# Overview

**Welcome to the Virtual Astronaut**

The Virtual Astronaut (VA) is an interactive Mars 3D environment created using multi-source and multi-instrument data from orbital and landed missions. The VA allows the user to explore and view the Martian landscape. This simulates an astronaut cooperatively working with a rover while independent from the rover's perspective. It allows the user to better understand and visualize the geomorphic and geologic contexts of Mars.

As a 3D visualization tool, the VA supports navigation through the virtual environment with a mouse, keyboard shortcuts, or a gamepad. A virtual astronaut can walk across the Martian surface. He or she can also control an animation of a rover drive along a path taken by Opportunity. Presenting a scene with multiple image mosaics overlain on a digital elevation model, the VA allows for an astronaut to adjust the contrast of the scene, change the terrain, and make measurements. Additionally, the astronaut can visit targets where Opportunity performed in situ measurements.

The VA was developed at the Geosciences Node of NASA's Planetary Data System (PDS). The first release of the Virtual Astronaut is a prototype study of Mars Exploration Rover (MER) Opportunity's Santa Maria campaign. Santa Maria is an impact crater on Mars that is about 90m in diameter and is located at 2.172°S, 5.445°W in Meridiani Planum. The crater sits northwest of the much larger Endeavour Crater. Before resuming its long-term trek toward Endeavour, Opportunity investigated Santa Maria from December 16, 2010 to March 22, 2011 (Martian days, sols 2451-2545). The VA for Cape York, a small rocky island sitting on the northwest rim of Endeavour Crater, is also under development.

Click the link http://wufs.wustl.edu/kvt/Santa_Maria/default.htm to launch the page of "VA at Santa Maria Crater". If you are a first time user of the Virtual Astronaut, the Unity Web Player plug-in needs to be downloaded from http://unity3d.com/webplayer/ and installed before you run the program. The prototype VA can be played online or at your local machine. If you have a slow internet connection, playing the VA locally will allow for better system performance. The online instructions detail how to download the stream to your local machine. Otherwise, the difference in playing the VA locally or playing it online is not significant. In general, the package of 3D content takes about 1 minute to load in your browser. The loading speed mostly depends on the quality of your graphics card, graphics memory, computer RAM, and internet speed. 2 GB RAM or more of system memory is recommended. An older PC with a poor graphics card and lower RAM may not support the VA application well. Please see the Virtual Astronaut User's Manual for more information.