academics inform the work you do now?

I will start by the 2nd part of the question because I still consider myself as an academic as much as I see myself an entrepreneur, this is allowing me to connect the two dots of .edu and .com in the work I do! As academics we are as much concerned by new research ideas and cutting edge developments in technology. The basic difference I see from the work I did when I was still a professor and what I do now in R&D as entrepreneur is in the goal underlying my applied research. I am not only focused in developing technology applications that are cutting-edge, but also in creating ones that are useful, customer oriented, and provide a value to operations on a day-to-day real world applications. This translates the meaning of success from the ability of writing an "interesting" publication or generating broader long-term impacts, to a new level that has to do with value creation, meeting customers' important needs, developing information products that align with the organization goals and does bring positive feedback on the business environments, etc.

GISWeekly: What other applications do you see on the horizon or are you working on now?

TR: We have so far been equally focused on three industries: health informatics, risk and hazards management, and Geospatial Intelligence. We have ongoing development lines in each of these areas that are informed by solutions frameworks we developed in each. Each solution framework is made of small technology components we keep developing based on project by project basis with a vision to integrate all these components into one solution at one point in the future.

GISWeekly: Is this application offered free or is there a charge to institutions?

TR: The Geographic Awareness of Cancer tool is completely free for use by any individual or institution. We intend to keep supporting it and develop further capabilities as long as there is a public interest for it.

GISWeekly: Will your future applications remain in the health care field or will you explore other industry areas that might need similar interfaces to the public?

TR: As I mentioned above, health informatics is one of three main industry lines we are focused on at the moment and I don't see a change in focus in the short and mid-terms. However, we maintain a level of flexibility to re-use same application logic in other areas if we happen to have the expertise (either in-house or through collaboration) that enables us to extend beyond our expertise areas. For example, I just came from Saudi Arabia where we are about to start developing an integrated risk management system for flash floods that provides a comprehensive solution for decision makers from forecasting & early warning to modeling risk to planning for missions and mitigation measures. Many of the technology components underlying this new system have developed from previous work we did in earlier projects and we are finally managing to integrate them all into one single solution.

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