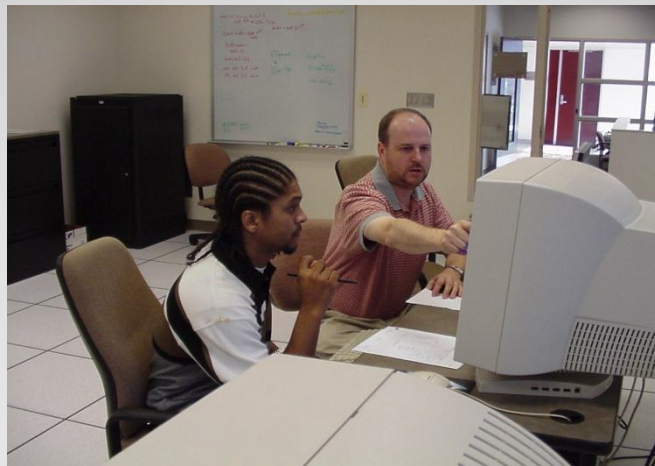


SAMPEX Spacecraft Modeling and Orbit Simulation

Jaye Clark
Elie Tcheimegni

- October 1997, NASA charged Bowie State University Satellite Operation Control Center (BSOCC) with control and maintenance of SAMPEX spacecraft.
- Jan 2004, BSOCC received WIRE missions.



BSOCC History

- **SAMPEX**

- launched on a Scout rocket on July 3, 1992
- Solar Anomalous and Magnetospheric Particle Explorer
- gathers scientific data in the fields of space plasma physics, solar physics and atmospheric physics
- detects solar energy particles, precipitating energetic electrons, anomalous cosmic rays and galactic cosmic rays throughout a solar cycle

About the Spacecraft

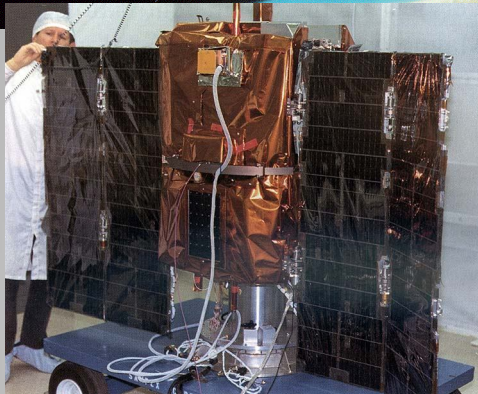
- 4 instruments & Solar Panels
 - MAST (Mass Spectrometer Telescope)
 - PET (Proton/Electron Telescope)
 - HILT (Heavy Ion Large Area Proportional Counter Telescope)
 - LECIA (Low Energy Ion Composition Analyzer)
 - and GaAs Solar Array panels.

SAMPEX

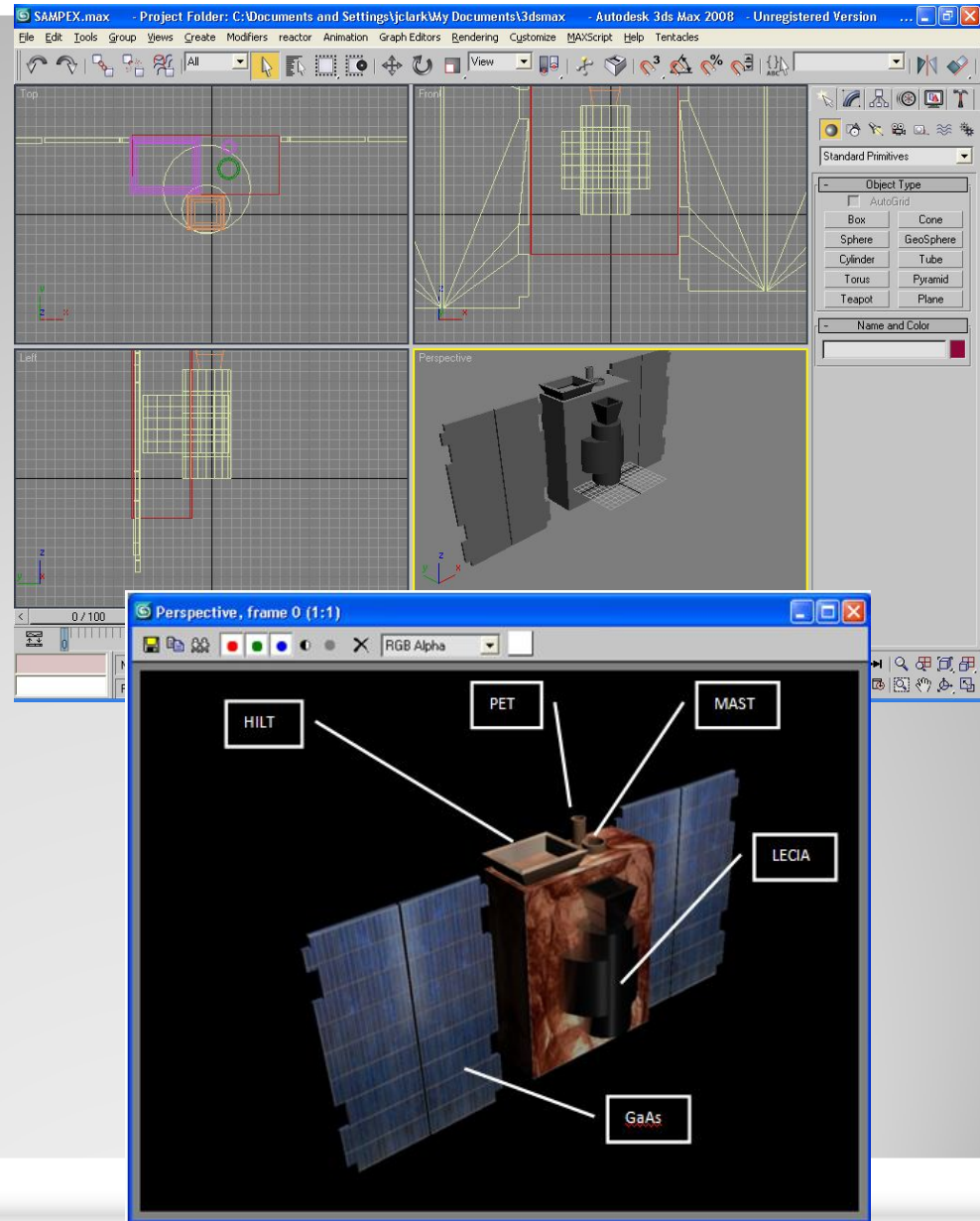
- To create a realistic model of this spacecraft and its orbit for use by the BSOCC team during informational sessions with visitors in order to give an idea of what the satellite does during its space flight.
- The environment includes outer space, satellite, earth and moon.
- Later a solar system model was added to the project

Goals & Objectives

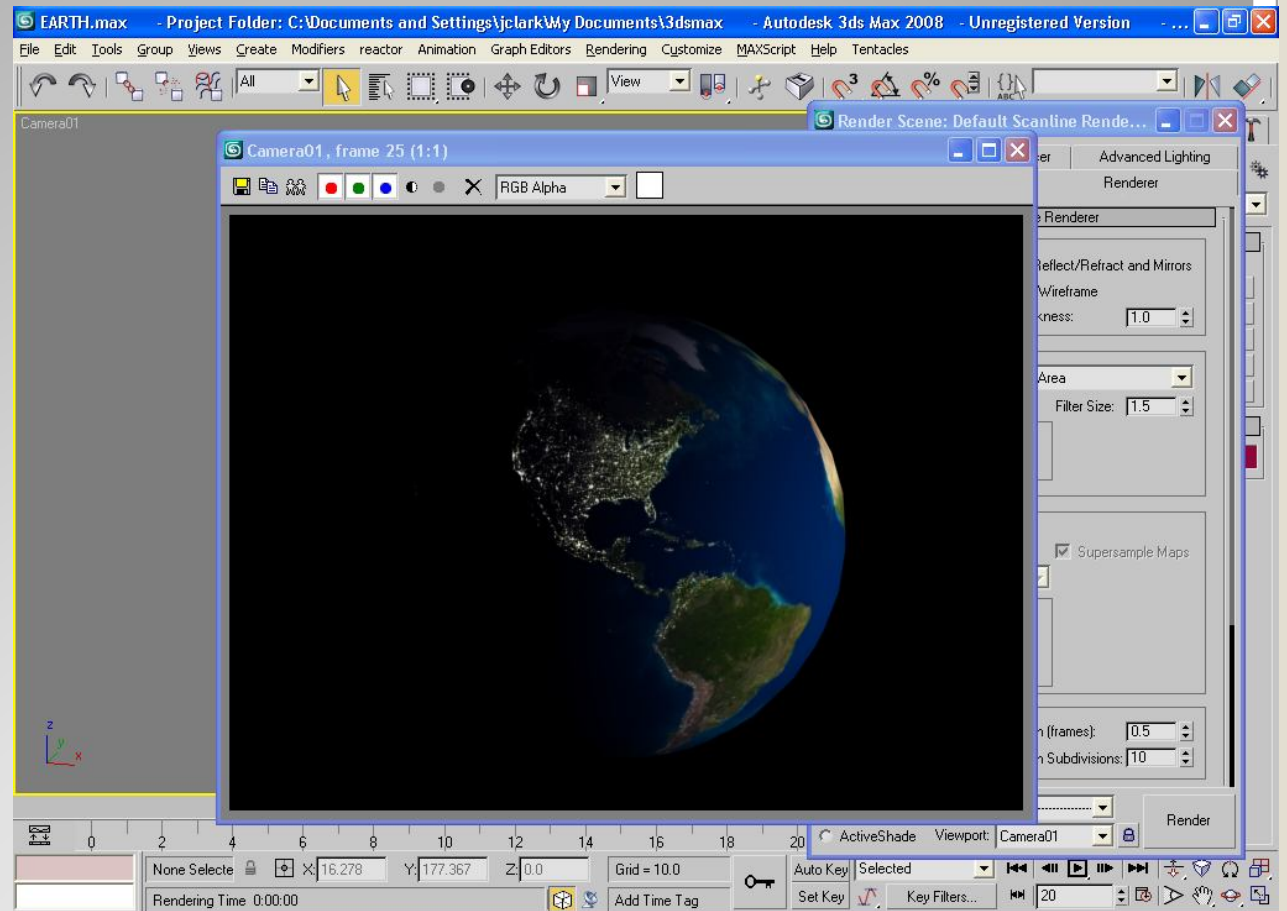
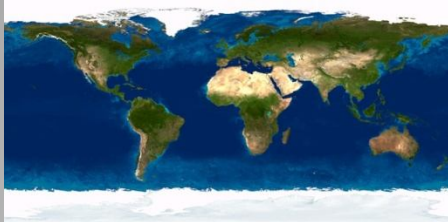
- 3DS Max



Modeling

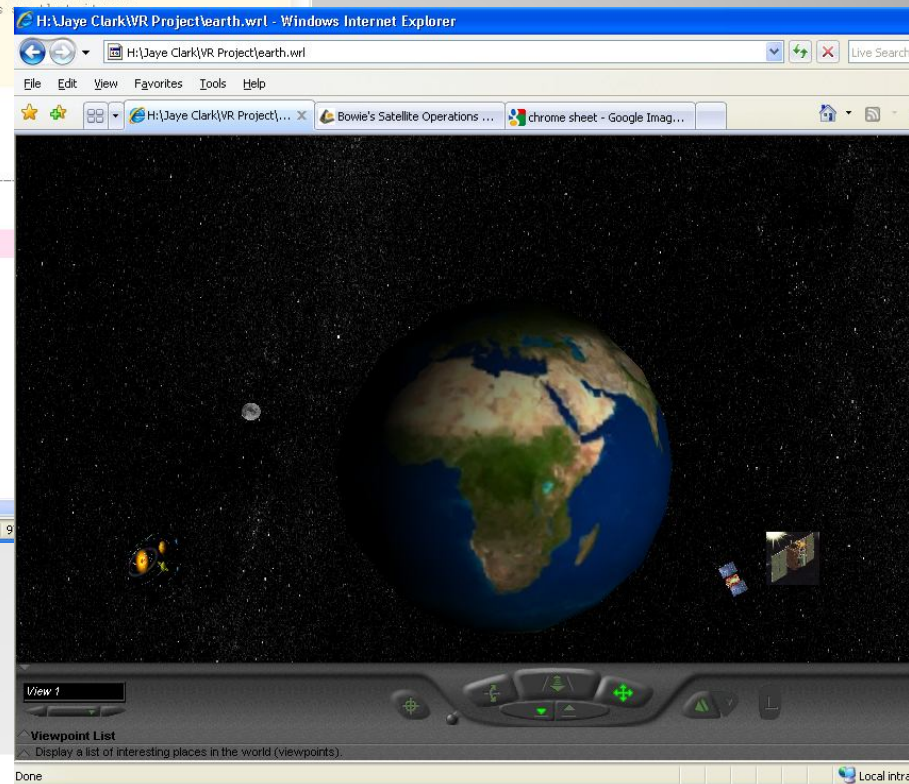
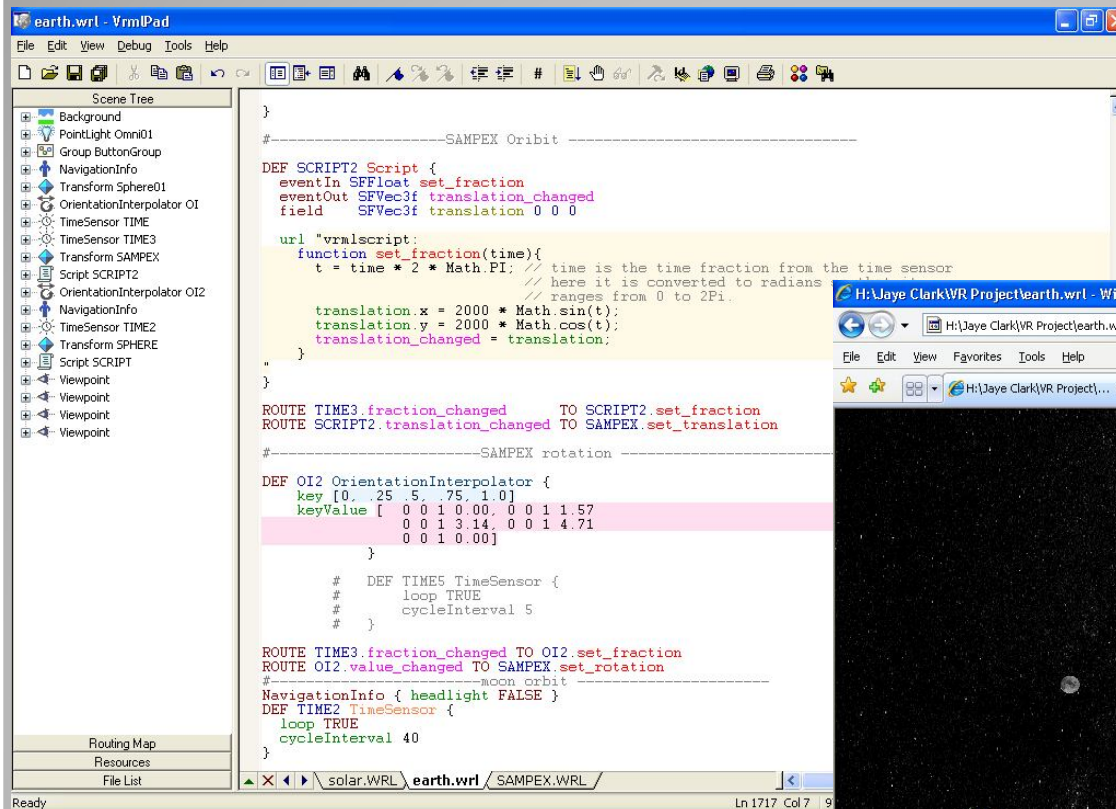


- 3DS Max



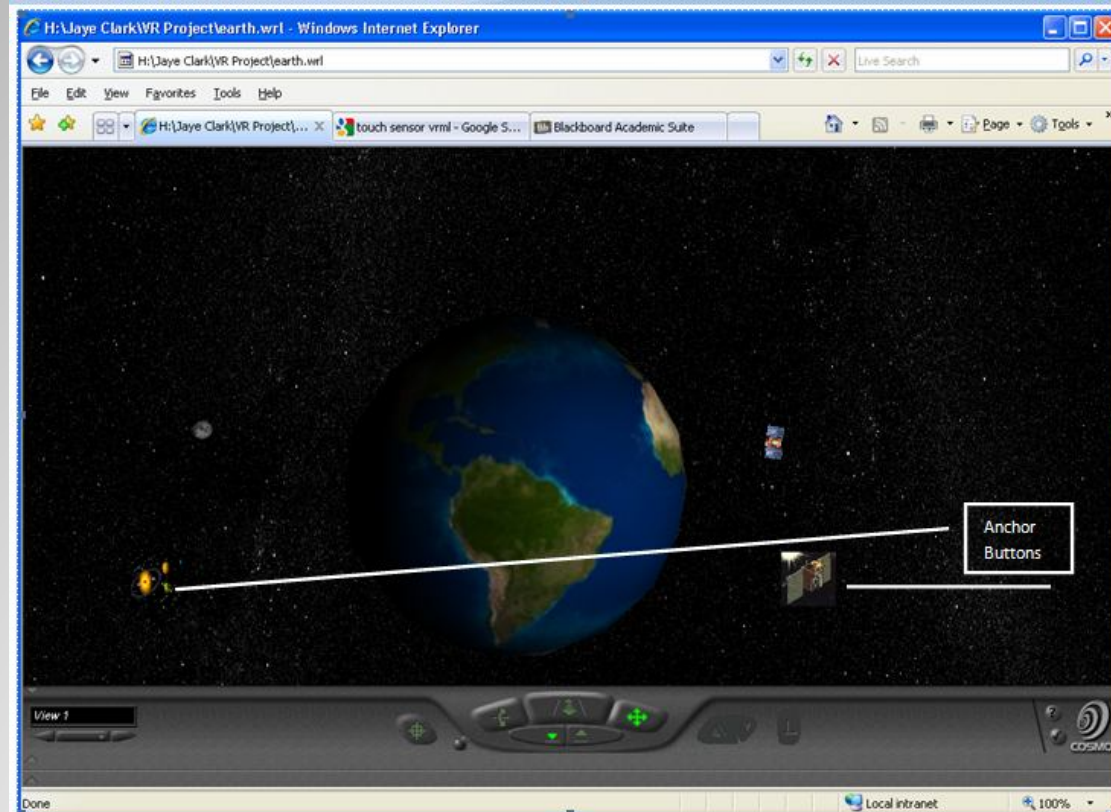
EARTH

VRML



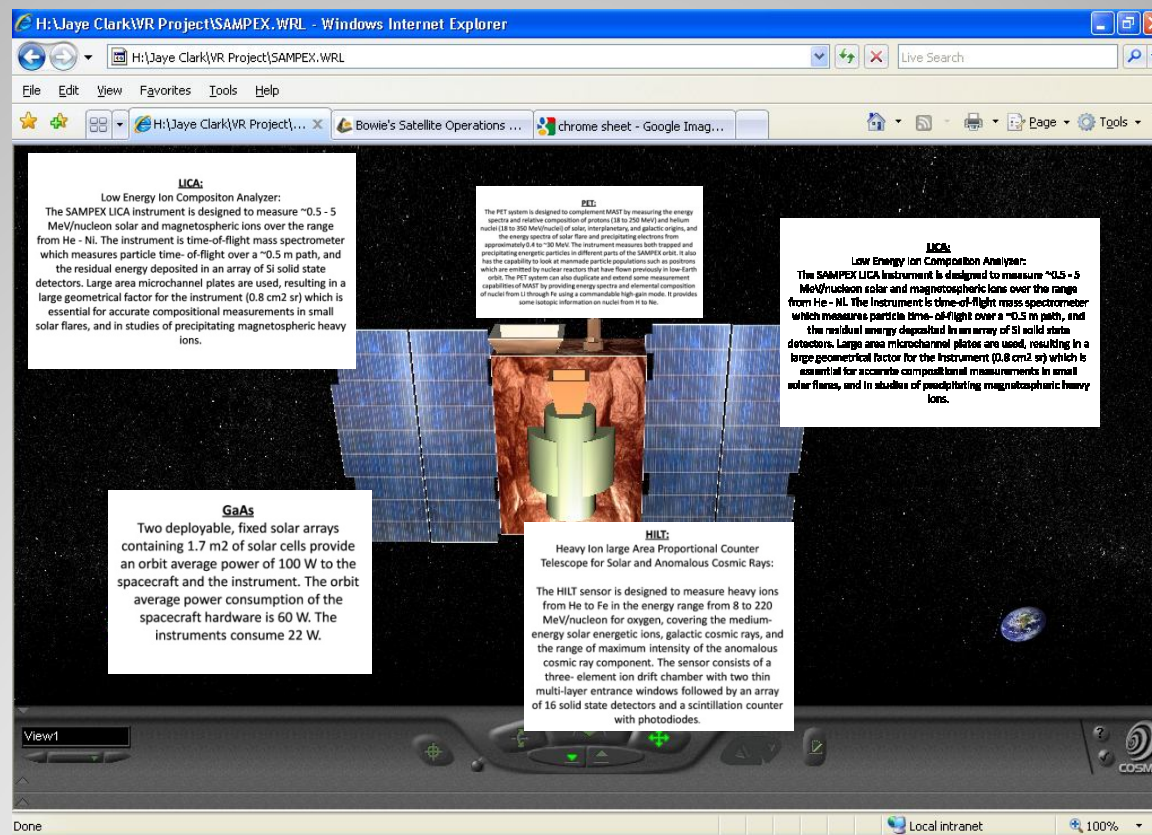
Satellite Orbit

- Link the full world file to the Satellite file and the solar orbit simulation



Anchor Nodes

• Touch Sensors



SAMPEX

- Problems included

- Loss of data and features in transitioning from 3DS Max to VRML
- Time consumption for modeling satellite and coding environment in VRML
- Learning to create elements on the fly

- Recommendations

- Completing animations for ground station transfers

Problems & Recommendation

- Special thanks...
 - Harish Vadali
 - Patrick Asata
 - Oluseye Fadiran
 - Todd Watson & BSOCC
 - Dr. Sharad Sharma

Any Questions?