

NASA LAUNCHES MARS MISSION WEB APP WITH TELERIK

Challenge

The Planetary Data System (PDS) is an archive of data from the U.S. National Aeronautic and Space Administration (NASA) planetary missions, sponsored by NASA's Science Mission Directorate. All PDS products are peer-reviewed, documented and easily accessible via online catalogs organized by planetary disciplines.

People the world over access the data for use in planetary research, analysis and more. In the case of Mars rovers, data are collected by a suite of instruments such as multispectral imagers, alpha particle x-ray and thermal spectrometers and chemical analyzers.

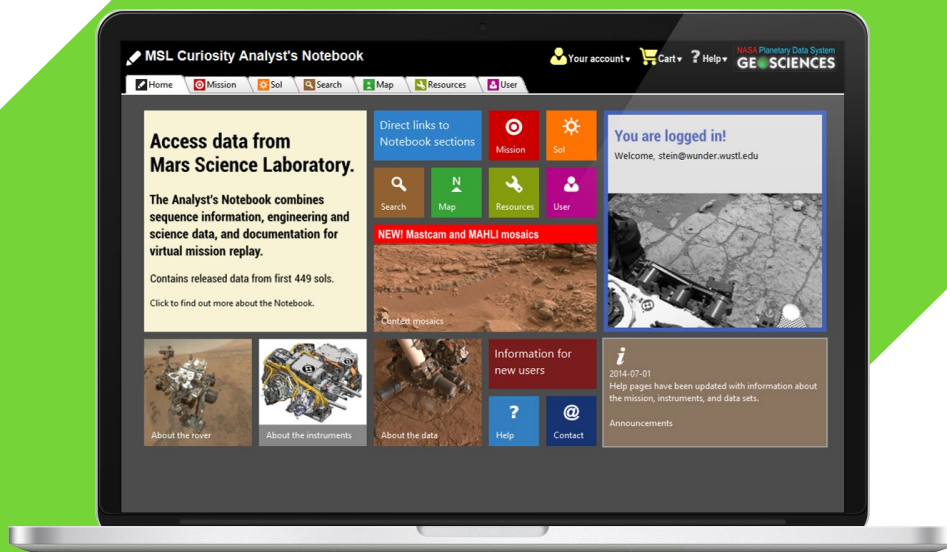
Unlike orbiters that typically map planets in a regular approach, the rover missions are non-deterministic: data are acquired based on opportunities of discovery within the framework of the overall mission science objectives. A wealth of science discovery results from this approach. But after 10 years of Mars Exploration Rover mission operations, and more than two years for Mars Science Laboratory, the team has accumulated millions of data products and thousands of documents.

Mars rover data collected daily by the mission science teams, is then released to the public quarterly. Given the sheer volume of data, the rate at which it is collected and the wide audience leveraging this information, PDS needed to update its online system to lower the cost and risks of maintaining the large archives. It also still needed to meet

Client

NASA





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the stringent requirements that enable future scientists to find, understand and use the data, despite being unfamiliar with the original experiments.

"Our Analyst's Notebook application needed to be easy enough for first time users, but also house an enormous amount of information vital to our NASA scientists," said Tom Stein, Computer Systems Manager, NASA's Planetary Data System Geosciences Node. "Archiving the data for the long term is straightforward bookkeeping. The real challenge is in accessing the data from a science perspective."

Solution

As the PDS has been collecting data for more than 25 years, the housing of data has shifted over time from paper, to CD-Rs (the Viking Mission required 42 CD-Rs worth of data alone). Early on, data volumes were small enough for scientists to scan through the CD volumes for data of interest. When the Mars Exploration Rover and Phoenix Mars Lander missions emerged, PDS knew an evolution was needed. With millions of images collected, it needed a system to help sort and find data quickly and easily. Prior, Stein wrote most of the front end code himself.

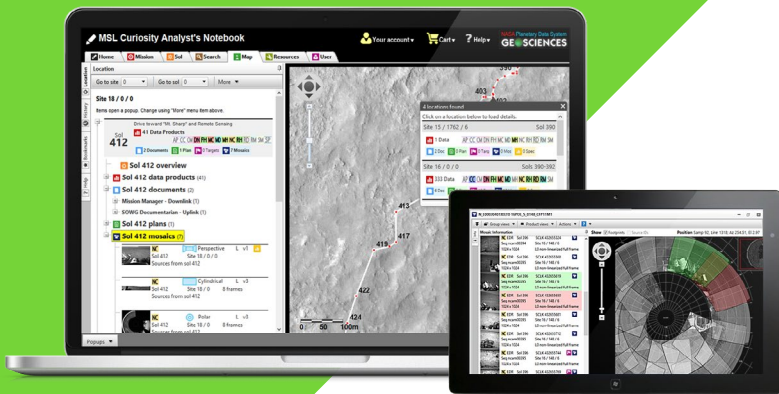
"The scientific community looks for things in different ways, and typically, we're the first to do something more complex," said

Stein. "We launched an initial framework in 2004, but quickly found an upgrade was needed. For one thing, the rover mission that was supposed to last 90 days was continuing year after year. In addition, the scientific community was evolving and getting more web-savvy. They expect the level of functionality from our application that they get in their day-to-day lives."

PDS selected Telerik® UI for ASP.NET AJAX to create a robust web-based app for easier accessibility and usage. The group didn't want to completely re-write the UI, and wanted to get all systems for all rovers on the same page. The app needed multiple user support, cart functionality, dropdowns and back and forth capabilities.

"We selected Telerik because it seemed more robust than other offerings—it looked like an interface on steroids," said Stein. "We also liked the forum-based support, which factored heavily into our decision making. In fact, we still use the demos today. We were pushing boundaries and needed a solution that would support our efforts today, and well into the future."

Given the app importance and the already overtaxed staff, pre-built Telerik controls such as the toolbars, calendars and windowing functions provided an immediate time savings with minimal complexity. Moreover, the UI tools, provided the multi-screen view and the ability to open images concurrently, a must-have at the outset of the project.



The resulting app has a professional look and requires less resources. It is seamless to use and offers functionality beyond original requirements. Today, the Analyst's Notebooks for MER rovers Spirit and Opportunity, and the MSL rover Curiosity, operate on Telerik. The Analyst's Notebook for the Phoenix Mars lander will follow.

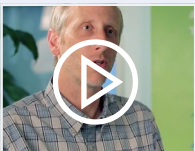
Results

"When we began, we needed to determine how to develop for first-time users versus our regular user base," said Stein.

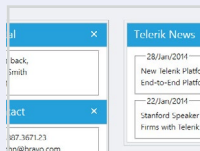
"The look and feel that Telerik tools provide for our app is a big plus for us. With Telerik, we can focus on adding value to the content, rather than making the web work. The app offers a look and feel that users are comfortable with." The resulting app:

- Handles user traffic: App accessed by hundreds daily
- Transmits mammoth amounts of data: Thousands of data points; millions of images
- Pushes updates: Daily updates to scientists; quarterly updates to the public
- Breeds Success: Great results with Mars rover expanded to three other Mars rovers

Learn More



Watch the video



See a demo showcasing the mobile capabilities of Telerik UI for ASP.NET AJAX



See UI for ASP.NET AJAX sample apps

Explore the App

The Analyst's Notebook



Curiosity, the Mars Science Laboratory rover



About Telerik

Telerik empowers its customers to create compelling app experiences across any screen. Our end-to-end platform uniquely combines industry-leading UI tools with cloud services to simplify the entire app development lifecycle. Telerik tools and services can be adopted individually or as a platform and seamlessly integrated with other popular developer solutions. More than 130,000 customers from 60,000 organizations in 94 countries depend on Telerik products, including more than 450 of the Fortune 500®, academic institutions, governments and non-profits. For additional information about Telerik, please visit telerik.com or follow [@telerik](https://twitter.com/telerik) on Twitter.