

Mercury
Venus

Earth

Mars

Jupiter

Saturn

Uranus

Neptune

2012 Event
Mars and Beyond
August 18-19, 2012
Museum of Science Boston
<http://www.mosboston.edu/mars2012>

Open Source Crater Seeker
<http://www.mosboston.edu/craterseeker/>

Modular Code
No server side processing
JavaScript/HTML
Google Earth Plugin

Ceres

Mars Panel

- Automatic crater detection
- Interactive navigation
- Interactive leader rotation

Mars Weekend

Workshop combines the data, systems, and reception of existing NASA funded research projects

with Participating Scientists present their latest Mars research

Archived Guide

with resources

Mars Weekend: A Panel and Games at the Museum of Science Boston

Invited Fred Cohen, University of Massachusetts Boston - Spaceflight & Earth Science
Wolfgang, University of Massachusetts Boston - Spaceflight & Earth Science
Mark L. The MIT Open Source Laboratory - 2012 Open Source
John Gable, Museum of Science Boston - Spaceflight & Earth Science
Learn the secrets of the technology and technology behind the Mars rover

Impact Crater Lab

- Added content to research on crater detection
- Visitors engaged creativity and fun of open-ended experimentation
- Audiences with greater facilitation were especially successful
- Look of scientists evidenced visitor's understanding of relevance to the study of planetary surfaces

You are here

"Planets"

Outreach Partnership: Museum's Perspective

"Dwarf Planets"

Impact Crater Lab

with resources

Mars Weekend: A Panel and Games at the Museum of Science Boston

Joseph Paul Cohen, University of Massachusetts Boston <joecohen@cs.umb.edu>

Wei Ding, University of Massachusetts Boston <ding@cs.umb.edu>

Ron Li, The Ohio State University <li.282@osu.edu>

Julia Sable, Museum of Science Boston <jsable@mos.org>

Tom Stepinski at the University of Cincinnati <stepintz@uc.edu>



Mars Weekend

Saturday and Sunday, June 4 – 5
10:00 am – 4:00 pm

Hands-on activities exploring
the Moon and Mars
10:00 am - 4:00 pm,
Blue Wing, Lower Level

Build a parachute for descent
through the Martian
atmosphere
10:30 am - 12:30 pm,
Gordon Current Science &
Technology Center, Blue Wing,
Level 1

Drive a Mars Rover from
Mission Control!
10:00 am - 4:45 pm,
Cahners ComputerPlace,
Blue Wing, Level 1

Live presentations and expert
panels about planetary
exploration
10:30 am - 4:00 pm,
Gordon Current Science &
Technology Stage, Blue Wing,
Level 1

Presented in collaboration with UMass Boston, Ohio State University, and Lunar and Planetary Institute



**Uniquely combines the data,
systems, and resources of
existing NASA funded research
projects**

**+MER Participating Scientist project
+AISR Crater Detection project
+LRO Participating Scientist project**

Achieved Goals

+955 Attendees

+Create an interactive web-based Mars Crater Seeker system for K-12 students, teachers, and the public by integration of the expertise and results of Mars research

+Effectively take advantage of the public science and technology component of the Museum of Science, Boston, which hosts more than 1.5 million visitors yearly



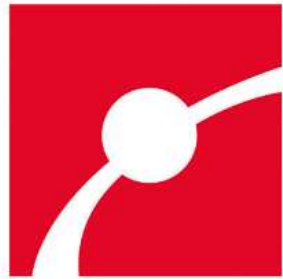


Museum of Science
Boston

Outreach Partnership: Researchers' Perspective

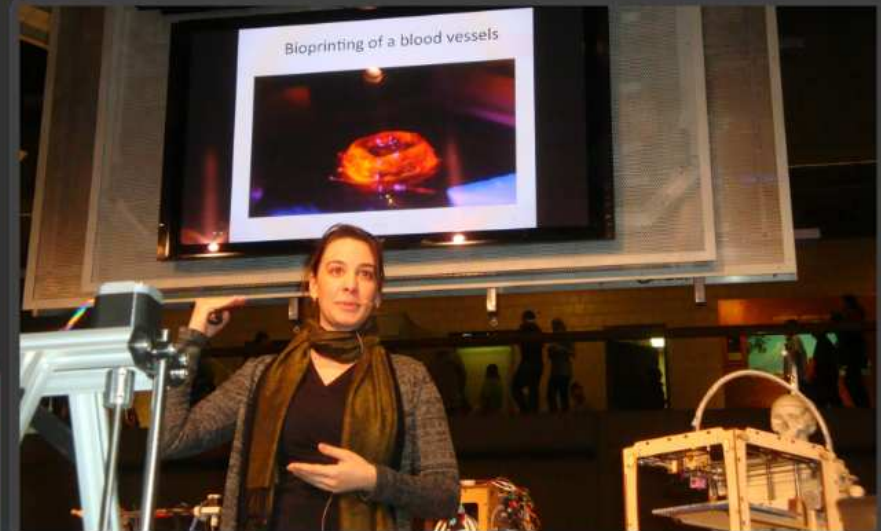
+A strong and experienced outreach partner

+Outreach continues after the museum event through an open-source game



**Gordon Current Science
& Technology Center**

Museum of Science, Boston



Outreach Partnership: Museum's Perspective



**+Be willing to adjust scope:
Emphasize context / implications
rather than research methods**

**+Leverage each partner's
strengths for greatest impact**

+How Much Would You Weigh on Mars?

+Stomp Rockets

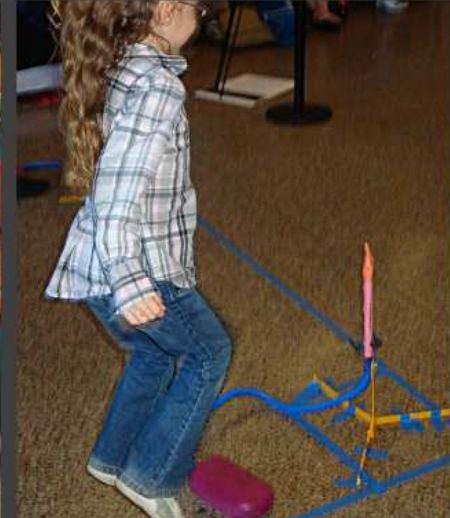
+Impact Crater Lab

+Life on Mars: What Might We Find?

+Moon and Mars Terrain

+Large 3D Mars Panorama

+Mars Mission Parachute Design Challenge





Impact Crater Lab

:) Added context to research on crater detection

:) Visitors enjoyed creativity and fun of open-ended experimentation

:) Activities with greater facilitation were especially successful

: (Lack of structure weakened visitor's understanding of relevance to the study of planetary surfaces

Mars Panel

+Automatic crater detection

+Mars rover navigation

+Phoenix lander mission



Plan for Crater Seeker

Web Based

MER-B data from The Ohio State University

Real tools used for crater ingress such as slope maps and point of view imagery

Use HiRISE and MRO orbital imagery

Real restrictions such as 25 degree tilt limit

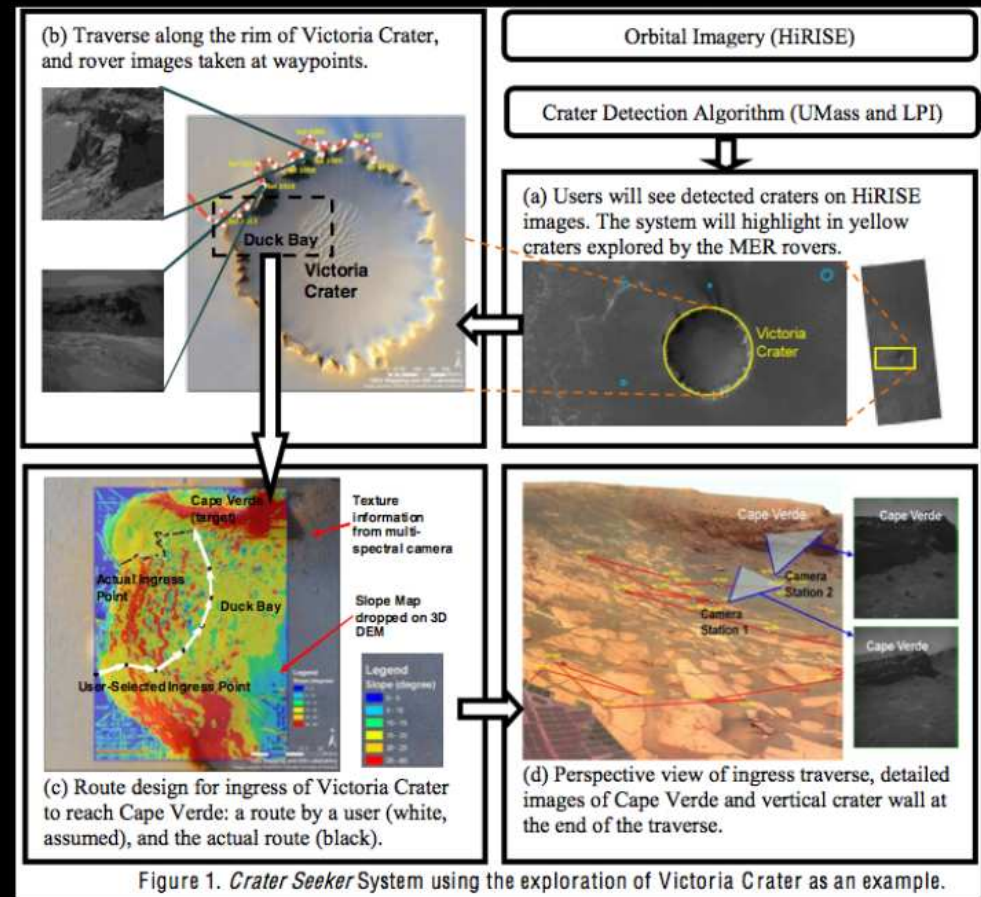


Figure 1. *Crater Seeker* System using the exploration of Victoria Crater as an example.

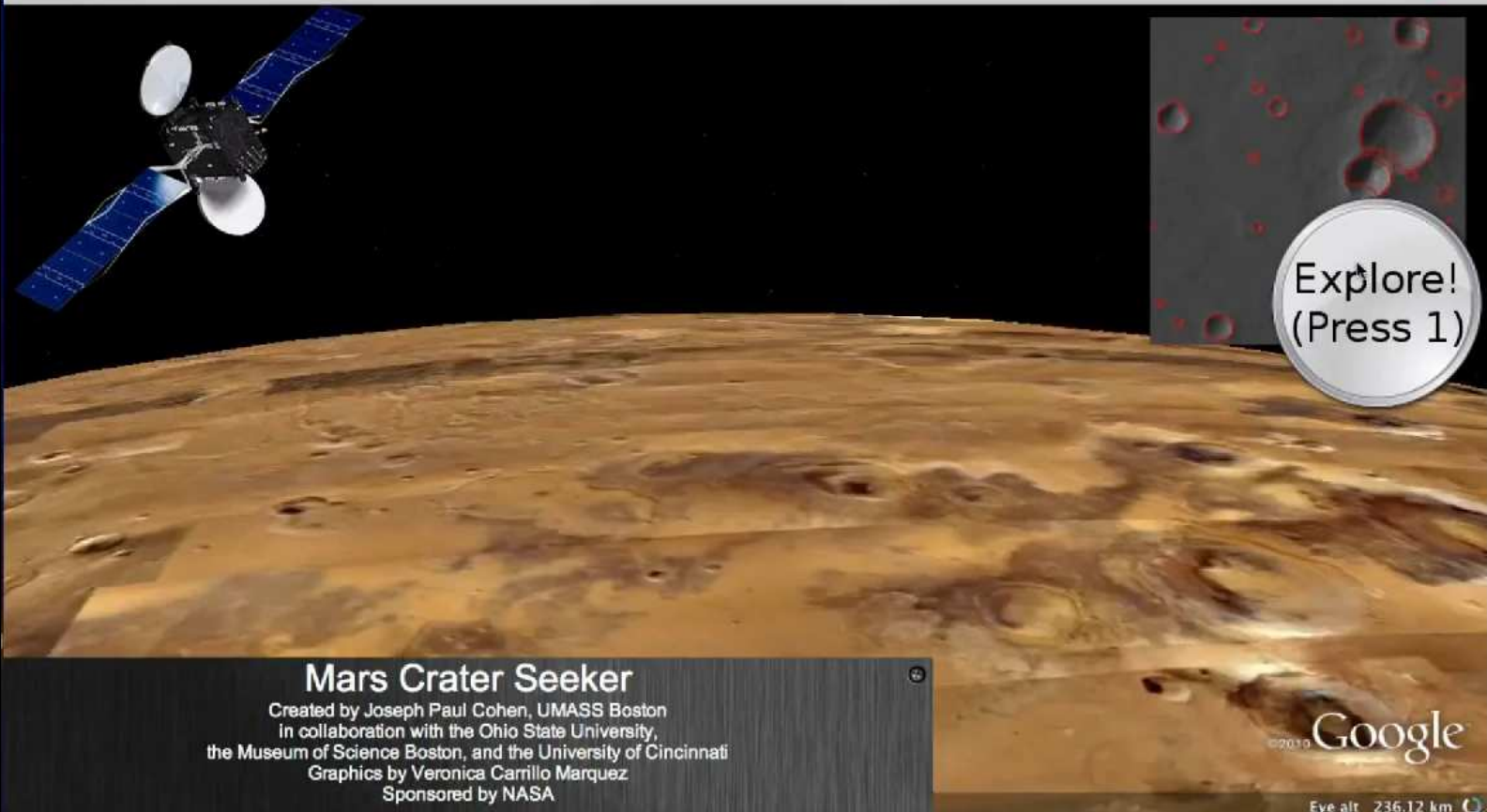


Modular Code

**No server side
processing**



**JavaScript/HTML
Google Earth Plugin**



Mars Crater Seeker

Created by Joseph Paul Cohen, UMASS Boston
In collaboration with the Ohio State University,
the Museum of Science Boston, and the University of Cincinnati
Graphics by Veronica Carrillo Marquez
Sponsored by NASA

Google

Eye alt 236.12 km

Derivative Work



2012 Event
Mars and Beyond
August 18-19, 2012
Museum of Science Boston

http://www.mos.org/events_activities/events&d=5339

Open Source Crater Seeker

<http://www.cs.umb.edu/~joecohen/craterseeker/>



Mars Weekend: A Panel and Games at the Museum of Science Boston

Joseph Paul Cohen, University of Massachusetts Boston <joecohen@cs.umb.edu>

Wei Ding, University of Massachusetts Boston <ding@cs.umb.edu>

Ron Li, The Ohio State University <li.282@osu.edu>

Julia Sable, Museum of Science Boston <jsable@mos.org>

Tom Stepinski at the University of Cincinnati <stepintz@uc.edu>

