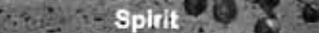
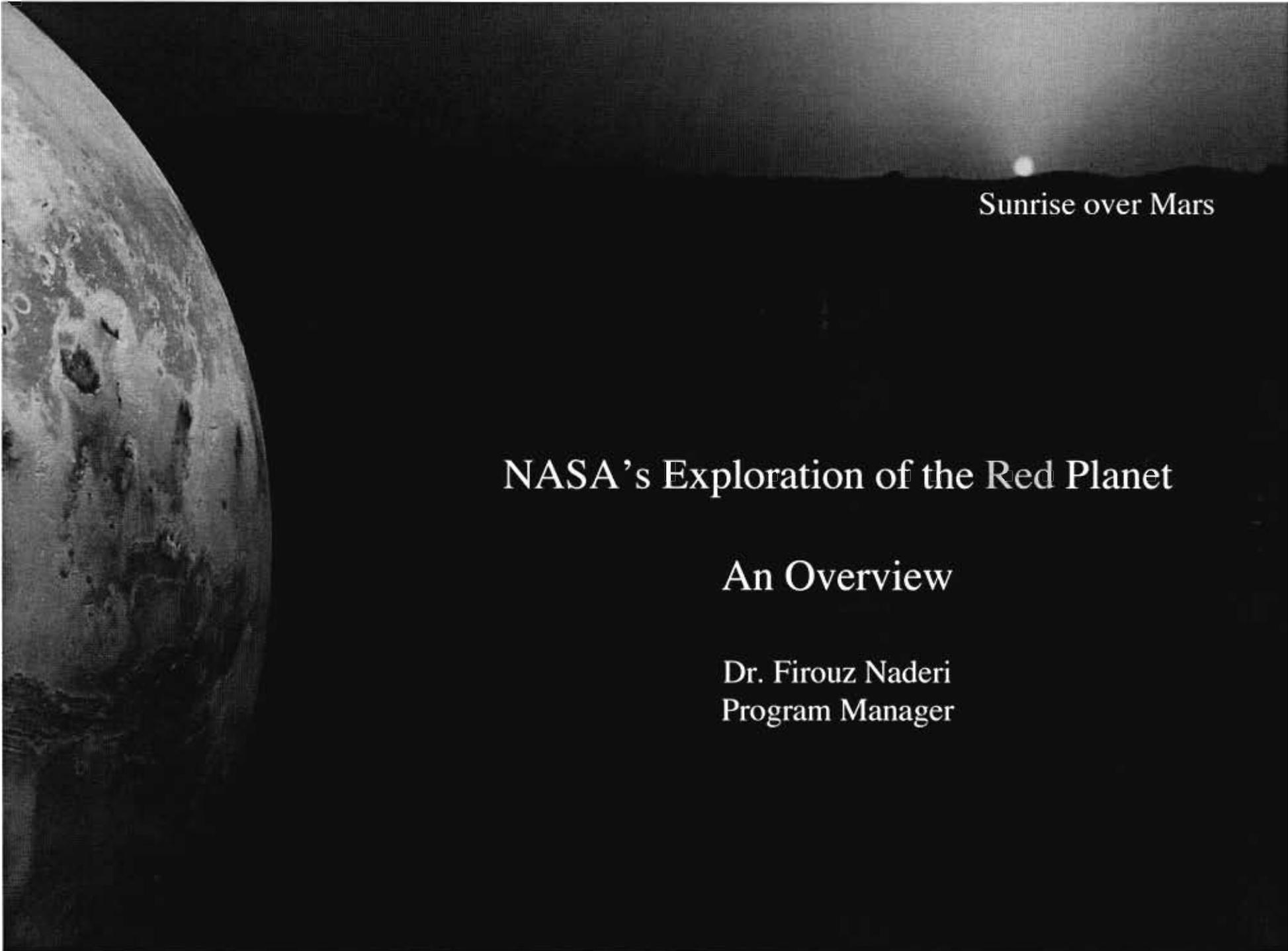


Mars Exploration Programs

Currently at Mars	Coming soon				
 <p>Mars Global Surveyor</p>  <p>Mars Odyssey</p>  <p>Opportunity</p>  <p>Spirit</p>	<p>2005</p>  <p>Mars Reconnaissance Orbiter</p>	<p>2007</p>  <p>Phoenix Scout</p>	<p>2009</p>  <p>Mars Telecom Orbiter</p>  <p>Mars Science Laboratory</p>	<p>2011</p> <div style="border: 1px solid white; padding: 5px; text-align: center;"> <p>Competed Scout Missions</p> </div>  <p>Technology Testbed Lander</p>	<p>2013</p>  <p>Mars Sample Return</p>

Mars Exploration Programs



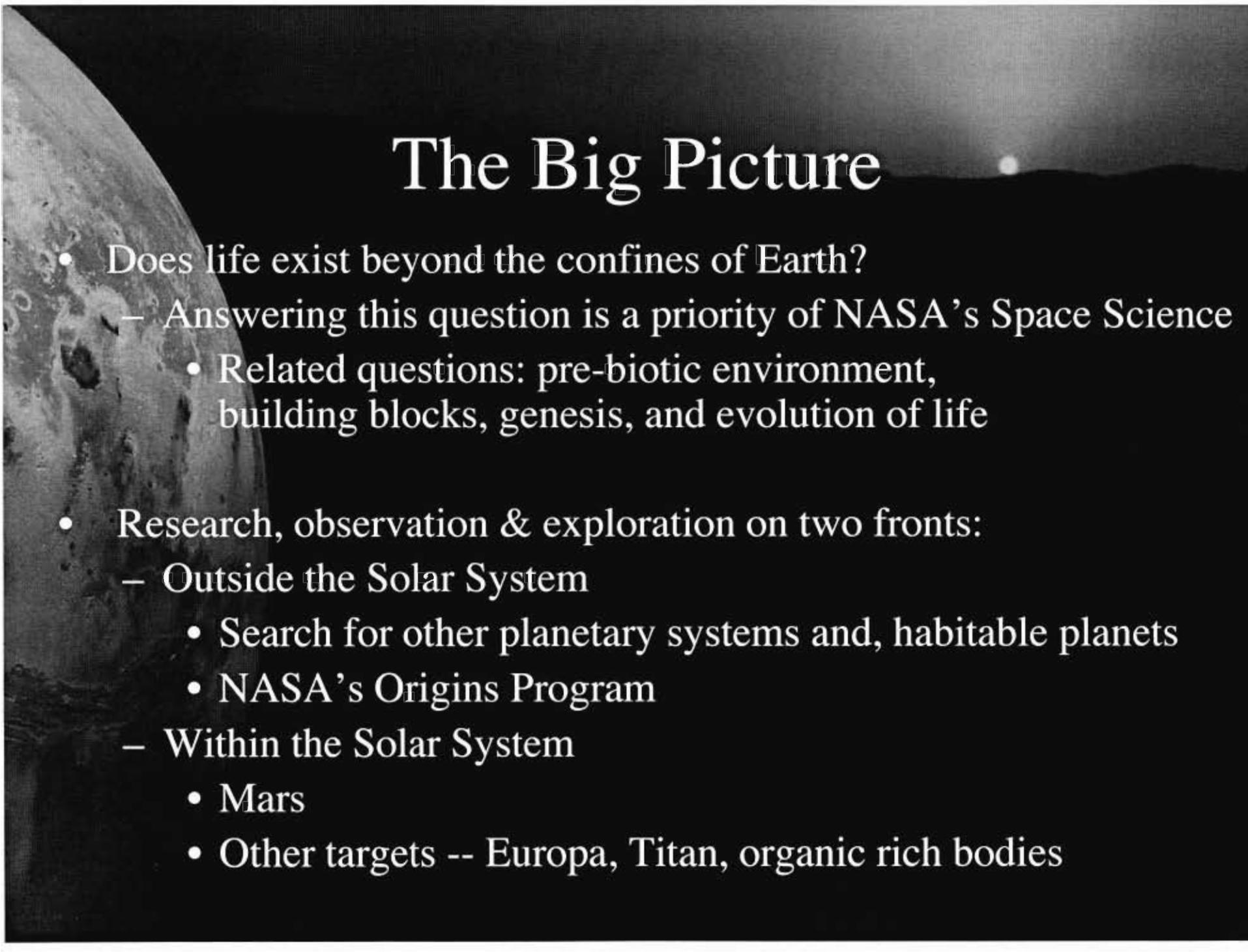


Sunrise over Mars

NASA's Exploration of the Red Planet

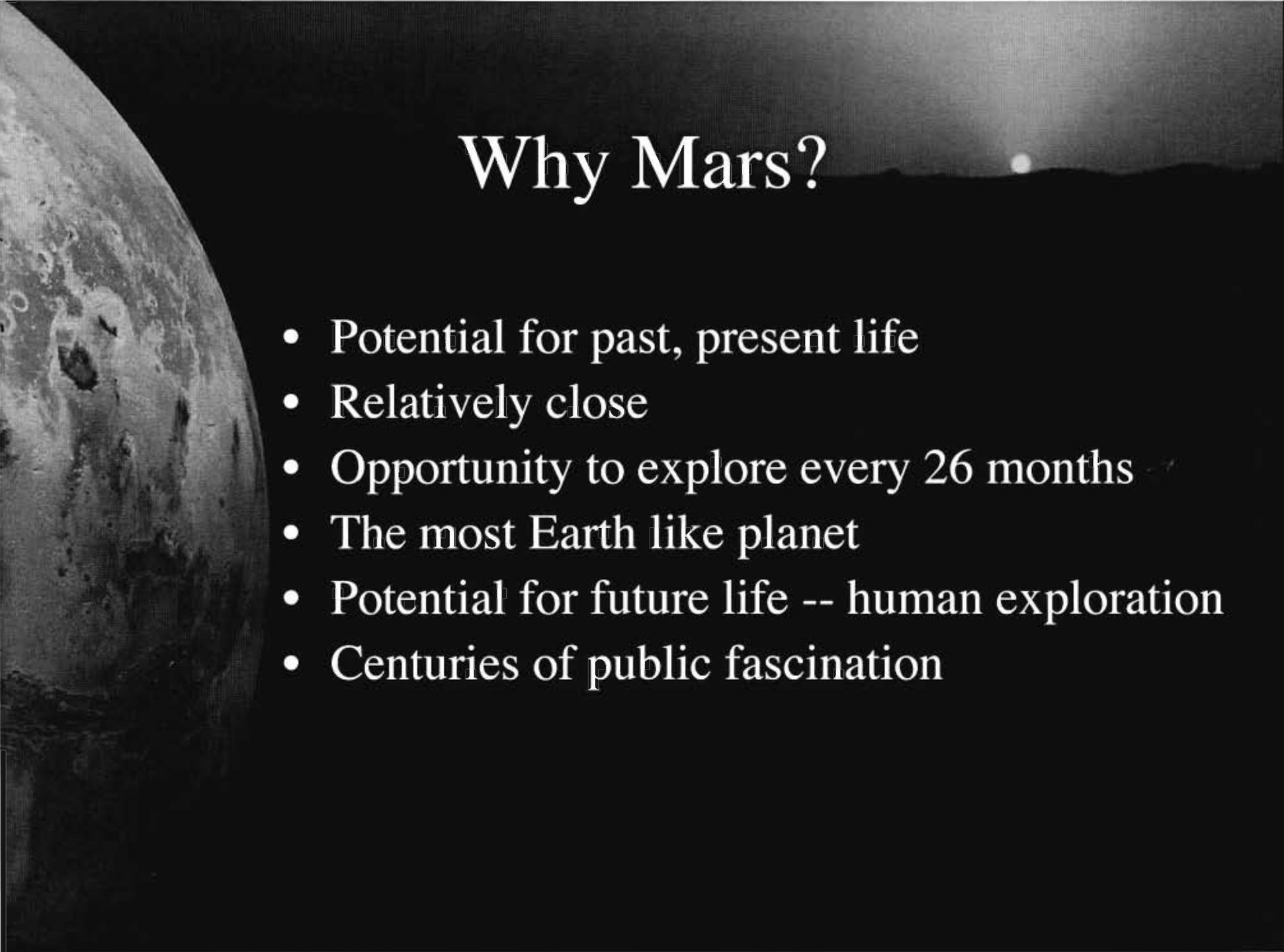
An Overview

Dr. Firouz Naderi
Program Manager



The Big Picture

- Does life exist beyond the confines of Earth?
 - Answering this question is a priority of NASA's Space Science
 - Related questions: pre-biotic environment, building blocks, genesis, and evolution of life
- Research, observation & exploration on two fronts:
 - Outside the Solar System
 - Search for other planetary systems and, habitable planets
 - NASA's Origins Program
 - Within the Solar System
 - Mars
 - Other targets -- Europa, Titan, organic rich bodies



Why Mars?

- Potential for past, present life
- Relatively close
- Opportunity to explore every 26 months
- The most Earth like planet
- Potential for future life -- human exploration
- Centuries of public fascination

Mars a Favorite Target

- The opportunity to go to Mars comes around every 26 months
- Since 1964 US has gone to Mars on nine such opportunities -- sometimes with more than one S/C
- These have included many planetary “first ever”



Mariner 4 - 1964
First S/C to Flyby
Another Planet and
Send Back Images



Mariner 9 - 1971
First Orbiter Around
Another Planet

Viking - 1975
First Lander on
Another Planet



Pathfinder - 1997
First Rover on
Another Planet



Only 1/3 of man-made objects launched to Mars, to flyby, orbit or land, have succeeded.

The US spacecrafts have fared somewhat better but still Mars has taken its toll.



Mars Exploration Science Strategy

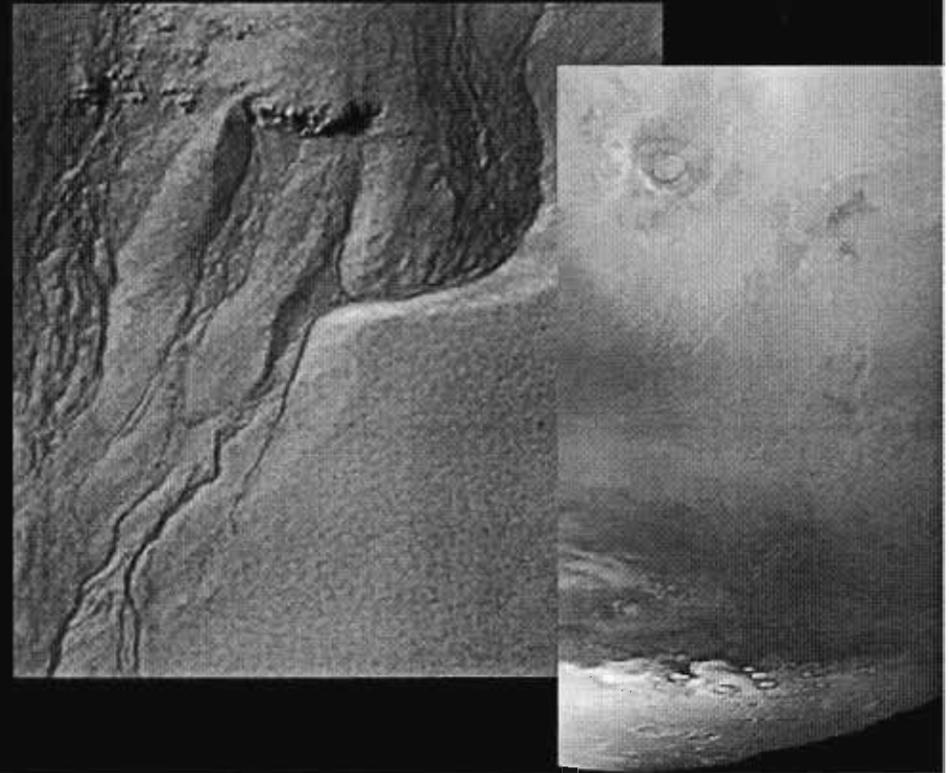
Follow the Water

- On Earth where there is water and a source of energy there is life

“What makes the desert beautiful”, said the little prince, “is that somewhere it hides a well....”



*Antoine De Saint
Exupery*





Implementing the Strategy

- Mars is a large planet with nearly the same land area as that of the Earth so the exploration requires a strategy.

Seek, In situ, Sample

- Use orbiters to **seek** promising sites and get global perspective
- Use landers/rovers carrying geobiological labs for **in situ** analysis
- Bring back **sample(s)** to precision analysis