BINARY SPACE
RELIABLE SPACE SYSTEMS

BULLETIN

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From the Editor

Full SCOS-2000 Compatibility!

Finally, after a long period of intensive work, the SCOS-2000 database driver development is now fully completed. Thanks to this driver, SatView™ can directly import, modify and process spacecraft databases compatible with the SCOS-2000 standard (6.0.2e).
So from now on, ESA projects can be supported by SatView™ with relatively little programming effort.

The next few months, SatView™ will be ported to Windows® 10 (as a desktop application).

A new generation of spacecraft tracking tool has been developed alongside the previously described activities, called SpaceTraveller™. It is designed as a solar system & space missions simulator, supporting selected inter-planetary missions as well as the real-time tracking of all Earth-based spacecraft. While initially implemented as a separate application and published to the Windows® Store, it will be integrated into SatView™ after it has been ported to Windows® 10.

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SatView™ SCOS-2000 Compatibility

The development of a SCOS-2000 database driver is a major milestone to open SatView™ to the ESA satellites. Up to now SatView™ only supported the database standard defined by L-3 Communications for the ARTEMIS project.
The driver software heavily depends on the principle known as (abstract) base classes in C++: The standard behavior is defined in a DLL called 'SCOS-2000.DLL' but can be overridden by a satellite specific DLL implementing those parts of the interface with a deviating behavior.

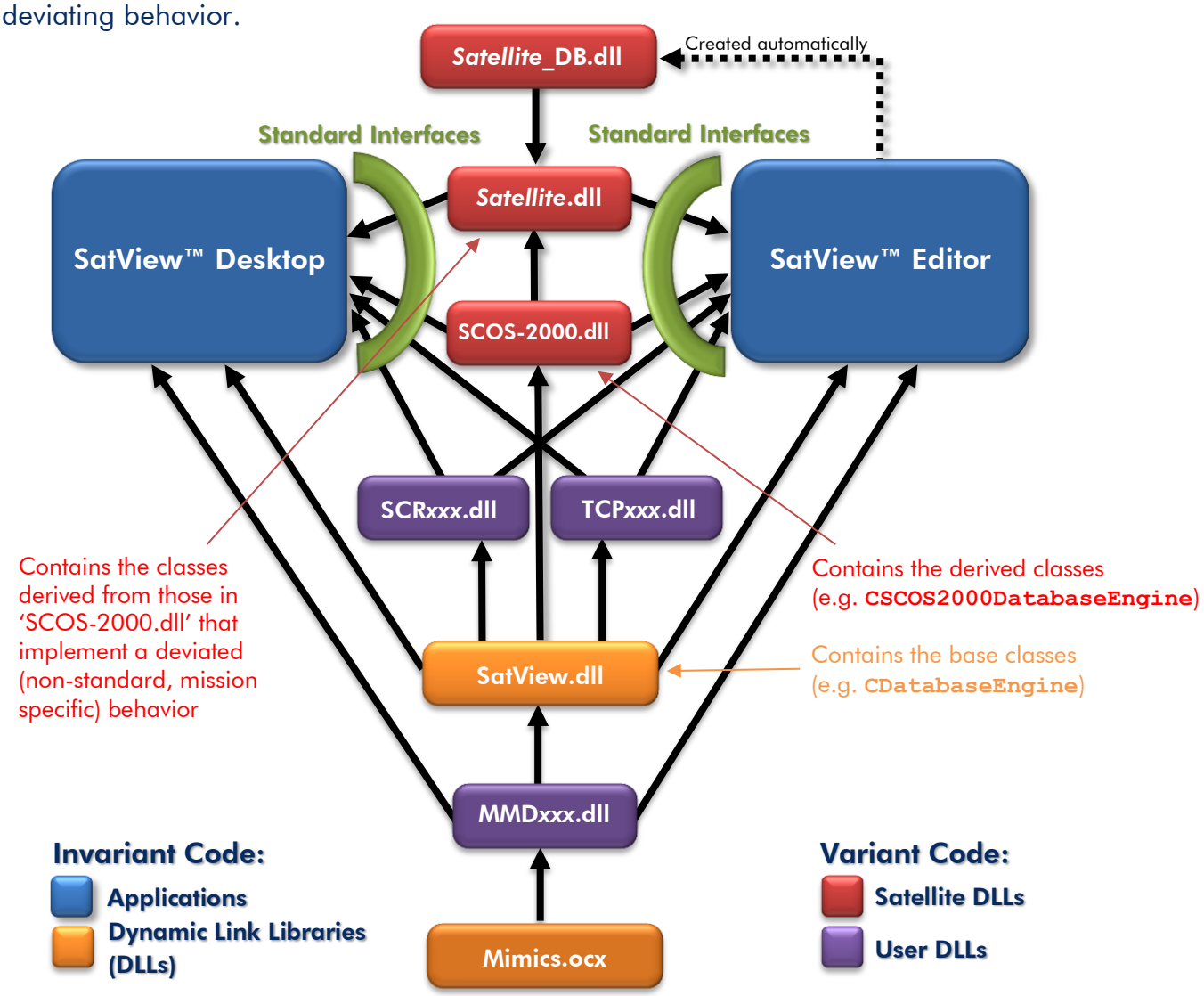

Figure 1 – SatView™ Software Architecture

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The standard SCOS-2000 driver implementation is encapsulated inside 'SCOS-2000.dll' and, in principle, comprises of the following classes:

Class	Description
CSCOS2000DatabaseEngine	Implements all database related tasks (i.e. parsing, relational table management, interface to the DBMS etc.)
CSCOS2000TMProcessEngine	Implements the telemetry processing (i.e. packet decoding, out-of-limit checking, derived parameter calculations etc.)
CSCOS2000TCProcessEngine	Implements the telecommand processing (i.e. command encoding, limit checking etc.)

The above classes (and some additional ones) are derived from base classes defined inside 'SatView.dll' and expose a set of virtual functions as interface.

Future SCOS-2000 compatible missions will require the implementation of an additional dynamic link library '*Satellite*.dll', defining classes derived from the above ones that implement all deviations from the standard behavior.

SatView™ Development Roadmap

The following months SatView™ will be ported to the Windows® 10 environment:

- Microsoft® Windows® 10 (Server)
- Microsoft® Visual Studio® 2015
- Microsoft® SQL Server® 2014 ff

For the moment, SatView™ will remain a so called 'desktop application' in Windows® 10. However, depending on the future Win32/UWA bridges that Microsoft® will publish soon, an additional migration to the *Universal Windows Platform* (UWP) could be envisaged when requested.
Alongside the migration, the new solar system & space missions simulator, called SpaceTraveller™ (see later), will be integrated into SatView™ too.

Figure 2 – Windows® 10 Logo

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SpaceTraveller™

The success of the Microsoft® Silverlight® web-based 'Satellite Tracking Tool' (http://www.binary-space.com/satellitetracking), which has been used from throughout the whole world, together with Microsoft®'s decision to stop further development on Silverlight®, has led to the development of a new generation of spacecraft tracking tool, called SpaveTraveller™, including selected deep-space missions:

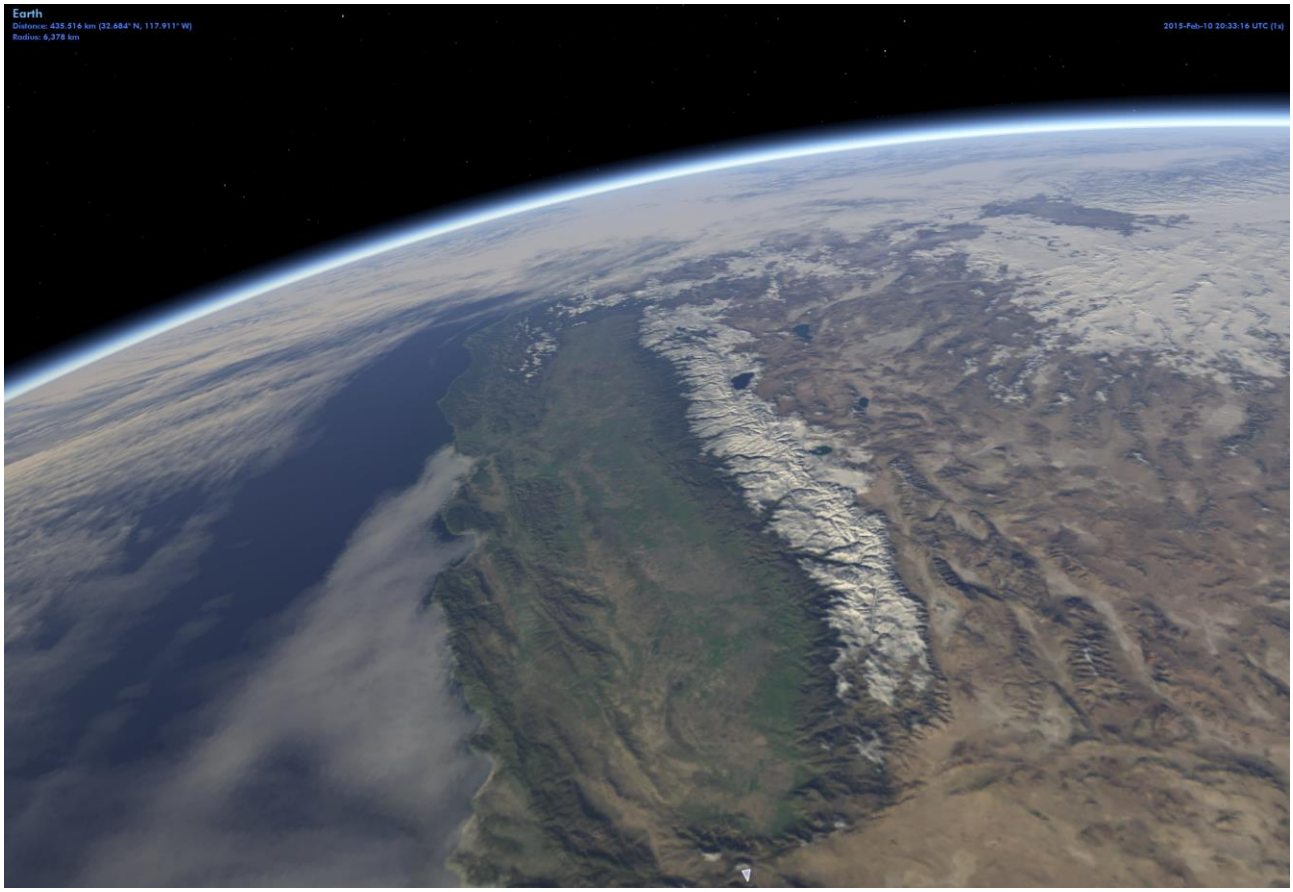

Figure 3 – SpaceTraveller™: Earth from Space

Top Features:

- All planets of our solar system and more, like moons, dwarf planets, selected comets
- Tracking support for most Earth-based spacecraft (www.celestrak.com, www.space-track.org), including the monitoring of orbit details, pass & satellite inter-link predictions
- Selected deep-space missions with 3D models (ftp://naif.jpl.nasa.gov/pub/naif), including past & predicted trajectories
- Automatic, periodic data updates via servers at BINARY SPACE

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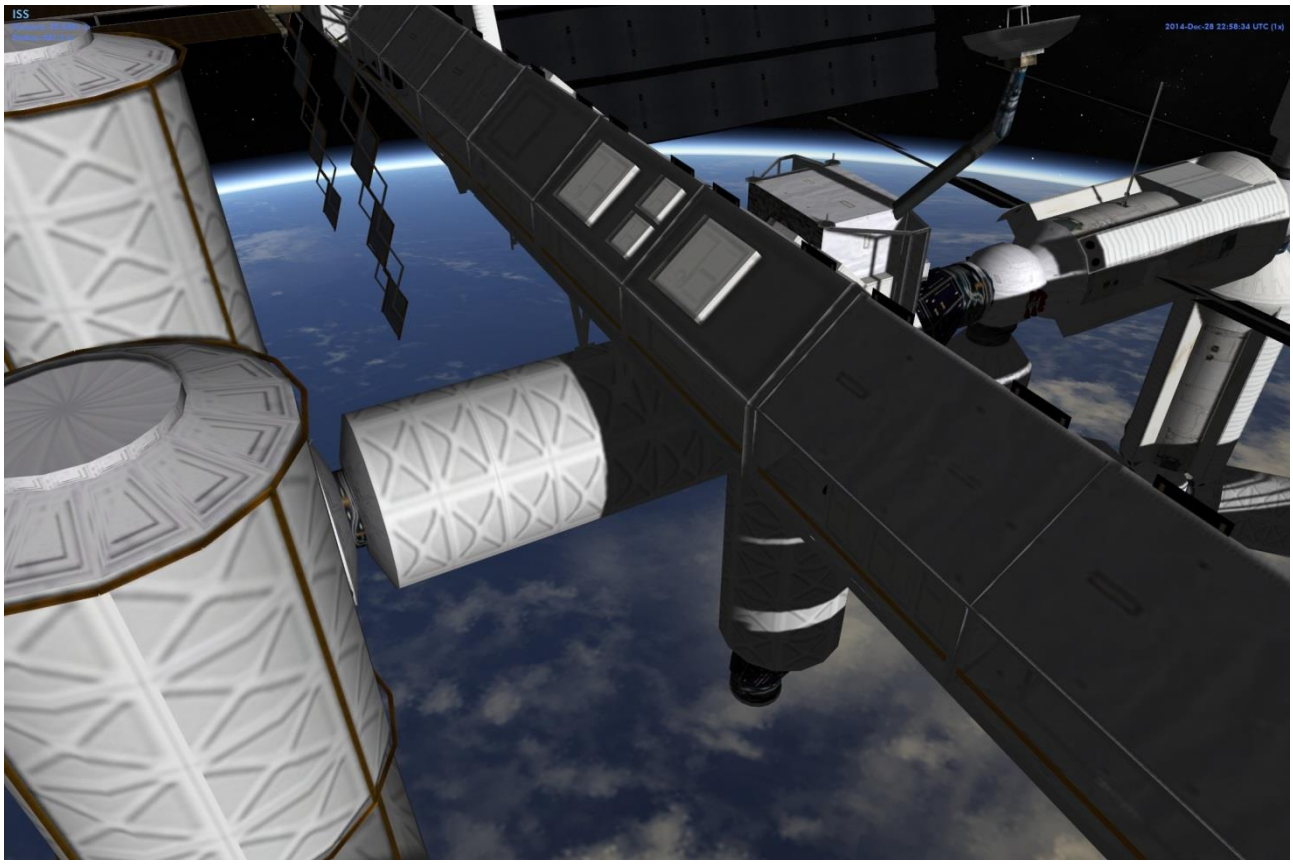

Figure 4 – SpaceTraveller™: International Space Station

Figure 5 – SpaceTraveller™: Night lights & Light reflections

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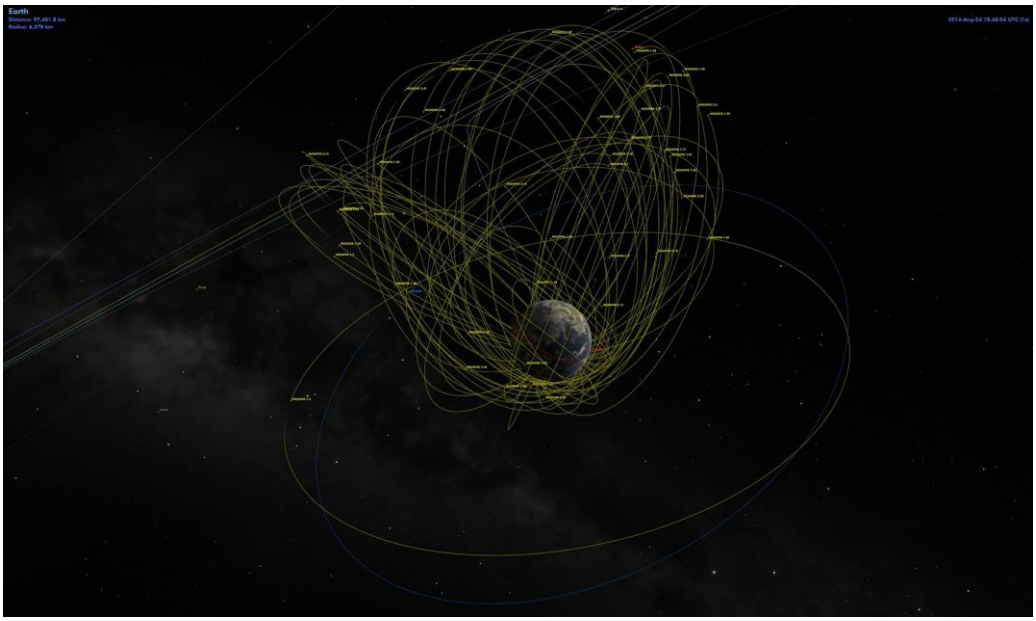

Figure 6 – SpaceTraveller™: Molniya satellite constellation

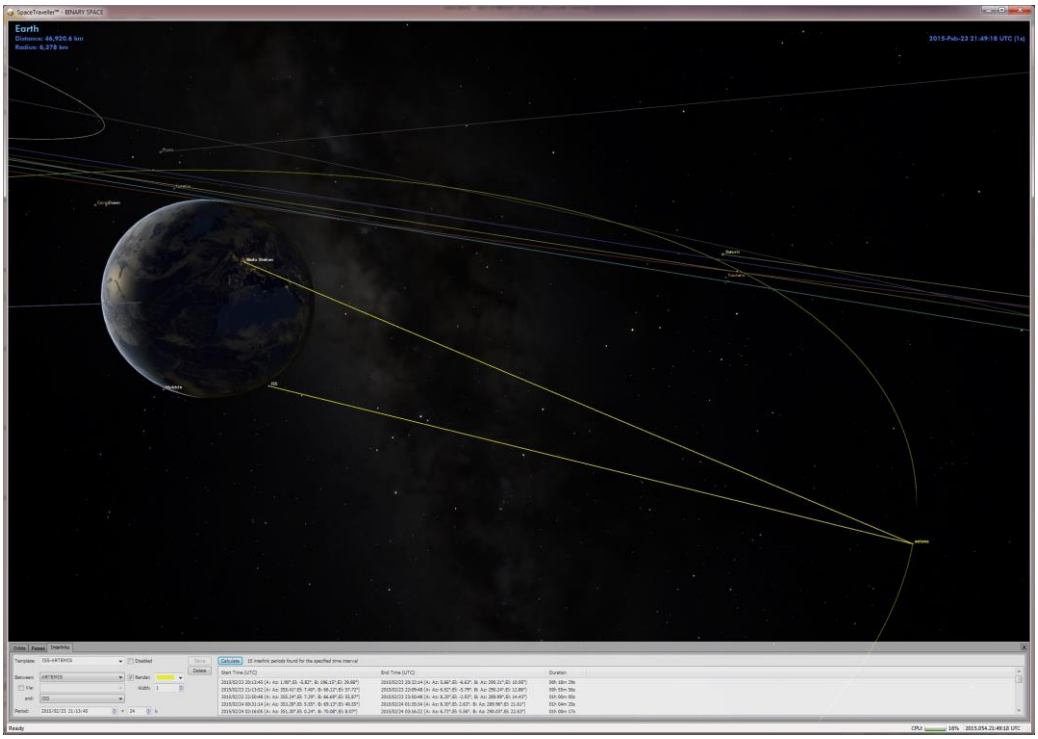

Figure 7 – SpaceTraveller™: Satellite interlinks

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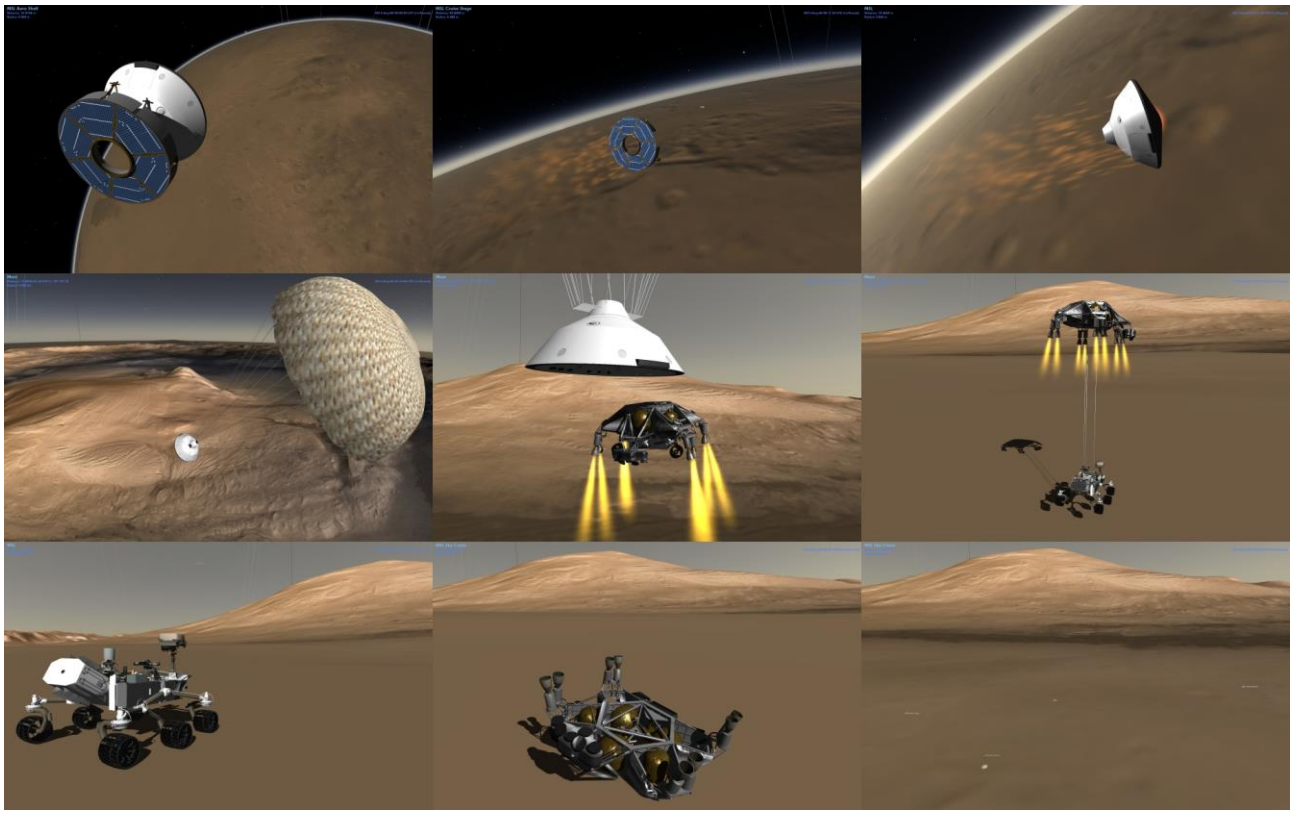

Figure 8 – SpaceTraveller™: Mars Science Laboratory (EDL)

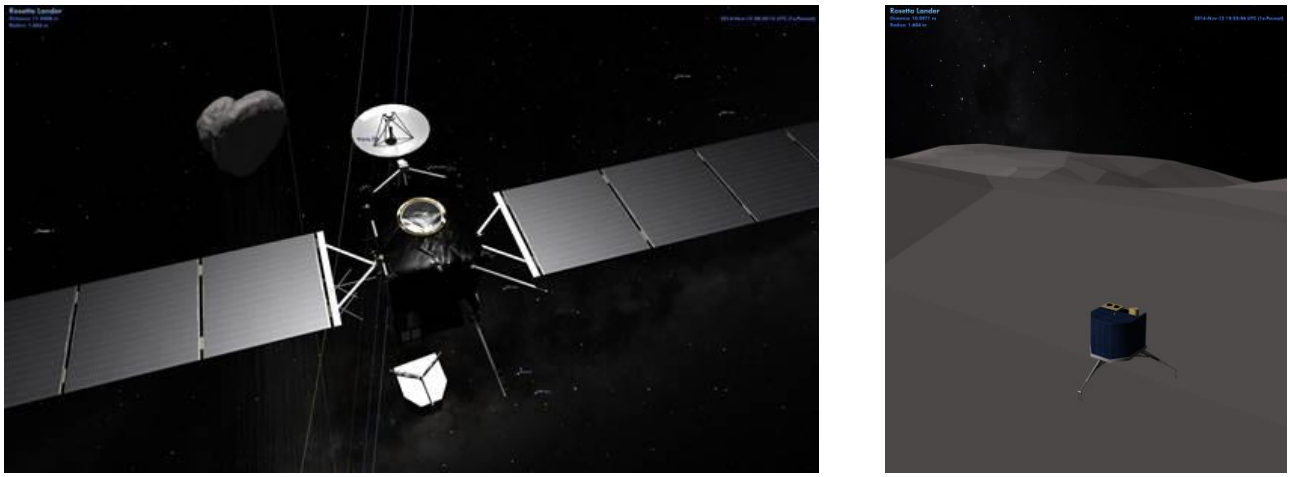

Figure 9 – SpaceTraveller™: Rosetta & Philae

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SpaceTraveller™ also supports terrains:

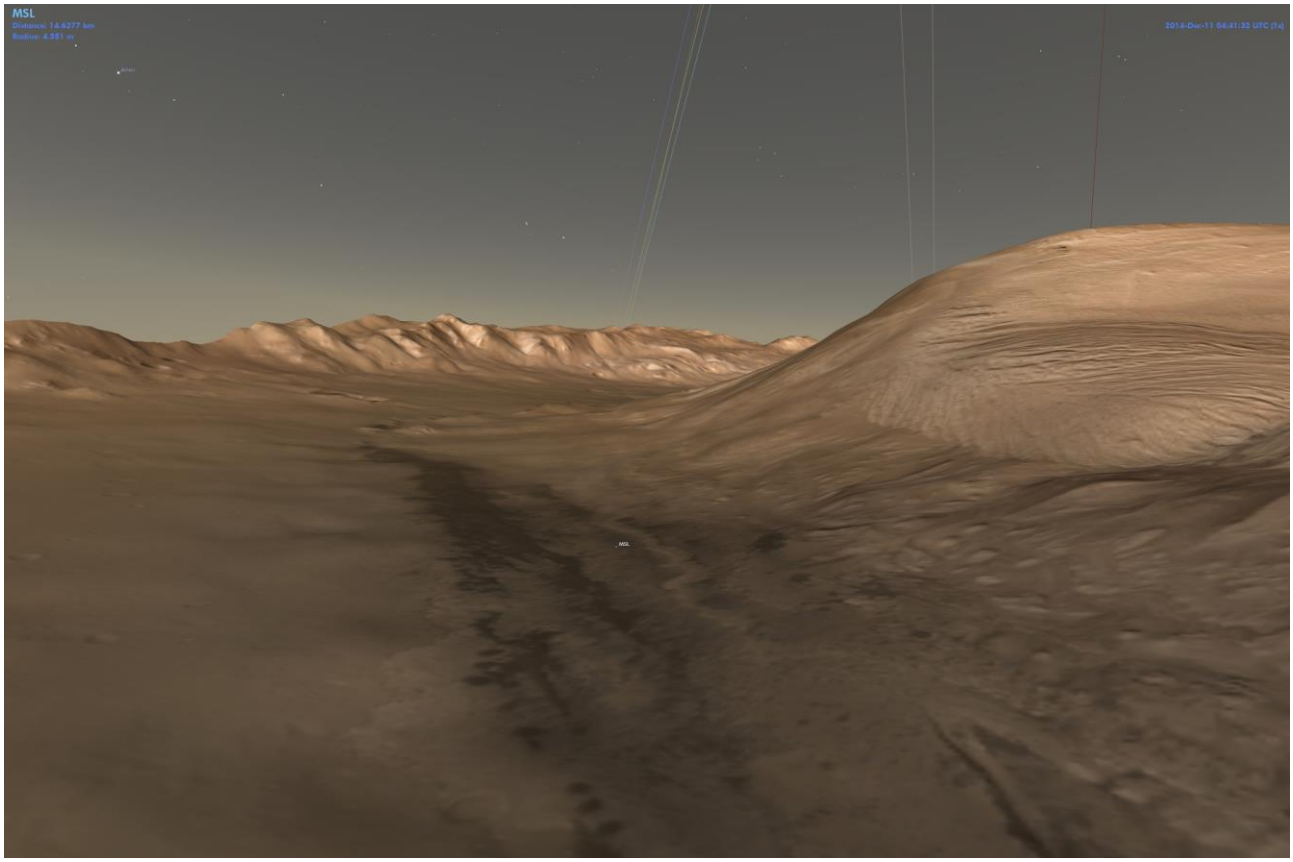

Figure 10 – SpaceTraveller™: Gale Crater on Mars

Watch the promotion video: https://www.youtube.com/watch?v=-SUMnr2zjL8

Currently, the SpaceTraveller™ is available in the Windows® 8 Store or at www.binary-space.com/products.html.

In addition to the integration into SatView™, it is planned to convert the SpaceTraveller™ into a *Universal Windows Application* (UWA) so that it can be purchased via the Windows® 10 store too.

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