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International Open Government Data Conference

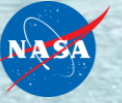
Technologies for Transparency—Dynamic Open Data Publishing with Open APIs

Kendall Clark, *Cofounder and Managing Principal, Clark & Parsia LLC*

Dan Melton, Ph.D., MPA, *Technical Director, Code for America*

Derek Willis, *Newsroom Developer, The New York Times*

George Thomas, *Enterprise Architect, U.S. HHS (Moderator)*



The Lunar Mapping and Modeling Project

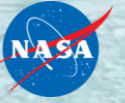
The Moon within Reach

Project Background & Overview

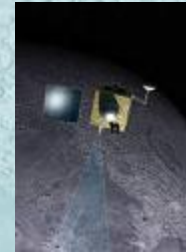
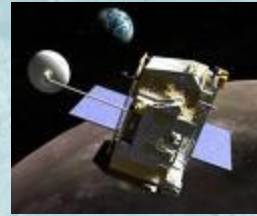


- The Lunar Mapping and Modeling Project (LMMP) was initiated in 2007 to help in making the anticipated results of the Lunar Reconnaissance Orbiter (LRO) spacecraft **useful** and **accessible** to future missions, to the public and to other future applications
 - The LMMP is managing and developing a suite of lunar mapping and modeling tools and products
- New instruments are giving us amazingly dense data sets
- The most highly detailed view of our Moon we have ever seen
- New discoveries altering the way with think about the Moon and our solar system

Multiple Global Data Sources



- LRO (USA)
- Kaguya (Japan)
gravity model data)
- Chandrayaan-1 (India)
- Clementine (USA)
- Lunar Prospector (USA)
- Apollo (USA; metric &
panoramic cameras)



Multiple Global Customers



- The information provided through LMMP will assist them in:
 - planning tasks in the areas of landing site evaluation and selection
 - design and placement of landers and other stationary assets
 - design of rovers and other mobile assets
 - developing terrain-relative navigation (TRN) capabilities
 - assessment and planning of science traverses
- The science communities
- The commercial community (e.g. Google Lunar X-prize, gamers)
- Public Engagement & Education communities!

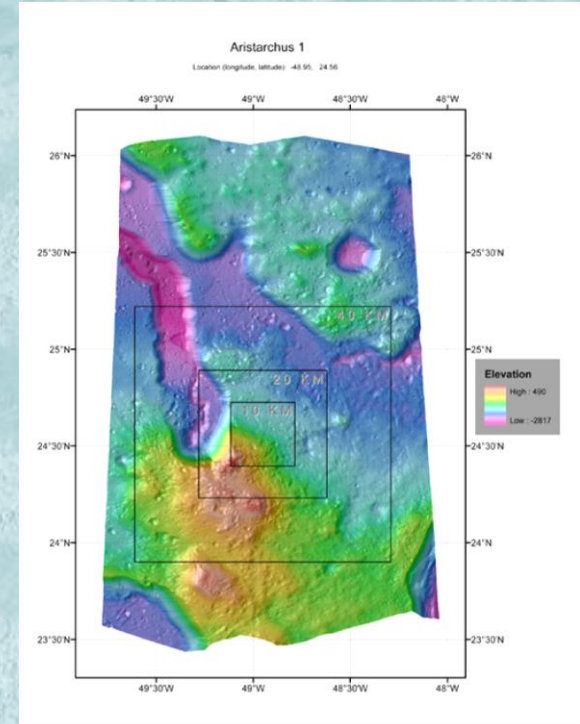
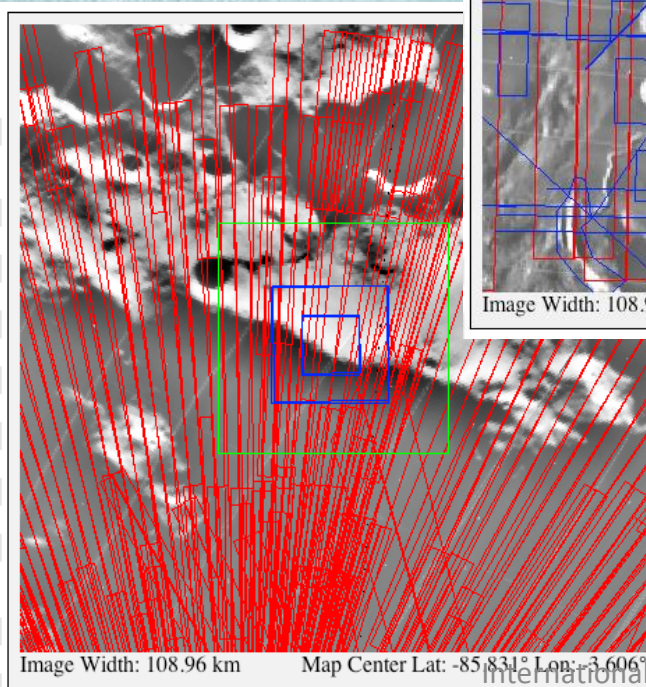
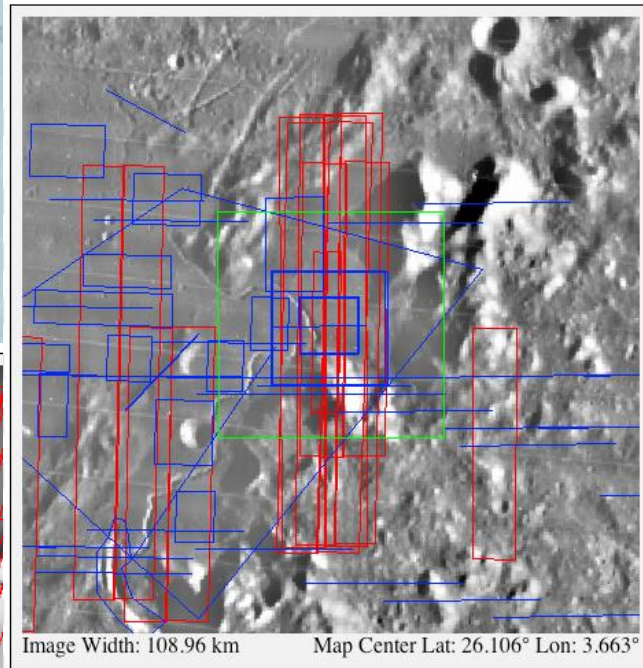
Participatory Exploration: It's fundamental to NASA's core mission

- Portal will be available to provide interactive capabilities
- Downloads of data encouraged; APIs to be published

Combined Sources Create Digital Elevation Models

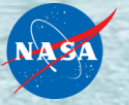


Local DEMs from LRO Camera (LROC) Narrow Angle Camera (NAC) covering 50 mission regions of interest (ROI)



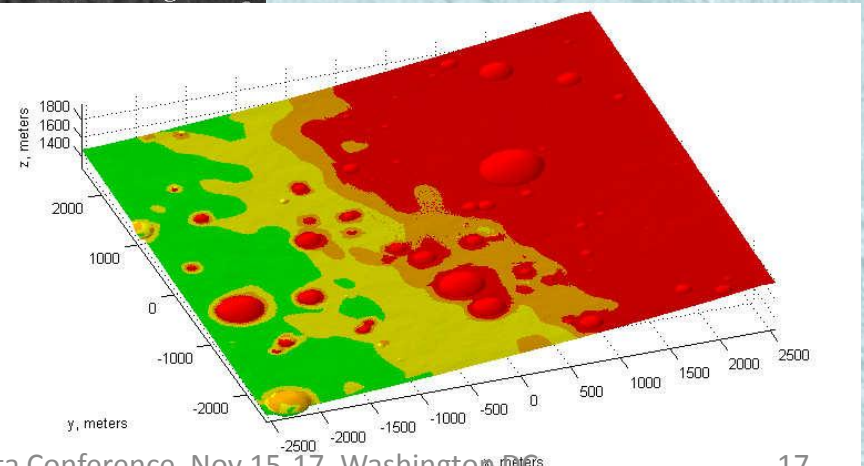
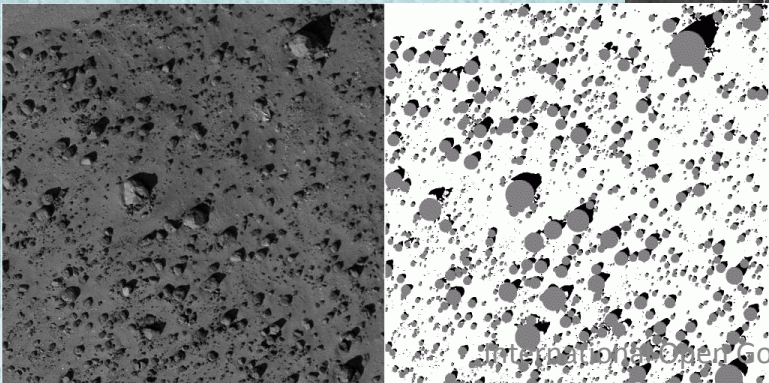
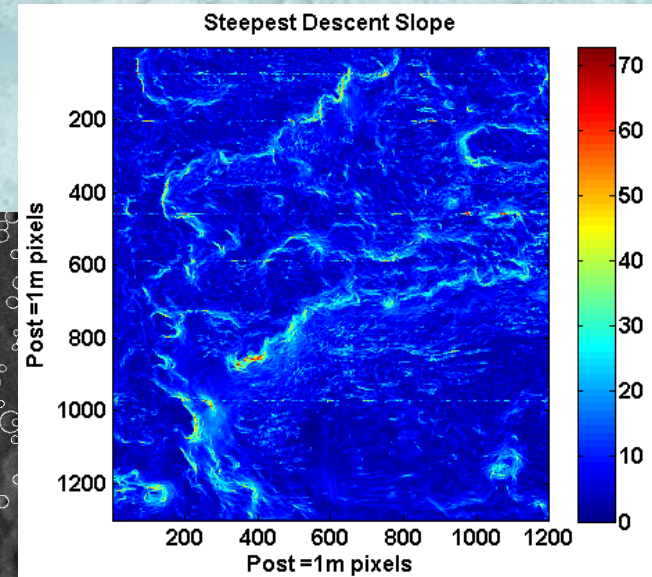
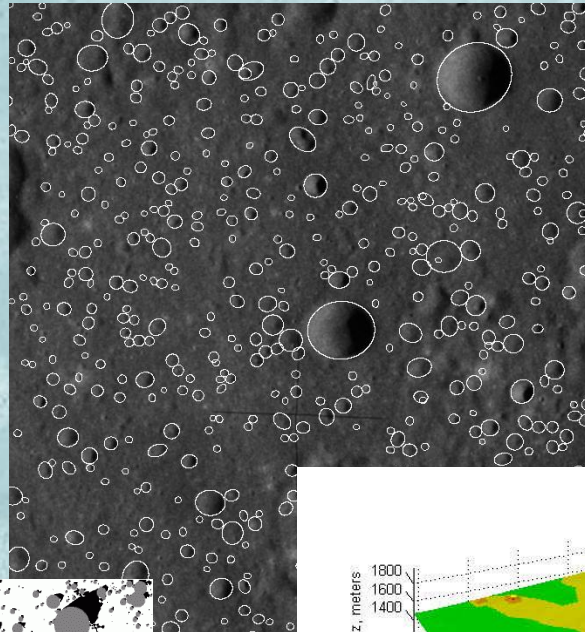
Preliminary USGS Aristarchus Plateau (DEM 1) from JSC/ASU Apollo Pan Cam Scans

Malapert Mountain (left) and Apollo 15 (right) ROIs showing in red the NAC images acquired through the 1st month of mapping orbit



Created Products - Hazard Maps

- Craters
- Boulders
- Slopes
- Surface Roughness



Search, Locate & Download Auxiliary Files



The screenshot displays the Lunar Mission Profile (LMP) web application interface. At the top, there is a navigation bar with the NASA logo and tabs for HOME, BROWSE, WORKSPACE, LOADER, STATUS, and TOOLS. Below the navigation bar is a "Logout" button. The main area features a lunar map with several craters labeled, including Aristarchus Z, Herodotus G, Herodotus N, and Aristarchus F. A popup window titled "Auxiliary Files" is open over the Aristarchus crater, displaying the following information:

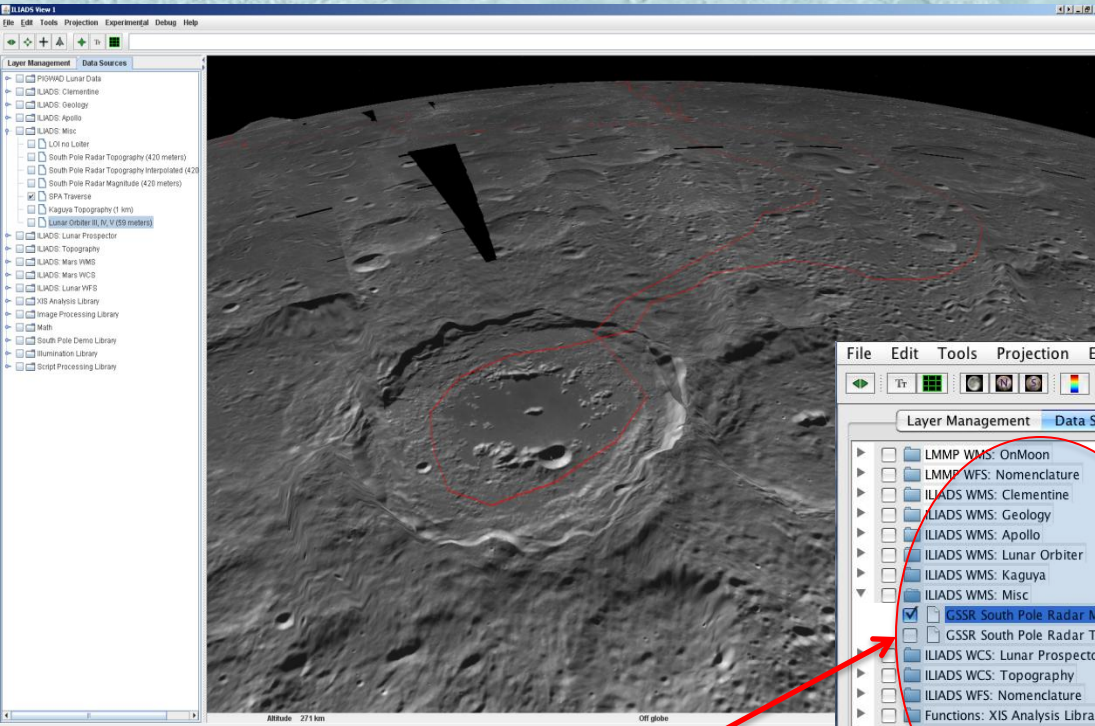
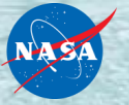
Auxiliary Files	
Aristarchus 3D View	
Name	Aristarchus 3D View
Latitude	23.6523°
Longitude	-47.5337°
Originator	
File	Download
Permission	null : Read/Write

On the right side of the interface, there are two panels: "Layers" and "Search". The "Layers" panel shows the "Base Map" set to "Clementine Mosaic XGIS" and "Nomenclature" checked. The "Search" panel has "Aristarchus" entered in the search box, and the results list includes "Aristarchus 3D View", "Aristarchus ReadMe", and "Aristarchus Slope Hazard Map".

At the bottom left, the text "Credits: LMMP 0.2.1" is visible. At the bottom right, there are links for "Curator" and "Online Help".

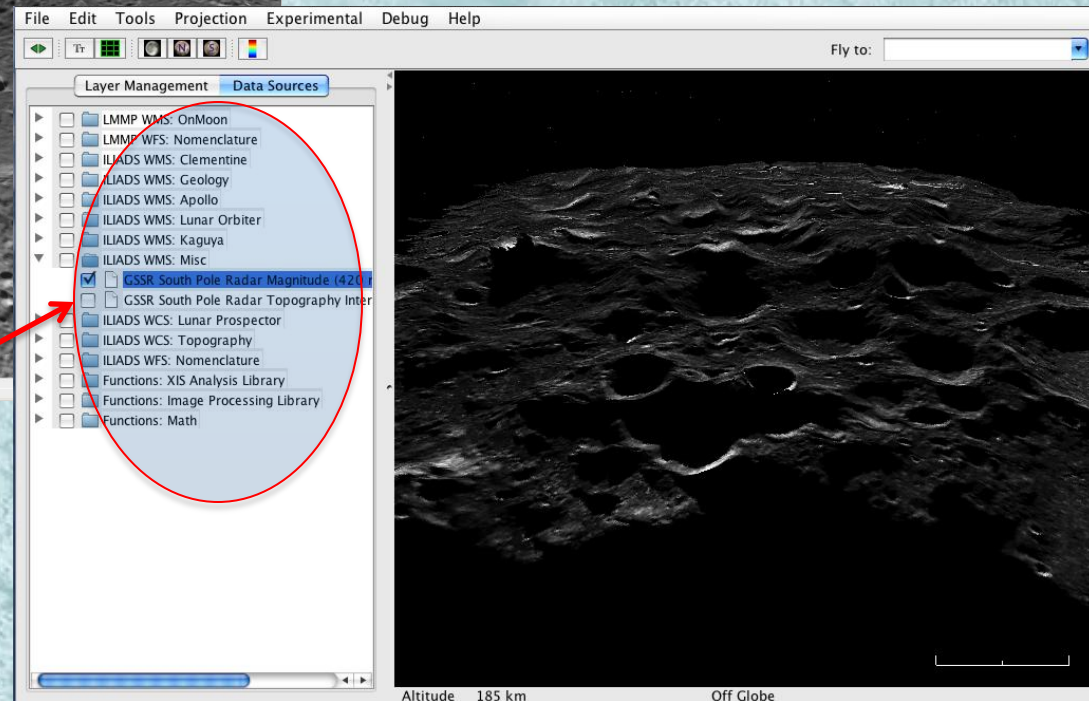
Plan Your Trip To The Moon

Integrated Lunar Information Architecture



Lunar Surface Traverse Tool
(oblique view)

Goldstone Radar of South Pole
(oblique view)



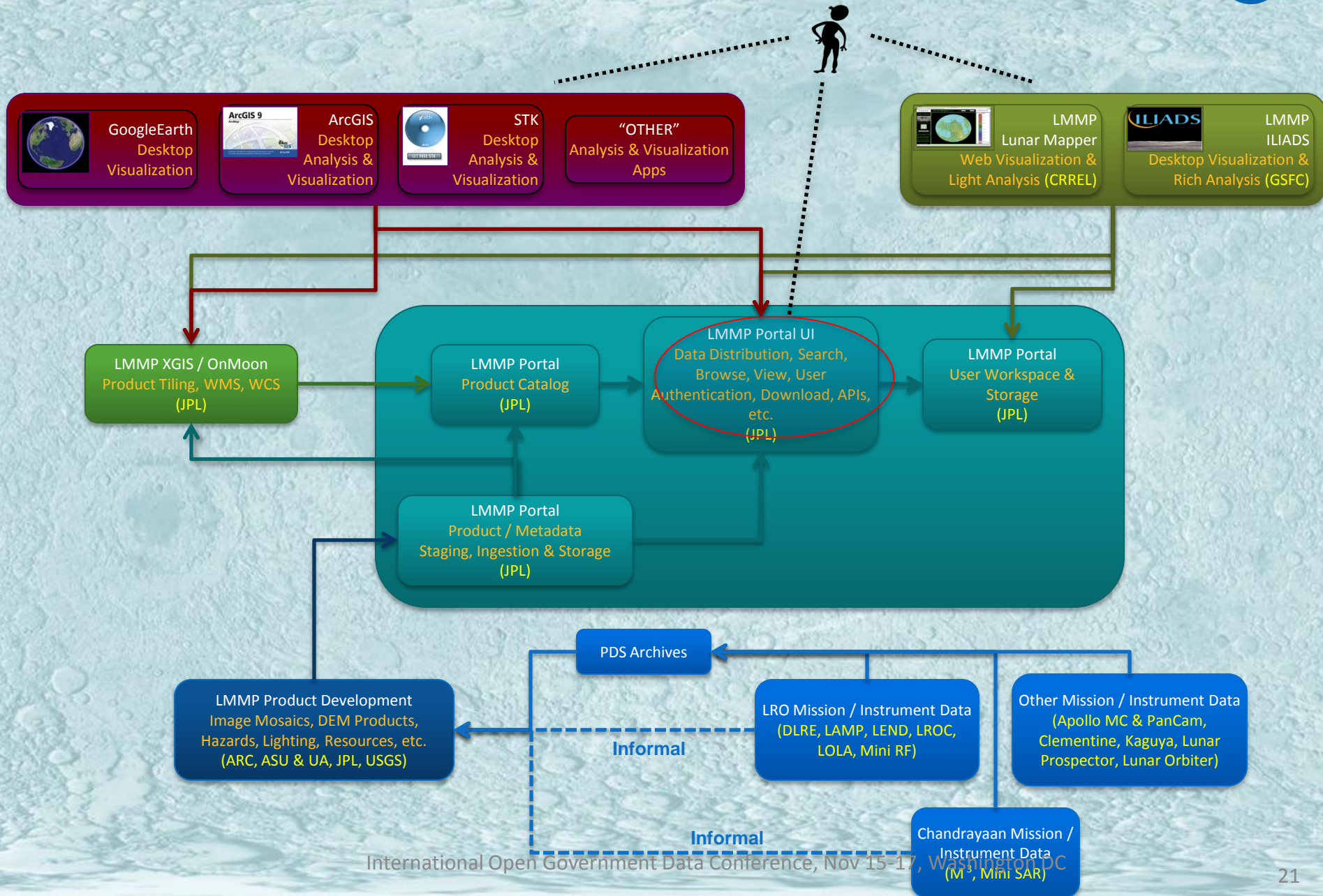
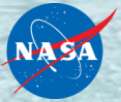
You can pick from multiple data sources,
depending on what you want to do

Displays Multiple Data Sources

The screenshot shows a software application window titled "IliadsRCP 201006101454" with a menu bar (File, Edit, View, Tools, Window, Help) and a toolbar. The interface is divided into several panels:

- Data Sources Panel:** A tree view showing a hierarchy of data sources. Under "Moon", "Image Layers" includes "Clementine Color Topography (.25 d...)" and "Clementine Color Shaded Relief (1 km)". Under "Tycho", "Image Layers" includes "Colorize (Kaguya Topography (2 km))", "Kaguya Terrain Camera (10 m)", and "Clementine Albedo (100 m)". "Elevation Layers" includes "Kaguya Topography (2 km)".
- Properties Panel:** Shows the "Kaguya Topography (2 km) - Properties" for the selected layer. It includes a "Visible" checkbox (checked) and an "Advanced" section with "DataRequest" set to "Global_Topography_K..." and "Metadata" set to "Entries: ...".
- Main View:** A large grayscale image of the Tycho crater on the Moon. A scale bar in the bottom right indicates "10 Km". At the bottom, coordinates are displayed: "Altitude 67... Lat -43.6717° Lon -11.1274° Elev -3,402 m".
- Thumbnail Views:** Two smaller windows on the right show global views. The top one, titled "Moon", shows a color-coded topographic map of the Moon with a "500 Km" scale bar. The bottom one, titled "Altit...", shows a zoomed-in topographic map of the Tycho crater area with a "10 Km" scale bar and the name "Tycho" overlaid.

The Portal Will Serve Up Mashups, APIs, Files





LMMP Milestones

- Apr 2009 – Formulation review
- Jun 2009 – LRO launched!
- Aug-Sep 2009 – Individual product process validation audits
- Sep 2009 – Preliminary System design audit
- Dec 3rd 2009 – Beta release of Mapper, ILIADS, Portal, infrastructure and content
- November 2010 – Version 1 audit
- Early 2011 – Version 1 release

Why Standard APIs Matter: Increasing the Velocity of Re-use

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What is C&P?

- Clark & Parsia, LLC--semantic software firm since 2005
- Offices in DC & Cambridge, MA
- Software products for end-user & OEM use
- Software development and integration services
- Specialize in Semantic Web, web services, and advanced AI technologies for federal and enterprise customers

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Tools Help 1/14

peplus

Agency (49)	Category (7)	Dataset (26)	Subject Matter (20)
<ul style="list-style-type: none"> Broadcasting Board of Governors Commodity Futures Trading Commission Cooperative for National and Community Service Department of Agriculture Department of Commerce Department of Defense Department of Education Department of Energy Department of Health and Human Services Department of Homeland Security Department of Housing and Urban Development Department of Justice Department of Labor Department of State Department of Transportation Department of Veterans Affairs Department of the Interior Department of the Treasury Environmental Protection Agency Executive Office of the President Export-Import Bank of the US Federal Communications Commission Federal Deposit Insurance Corporation Federal Election Commission Federal Reserve Board General Services Administration 	<ul style="list-style-type: none"> Agriculture Income, Expenditures, Poverty, and Wealth International Statistics Labor Force, Employment, and Earnings Other Population Prices 	<ul style="list-style-type: none"> Business Employment Dynamics Department of Labor Research and Evaluation Inventory Employee Benefit Survey Employment Projections Employment, Hours, and Earnings from the Current Employee Employment, Hours, and Earnings from the Current Employee Job Openings and Labor Turnover Survey Labor Force Statistics from the Current Population Survey Local Area Unemployment Statistics Mid-Atlantic Information Office Midwest Information Office Mountain Plains Information Office New England Information Office New York-New Jersey Information Office OSHA Data Initiative - Establishment Specific Injury and Illness Occupational Outlook Handbook Productivity and Costs Project GATE: Growing America Through Entrepreneurship Files Public Workforce System Dataset (PWS) Quarterly Census of Employment and Wages Southeast Information Office Southeast Information Office Weekly Fatality Reports Western Information Office Work Stoppages Workforce Employment and Displacement Evaluation Dataset 	<ul style="list-style-type: none"> Age discrimination in employment Allotment Apprentices Childhood and youth Discouraged workers Displaced workers Education, Cooperative Educational attainment European Union—Membership Feudalism Judges—Selection and appointment Labor supply Land Tenure Open and closed shop Shift systems Teachers—Tenure Tenure family Tenure of office Vocational education Youth

Web View

Home Search

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su: Labor supply

Search

[Advanced Search](#) [Print a library](#)

Search results for 'su: Labor supply'

Results 1-10 of about 67,012 (1.37 seconds)

« Prev | Prev 1 2 3 Next »

[Reset All](#) [Clear All](#)

Save to: Save

Sort by: Save Search

Narrow by Format

- All Formats (67,012)
- Book (5294)
 - eBook (429)
 - Thesis/Dissertation (2640)
 - Microform (243)
 - Continuously updated resource (124)
 - Audio (8)
- Article (2290)

1.  **Labor supply**
 by Mark R Kingworth
 Book
 Language: English
 Publisher: Cambridge [Cambridge, etc.] ; New York : Cambridge University Press, 1982.
[View full record](#)

<http://datagov.clarkparsia.com>

So what...?

- A motivating example about the role of standards in promoting re-use
- A relatively trivial example, but with good utility
- Important metrics:
 - 90 minutes of work
 - for a junior programmer, w/ 3 months of experience
 - zero: meetings, phone calls, architects, UML diagrams, etc.
 - **Yes: zero meetings, i.e., uncoordinated app/data integration**
- How is that possible?□□□
 - de facto Web APIs (REST)
 - Standards: URIs, HTTP, RDF, SPARQL, etc.

How, in some detail

- Opening government data gives 3rd parties a *reason* and a *means* of engaging with the data & the data's owner
- But it doesn't necessarily provide an ***efficient means***
- Data plus APIs and standards = efficient means of re-use
- Not all APIs (or API styles) are created equally
 - When in doubt, do what the Web does (REST)
 - In most cases, there shouldn't be any doubt
- Using data standards means tools, skills, and infrastructure re-use is more likely
- **Conjecture:** To increase the velocity of data re-use, increase the amount of *tool re-use*
 - Tools coalesce & form around standards & APIs

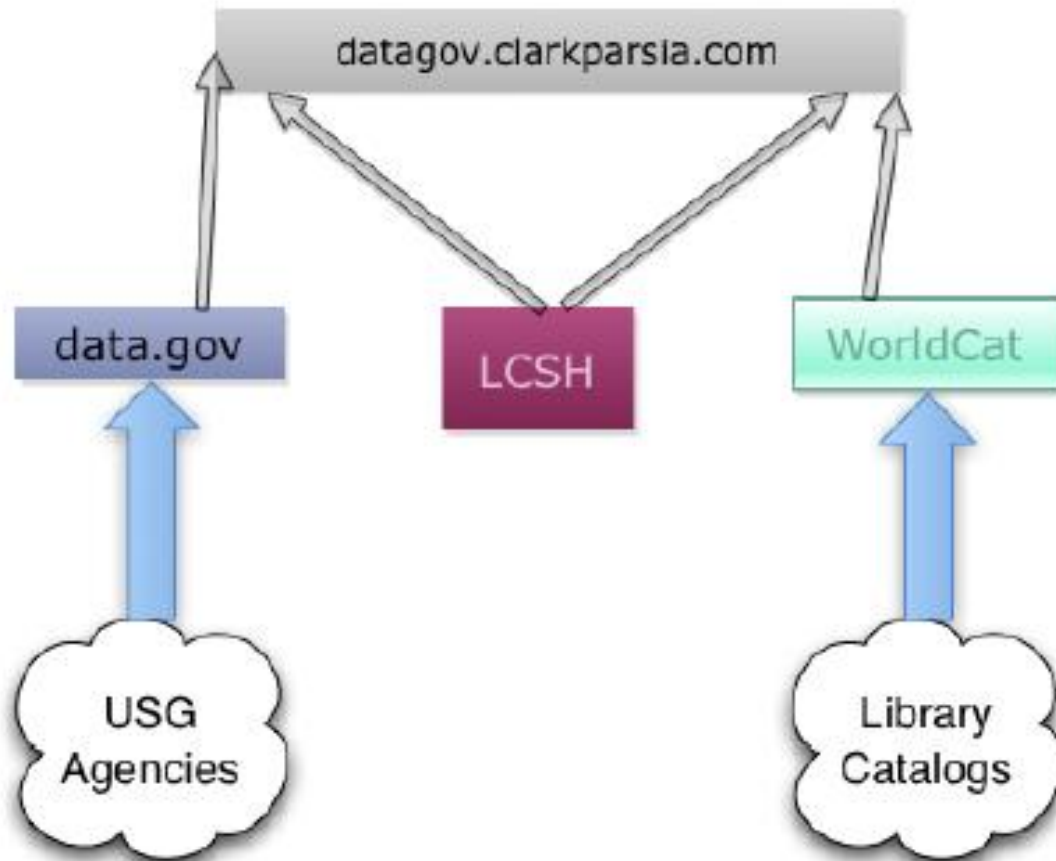
Re-use is a matter of details...

- Standards and APIs are cohesive collections of *worked out details*; worked out, so they can just be *used* straightaway
- Basing Government Open Data efforts on standards and APIs *reduces the ambiguity that results in meetings, delay, and friction*
- Working out the multitude of (mostly) arbitrary details kills re-use velocity, especially when organizational boundaries must be crossed
- Ad hoc data standards and eccentric APIs decreases the likelihood that a junior programmer can do something interesting in 90 minutes

Questions?

Thank you for your attention.





Relating data.gov datasets to relevant books

Examples...

1. [State Department data about Darfur](#)
2. [NASA global warming data](#)
3. [Federal Reserve data](#)