

SECTION 1. PROJECT ADMINISTRATIVE INFORMATION

- . This proposal relates to the following CDI Science Support Framework elements: Applications, Information, and Data Management
- . Project title – Leveraging National Map elevation services to render on-the-fly, plugin-free, 3D terrain models via client-side web browser.
- . Principal Investigator (for purposes of contact) – Chris Garrity, 956-A National Center, Reston, VA 20192, 703-648-6426 (work), 703-648-6419 (fax)
- . Additional Principal Investigators – Rob Wardwell (rwardwell@usgs.gov)
- . Short description of the project – This project will develop scripting methods to transfer National Map elevation data (via WCS GetCoverage requests) to on-the-fly 3D terrain models rendered via the client’s web browser.

SECTION 2. ESTIMATED BUDGET

Budget Category	Funding Requested	Matching Funds
1. PERSONNEL (SALARIES including benefits):		
Federal Personnel Total:	\$21,800	\$10,000
Contract/Collaborator Personnel Total:	\$ 0	\$ 0
Total Salaries:	\$21,800	\$10,000
2. TRAVEL EXPENSES:		
Travel Total (Per Diem, Airfare, Mileage/Shuttle):	\$1,000	\$1,000
Other expenses (e.g. Registration fees):	\$0	\$0
Total Travel Expenses:	\$1,000	\$1,000
3. OTHER DIRECT COSTS: (itemize)		
Equipment (inc. software, hardware, purchases/rentals):	\$0	\$
Publication Costs:	\$0	\$0
Office supplies, Training, Other expenses (specify):	\$0	\$0
Total Other Direct Costs:	\$0	\$0
Total Direct Costs:	\$22,800	\$10,000
Indirect Costs (24%):	\$7,200	\$0
GRAND TOTAL:	\$30,000	\$11,000

SECTION 3. PROJECT SUMMARY

This project will develop scripting methods to transfer National Map elevation data (via WCS GetCoverage requests) to on-the-fly 3D terrain models rendered via the client's web browser. Through customized scripts, elevation requests (called dynamically by geographic extent) will be converted on-the-fly to a WebGL parsable format. WebGL is a plug-in free open standard that performs 3D rendering via the HTML canvas element (see additional information below). Work from this project will be made available for public beta testing via the USGS topoView application where users will be able to visualize historical topographic maps in three-dimensional space. Collaboration with the National Geospatial Program is anticipated to host public facing beta WCS services.

Additional Information

The OGC Web Coverage Service (WCS) provides access to raster data in forms that are useful for client-side rendering, as input into scientific models, and for other clients. Unlike static Web Mapping Services, WCS make available data together with their descriptions and returns data with its original semantics (instead of static pictures) which may be interpreted, extrapolated, etc.

WebGL is a cross-platform, royalty-free web standard 3D graphics API based on OpenGL, exposed through the HTML5 Canvas element as Document Object Model interfaces. WebGL brings plugin-free 3D to the web, implemented directly into the browser. Major browser vendors Apple (Safari), Google (Chrome), and Mozilla (Firefox), are members of the WebGL Working Group.