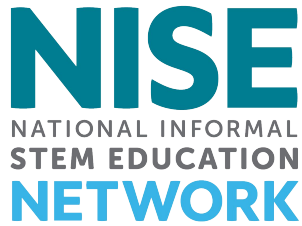


Earth & Space Project-Based Professional Learning Community



Improving Diversity, Equity, and Inclusion in Space Science

Derrick Pitts, Sc.D.
The Franklin Institute

Recorded in April 2022 as part of the Earth & Space Project-Based
Professional Learning Community Convening



Plenary Keynotes

Improving Diversity, Equity, and Inclusion in Space Science



Derrick Pitts, Sc.D.

Chief Astronomer
The Franklin Institute
Philadelphia, PA

The background features a dark blue gradient with a starry space pattern. On the left side, there are several circular gauges or dials with white markings and numbers. The largest gauge has numbers from 140 to 260 in increments of 10. Other smaller gauges are scattered around, some with arrows indicating direction. The overall aesthetic is technical and futuristic.

AD ASTRA

PATHWAYS TO GREATNESS

NISE NET APRIL CONVENING

DERRICK PITTS

THE FRANKLIN INSTITUTE

DERRICK H. PITTS, Sc.D.

Astronomer, Space
Scientist, NASA Solar
System and
Astrobiology
Ambassador, Advisor -
world's largest
telescope, National
radio Astronomy
Observatories; Science
Communicator





ENDLESSLY
FASCINATING





STUNNINGLY
BEAUTIFUL





MYSTERIES WE CAN
UNRAVEL TO
UNDERSTAND THE
UNIVERSE



GUION S. BLUFORD, JR.

5522 Media Street Ac.
S.A., A.A., *Captain of Chess Team,
Delegate, Ping Pong Team, Teacher's
Aide, Science Club, Record Book Staff,
Alternate.*

Puzzles, girls and athletics rate high
on "Bunny's" special likes . . . if not
playing chess or ping pong he can be
found in the refrigerator . . . hopes to
become an aeronautical engineer.



DID YOU KNOW?

THIS IS
EMORY CONRAD MALICK,
A Native Philadelphian!

FIRST LICENSED
AFRICAN-AMERICAN PILOT –
1912!



FIRST LICENSED AFRICAN-AMERICAN PILOT
F.A.I. LICENSE #105
MARCH 20, 1912

FIRST AVIATOR TO FLY OVER
NORTHUMBERLAND AND SNYDER COUNTIES
PENNSYLVANIA

FIRST AFRICAN-AMERICAN PILOT TO EARN A
FEDERAL AIRLINE TRANSPORT LICENSE
FEDERAL TRANSPORT LICENSE #1716
APRIL 30, 1927



**BLACK MILITARY
AVIATORS, 1945**
Far Left, Top Row, Dr.
Eugene Richardson



ROBERT LAWRENCE, SR.,
ASTRONAUT CANDIDATE.



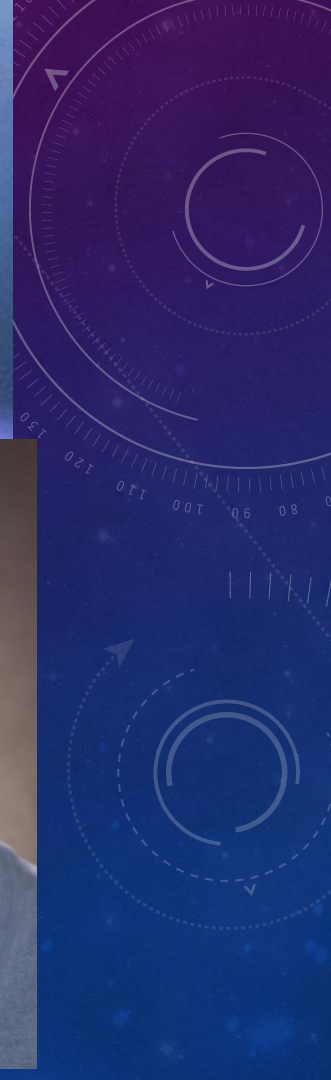


**'HIDDEN FIGURE'
KATHRYN JOHNSON,
NASA
MATHEMATICIAN**



ASTRONAUT MAE JEMISON

Launching Women Into Science & Tech



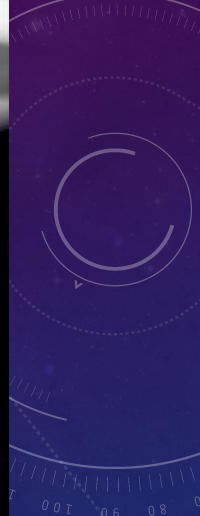


CHARLIE
BOLDEN,
STS
Commander
and NASA
Administrator
under Pres.
Obama





LELAND MELVIN,
EX-NFL STAR!





STEPHANIE
WILSON, more
hours in space
than any other
African-American
female astronaut.



Victor Glover –

Representative of
the new vanguard
of space explorers.













12 Principles of Green Chemistry

Anastas & Warner

1. **Prevention**
It is better to prevent waste than to clean up after it has been created.
2. **Atom Economy**
Design syntheses that maximize the incorporation of all of the materials used in the process into the final product.
3. **Less Hazardous Chemical Synthesis**
Use substances and reaction conditions that are as non-toxic and non-hazardous as possible.
4. **Design Safer Chemicals**
Design products to be effective while being as innocuous as possible to human health and the environment.
5. **Design for Energy Efficiency**
Run chemical processes at ambient temperature and pressure.
6. **Use Renewable Feedstocks**
Use raw materials that are renewable rather than depleting.
7. **Reduce Derivatives**
Avoid unnecessary protection and deprotection steps.
8. **Catalysis**
Use catalytic reagents (as opposed to stoichiometric amounts) to generate products.
9. **Design for Degradation**
Design products that break down to innocuous materials after use.
10. **Real-Time Analysis**
Monitor and control reactions in real time to maximize yields and minimize byproducts.
11. **Accident Prevention**
Design processes and products that reduce the hazard of chemical accidents.
12. **Minimize Waste**
Design products and processes that generate no waste or as little waste as possible.







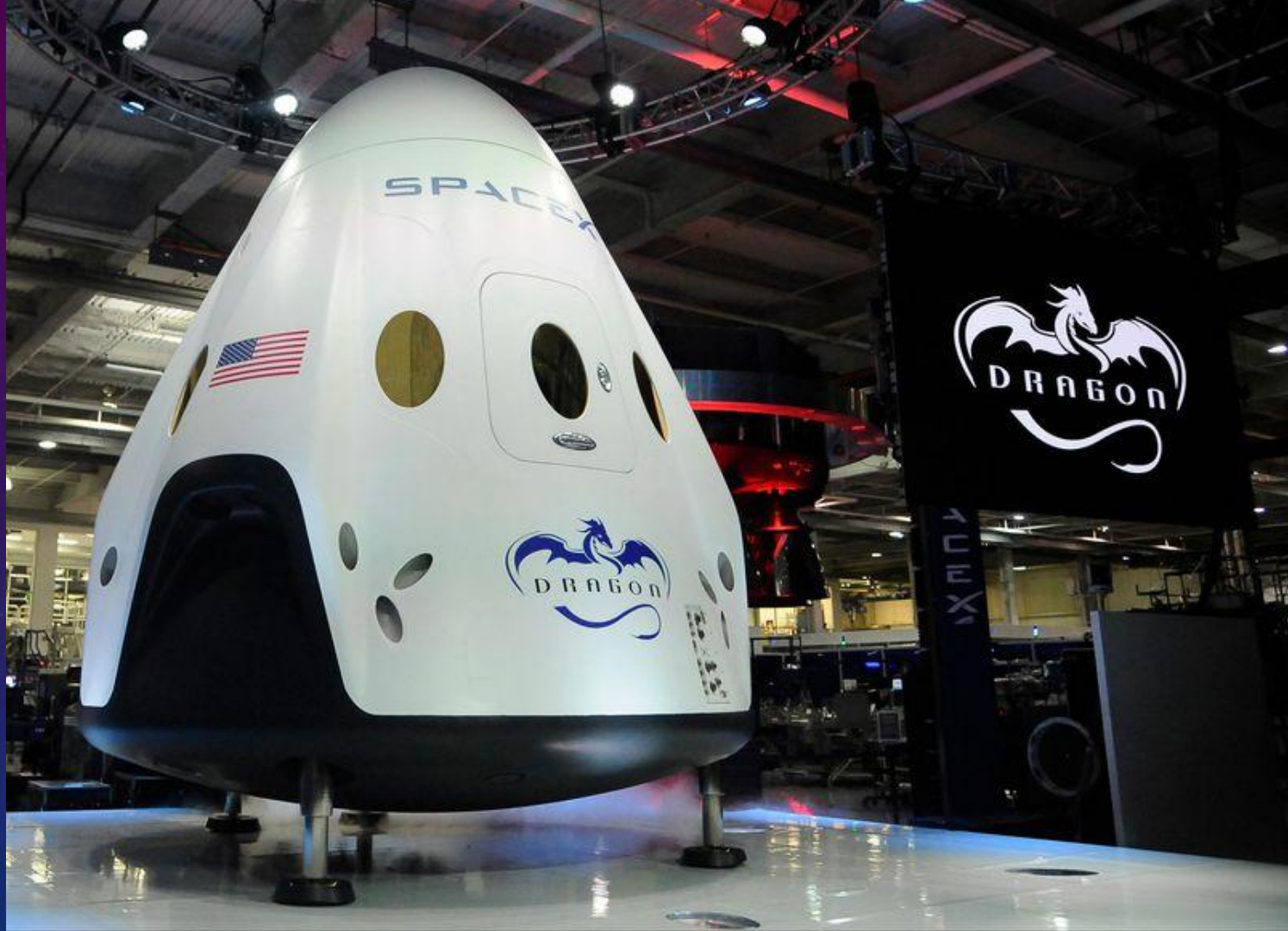
International Space Station – Dominating the NEO since
2000



Orbital Correction Yesterday – Nov. 12

Second Generation - SpaceX

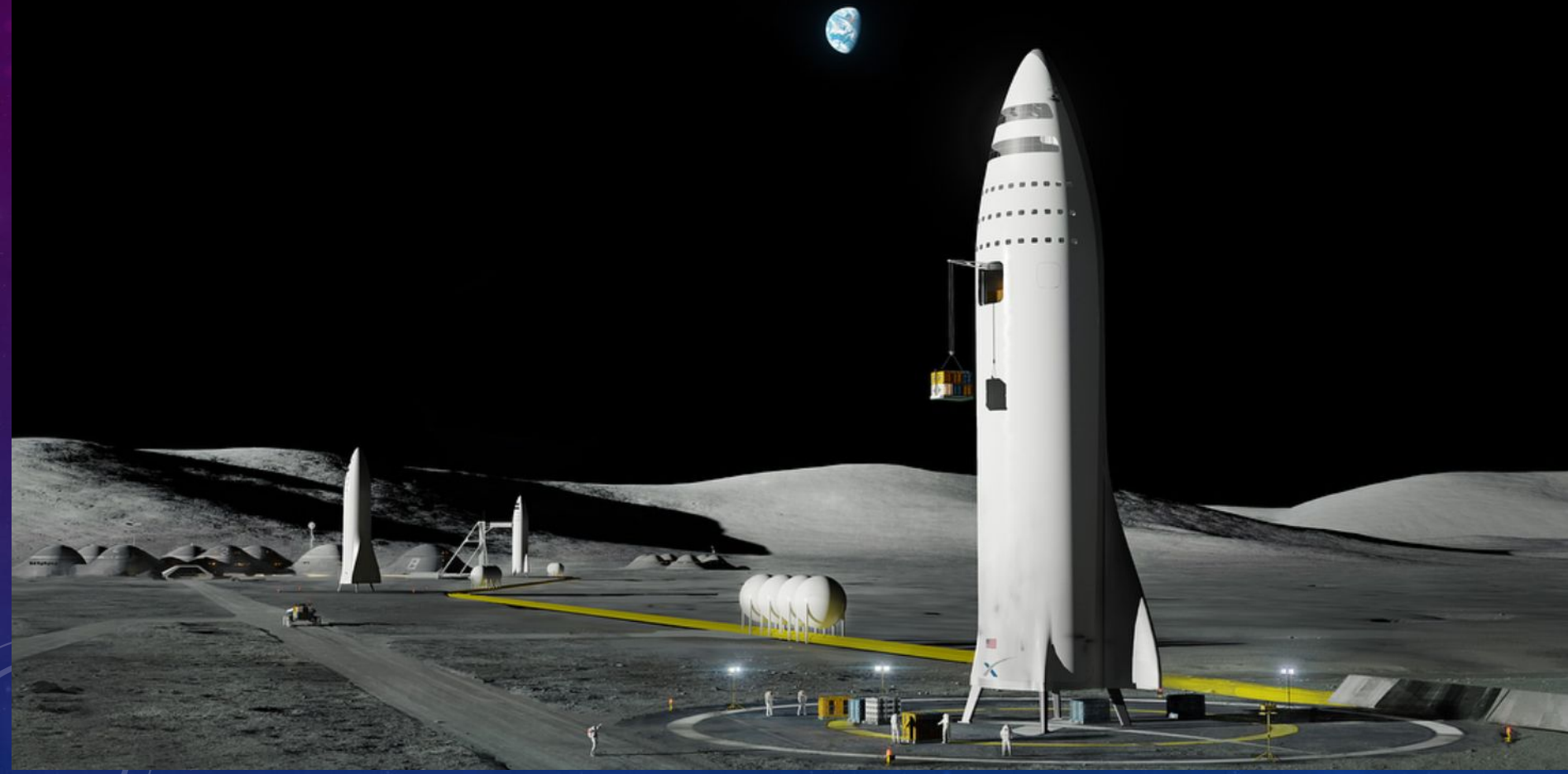


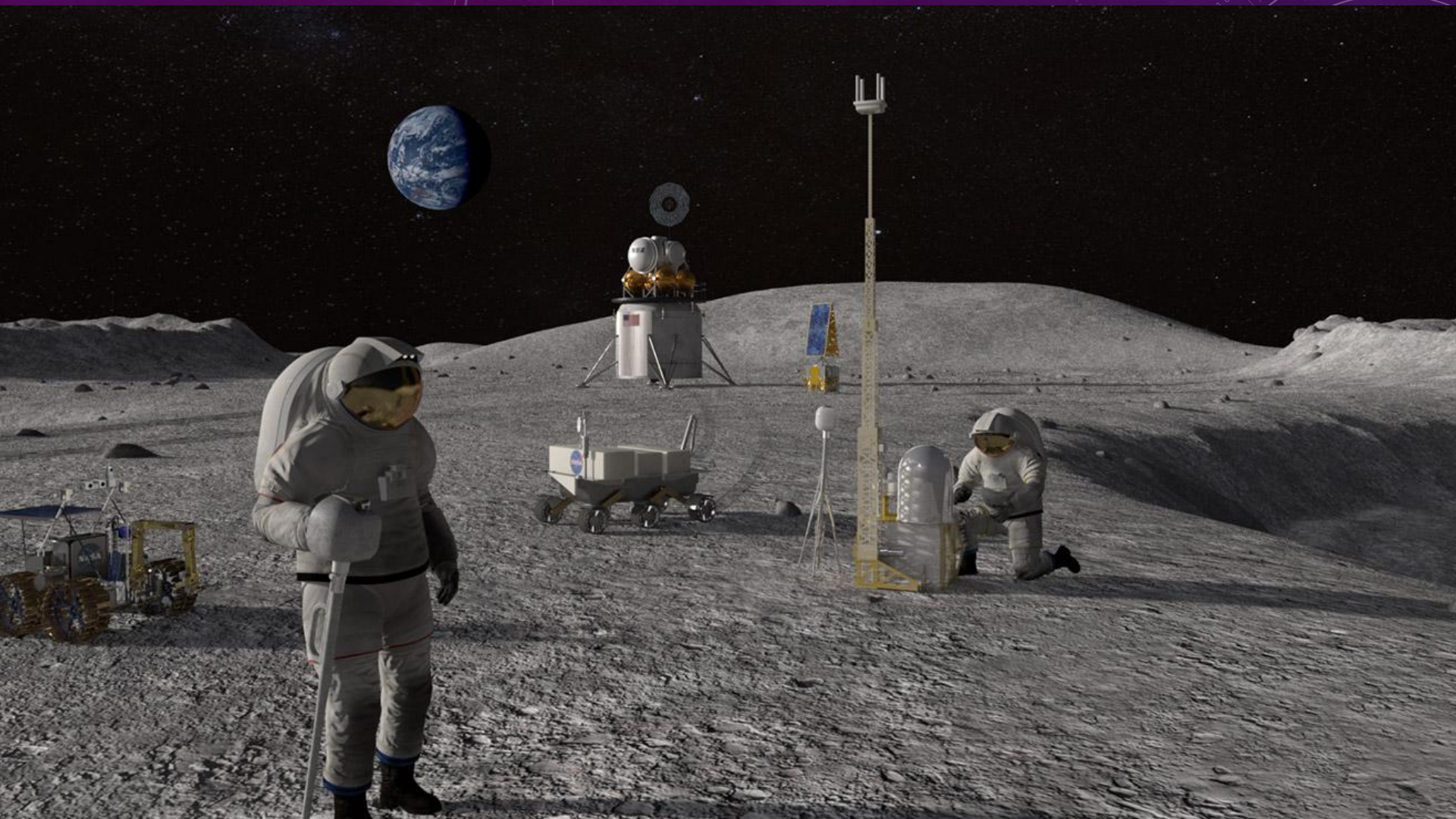


Crew Dragon Interior



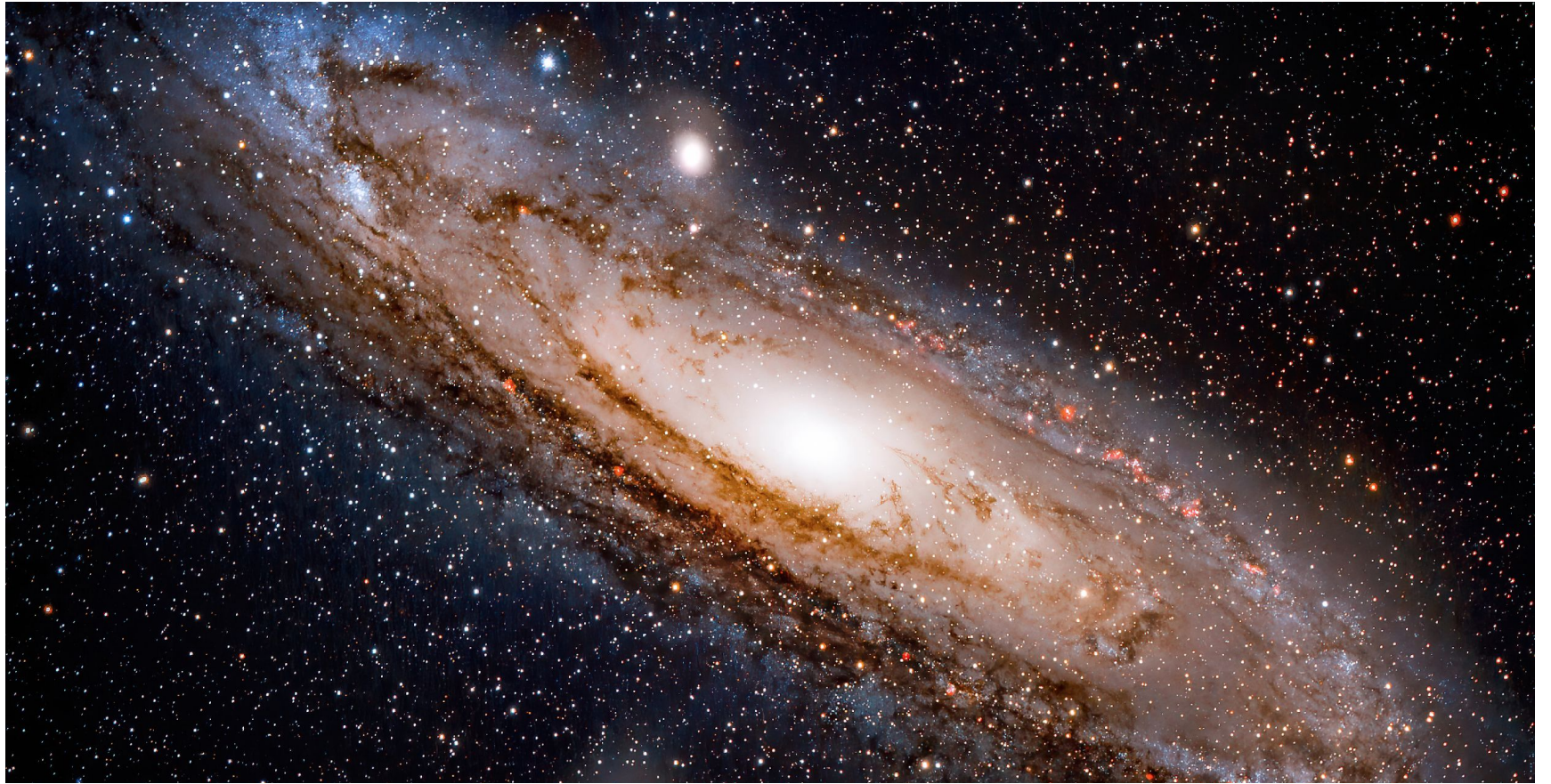
STARSHIP LUNAR BASE CAPABILITY





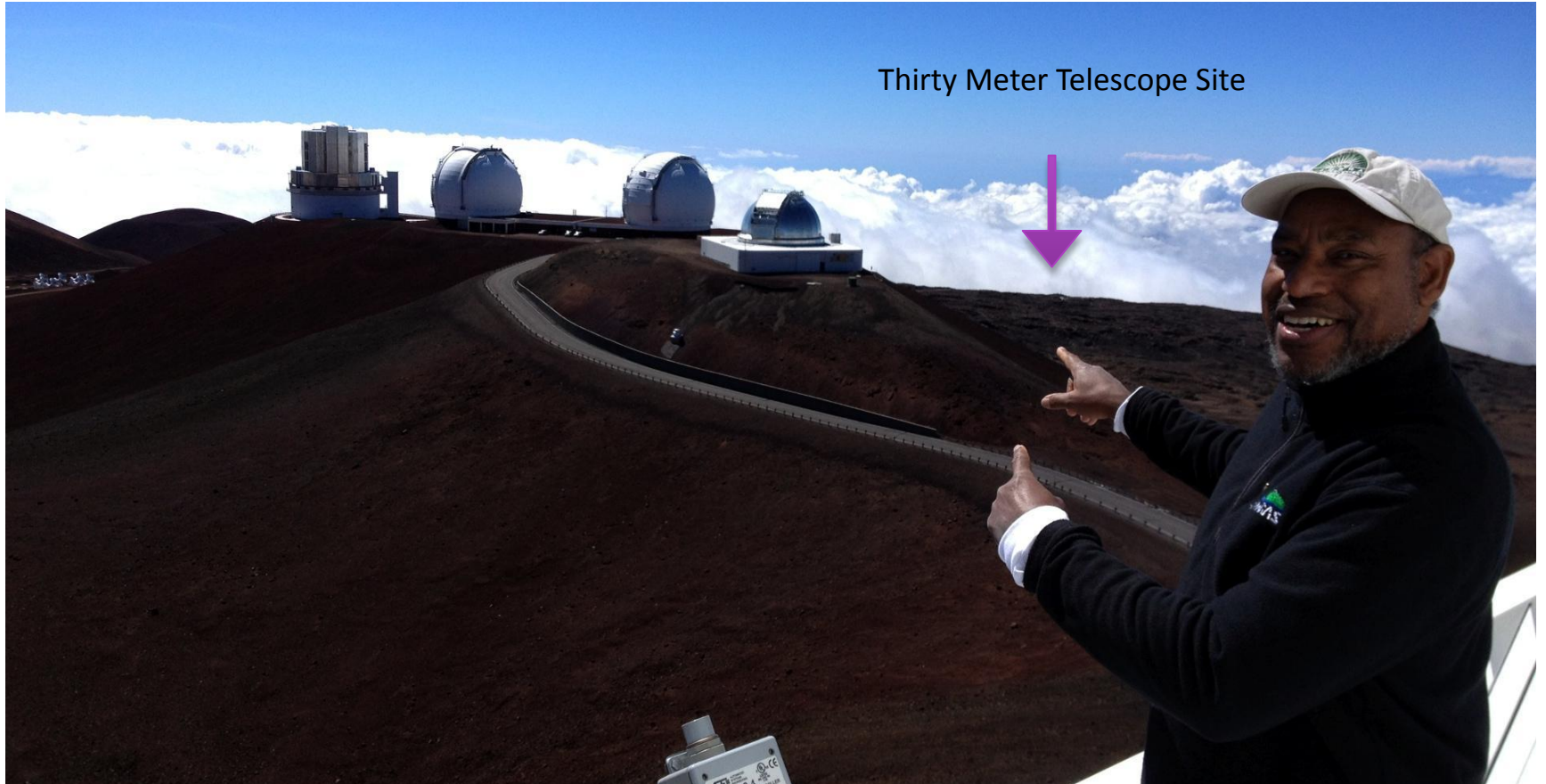
AND...YOU
GUESSED
IT...MARS BASE
CAPABILITY







Thirty Meter Telescope Site





EXPLORE HUMANS *in*SPACE

Leading Discovery, Improving Life on Earth



Thank You

