University of Maryland

Project Management Symposium

NEXT SESSION

Prioritisation, Preparation & Perseverance - Are 3 P's enough?

Project planning for IT infrastructure support of the James Webb Space Telescope (JWST)

David Carter

Program Management, Space Telescope Science Institute

Project Management
Center for Excellence
A.J. Clark School of Engineering
Civil & Environmental Engineering Department

This session will be recorded.

Project Management Symposium

Prioritization – Preparation – Perseverance -Are 3 P's enough?

Project planning for IT infrastructure support of the JAMES WEBB SPACE TELESCOPE (JWST).

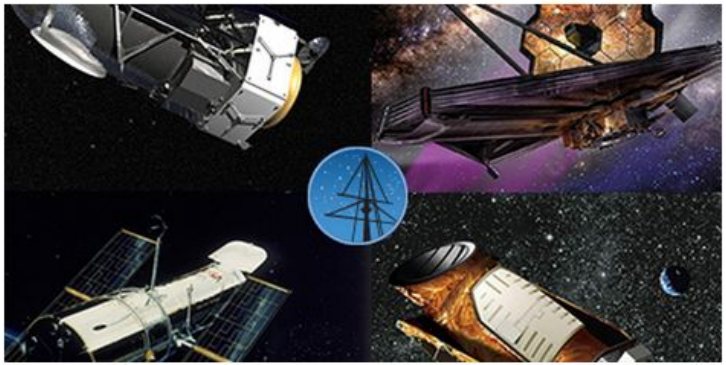
David M Carter CEng MIET

PROJECT MANAGEMENT
CENTER FOR EXCELLENCE
A.J. CLARK SCHOOL OF ENGINEERING
Civil & Environmental Engineering Department

Agenda

- Space Telescope Science Institute – STScI – who we are and what we do
- Themes
  - *Preparation – Prioritization – Perseverance – is this enough?*
  - *A class of project often overlooked*
- Experiences – good and bad

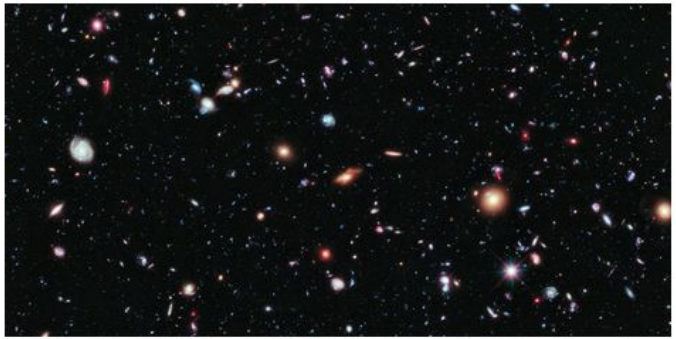
Space Telescope Science Institute - STScI



Our Missions

Learn how we help humanity explore the universe with advanced space telescopes and ever-growing data archives.

Read More



STScI's Timeline

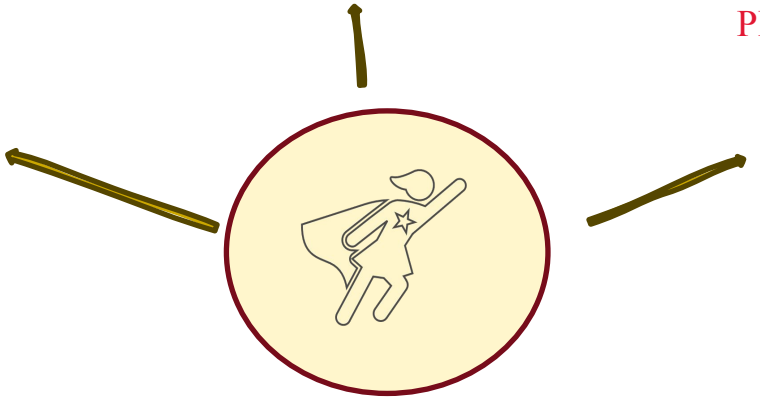
Step through history, from the conception of Hubble and the founding of the institute to major discoveries of space-based satellites.

Learn More

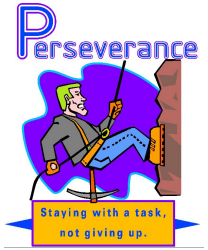
How does PM enable this?

PRIORITISATION

PREPARATION



PERSEVERANCE



PREPARATION

GLOBAL

Top Project Management Statistics: Editor's Choice

- ✔ 70% of all projects fail.
- ✔ Stakeholder engagement is the most valuable PM process.
- ✔ 62% of successfully completed projects had supportive sponsors.

LOCAL

Like most organizations we need to:

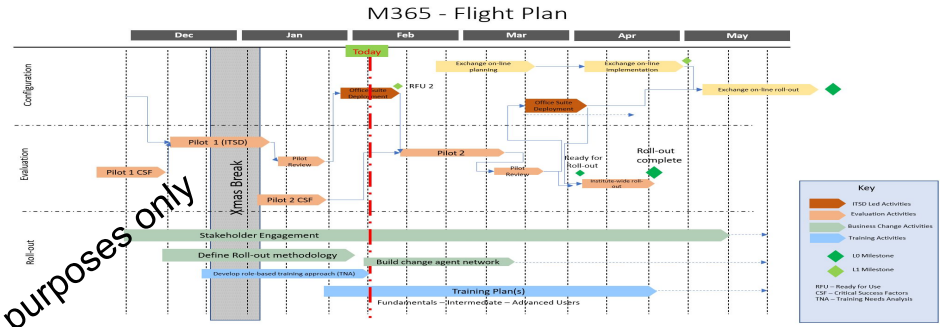
- ✔ deliver faster
- ✔ be more productive
- ✔ improve customer satisfaction
- ✔ reduce costs
- ✔ improve employee engagement
- ✔ provide better quality
- ✔ continuously improve
- ✔ reduce risks.

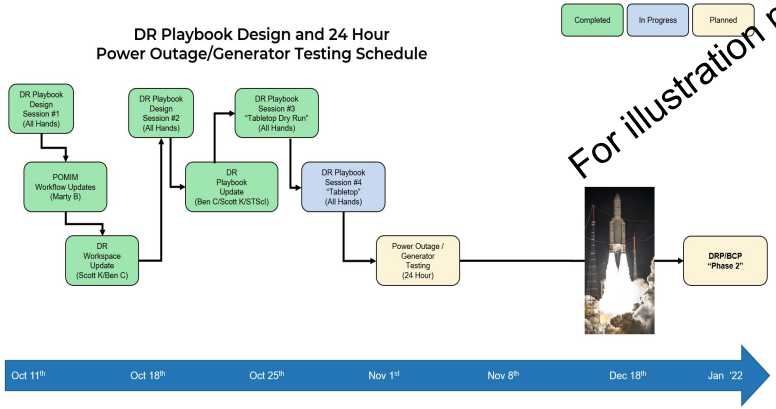
ENTERPRISE

- ✔ Launch
- ✔ First Ops Mission
- ✔ Advanced Tech
- ✔ Readiness
- ✔ COVID

PRIORITIZATION

"There is no fair wind for one who knows not wither he is bound"
(Lucius Annaeus Seneca, philosopher, 3-65AD)





For illustration purposes only

PERSEVERANCE

Failure to take any action will result in……

- Increasing disorder
- Process performance deterioration
- Missed business goals
- Second Law of Thermodynamics applies …….ENTROPY increases!

The Power of Individuals

Where does your "Power" come from?

Your Total Power, Pt – is given by;
Pt = (Pa + Pc) Pv

Pa=Power of Authority

Pc=Power of Competence

Pv=Power of your Values

Your coefficient of competence;
Ct=CiEi(Ced+Cex) x PA

Ci – Inherent competence
Ei – Inherent energy
Ced – Formal education
Cex – Personal experience
PA – Personal attitude

How do you apply it?

What industries are represented here today?

- Construction
- IT
- Software Development
- Manufacturing
- Engineering
- Hospitality

- Organizational structures?

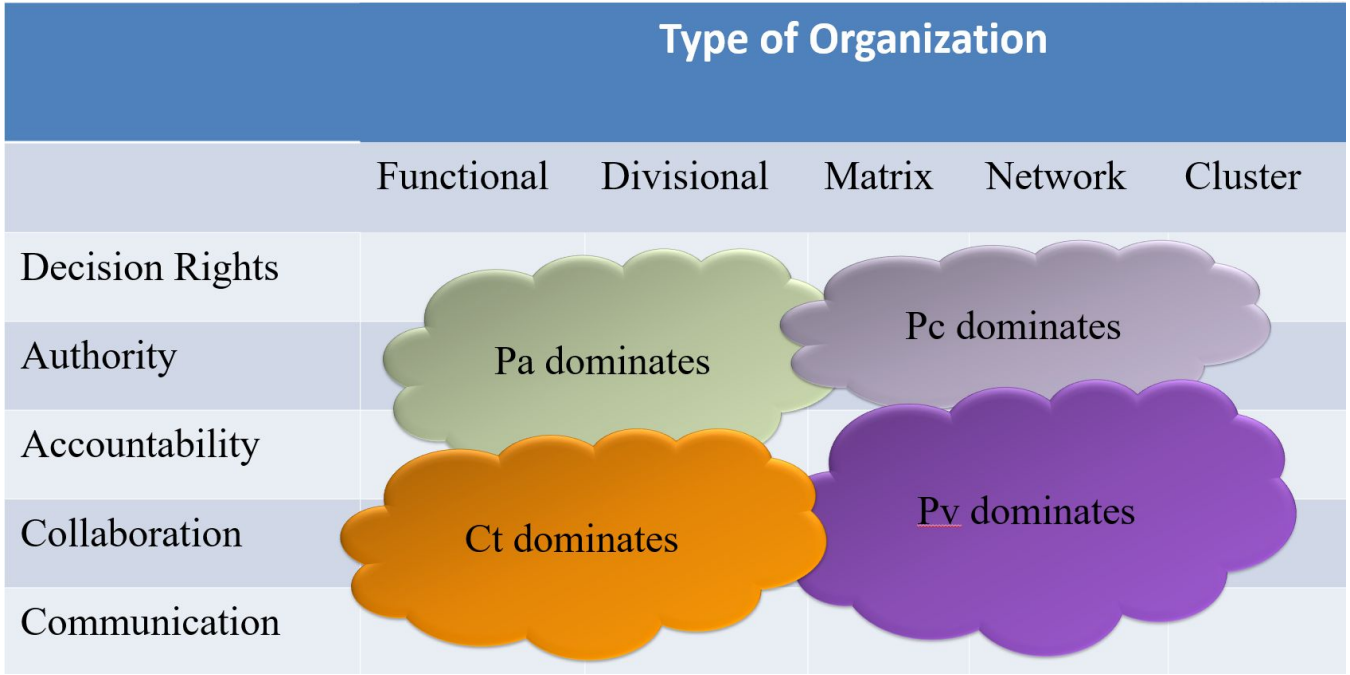
Types of organization

- Functional – Traditional, control-focused, single product line, common standards
- Divisional – Independent business units, low synergy between products, short product cycles
- Matrix – core work is project based, highly specialized workforce, labor costs prime driver
- Network – fast moving, innovative, customer focus with ‘team delivery’
- Cluster – can exploit market niches, few direct reporting relationships, decision making and accountability delegated

Types of organization

- Functional – Traditional, control-focused, single product line, common standards HP
- Divisional – Independent business units, low synergy between products, short product cycles Chevron/Texaco
- Matrix – core work is project based, highly specialized workforce, labor costs prime driver Philips Electronics
- Network – fast moving, innovative, customer focus with 'team delivery' UPS
- Cluster – can exploit market niches, few direct reporting relationships, decision making and accountability delegated NIKE

Dominating Factors



Putting this into practice

- "In theory there is no difference between theory and practice, in practice there is!
- Using an active project - illustrate how I applied some of these techniques to advance a challenging situation

  An often-overlooked project area – Information system (IS) **upgrades**"

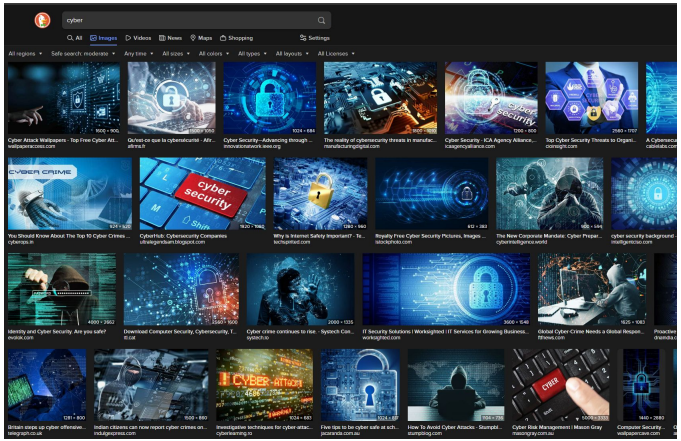
Situation Appraisal

- How welcome are projects to upgrade the Operating Systems?

Scale and perspective

Cyber – suggests…..
- Intrigue, sinister, glamorous

Cyber – reality….
- mundane, repetitive,



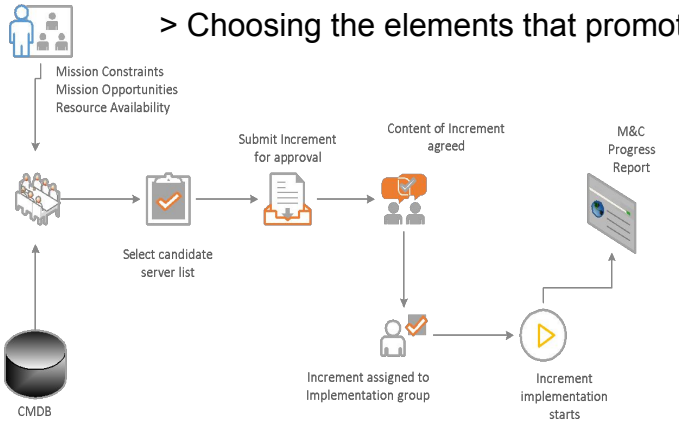
Scale
- 1000s of servers
- All OS's
- Physical and Virtual

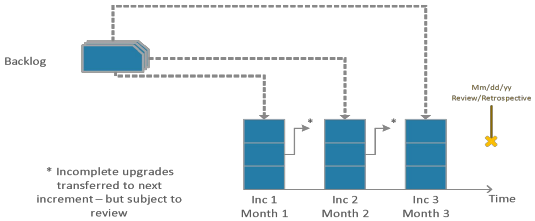
Choosing an approach

Infrastructure upgrade projects don't lend themselves to trendy, new techniques like Agile, SAFe

But with a bit of inventiveness:

> Critical to have stakeholder engagement
> Drawing from the agile-method – create timeboxed periods of work – INCREMENTS
> Selecting sets of machines to be upgraded – THREADS
> Demonstrated a workable methodology – gained stakeholder's support
> Choosing the elements that promote competency, confidence, cooperation (3 Cs!)





Implementation

- Does the method work?
- What are the successes and failures?
- Will it scale?

Initial

- Many stakeholder briefings
- Early adopters keen
- Cooperative and collaborative rather than ‘dictatorial’
- Early pace, ambitious!

On-going

- Course correction required
- Mission drivers change
- Initial pace not maintained
- Technical challenges
- Risk Management paramount
- Impossible to assess all software prior to implementation

In conclusion…

- So far, so good
- Progress modest but improving
- Initial resistance overcome
- Critical to recognize the environment
  - Authority
  - Collaboration
  - Communication
- Finding new applications

What does all this result in?

Seen in the headlines:

Astronomers detect 'waterworld with a boiling ocean' in deep space

Exclusive: Significant discovery, made by James Webb telescope, provokes disagreement over conditions on planet's surface

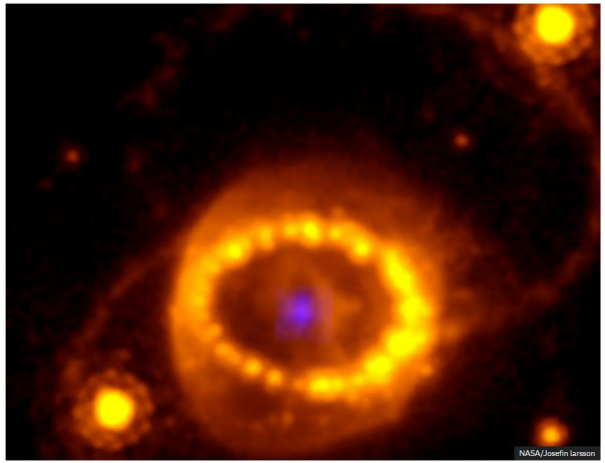
An artist's impression of the surface of a 'hycean' planet – one with a liquid water ocean beneath a hydrogen atmosphere. Photograph: Amanda Smith/PA

Astronomers have observed a distant planet that could be entirely covered in a deep water ocean, in findings that advance the search for habitable conditions beyond Earth.

Supernova: Astronomers crack cosmic 'murder mystery'

23 February 2024 Share

By Pallab Ghosh, Science correspondent

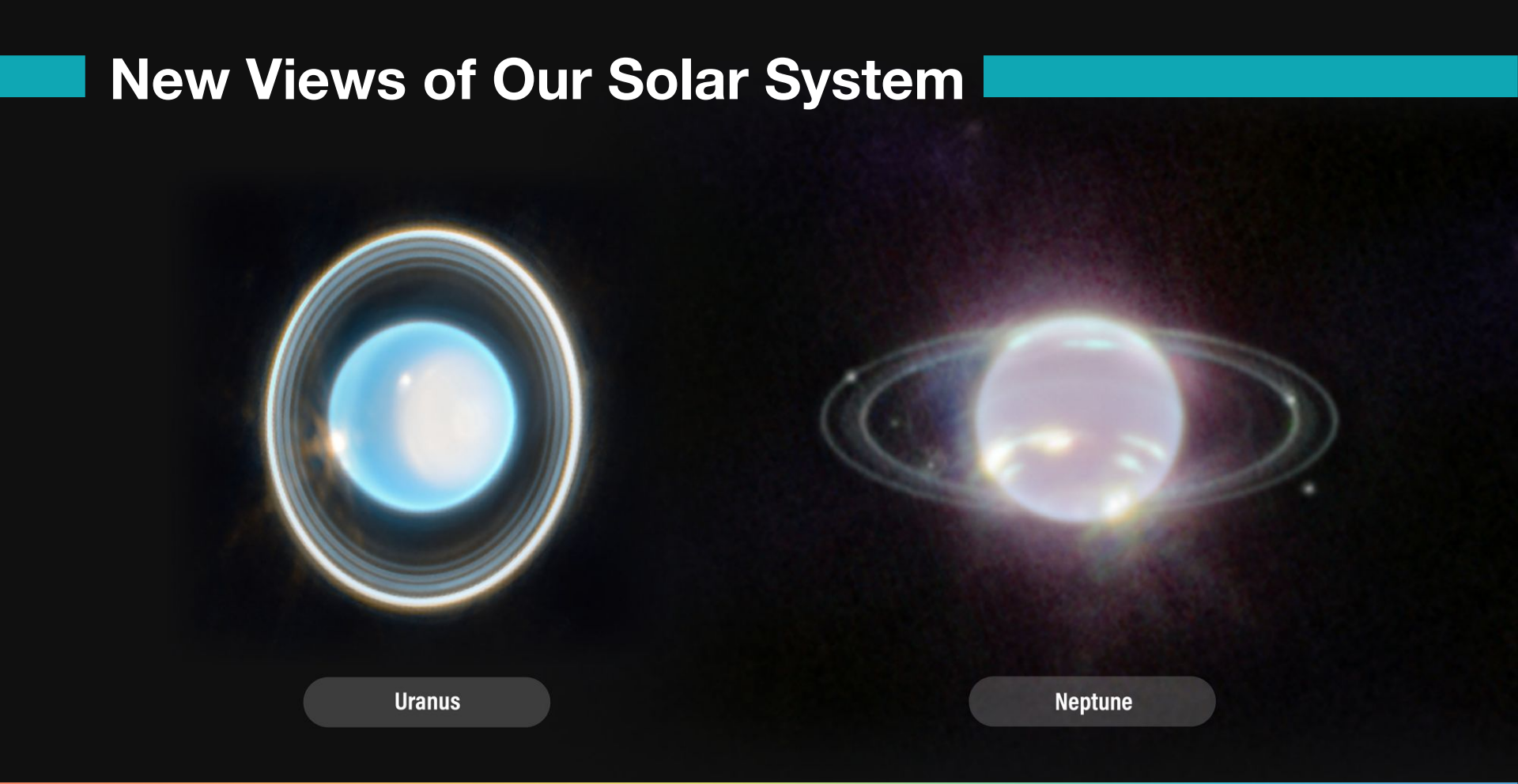


The neutron star in purple has been found to be at the centre of bright "string of pearls" ring of superheated gas

Scientists say they have solved the mystery of what lies at the heart of a celebrated cosmic explosion.

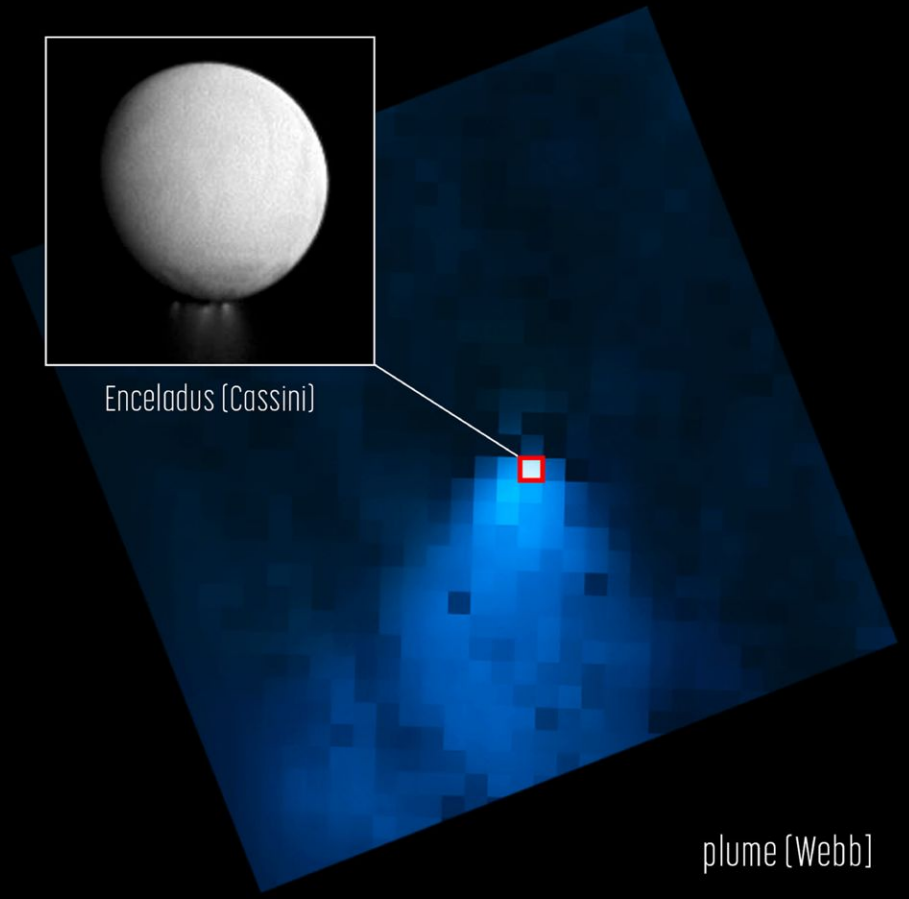
In February 1987, a star was seen exploding in a nearby galaxy. It was visible from Earth for months, shining with the power of 100 million suns.

New Views of Our Solar System

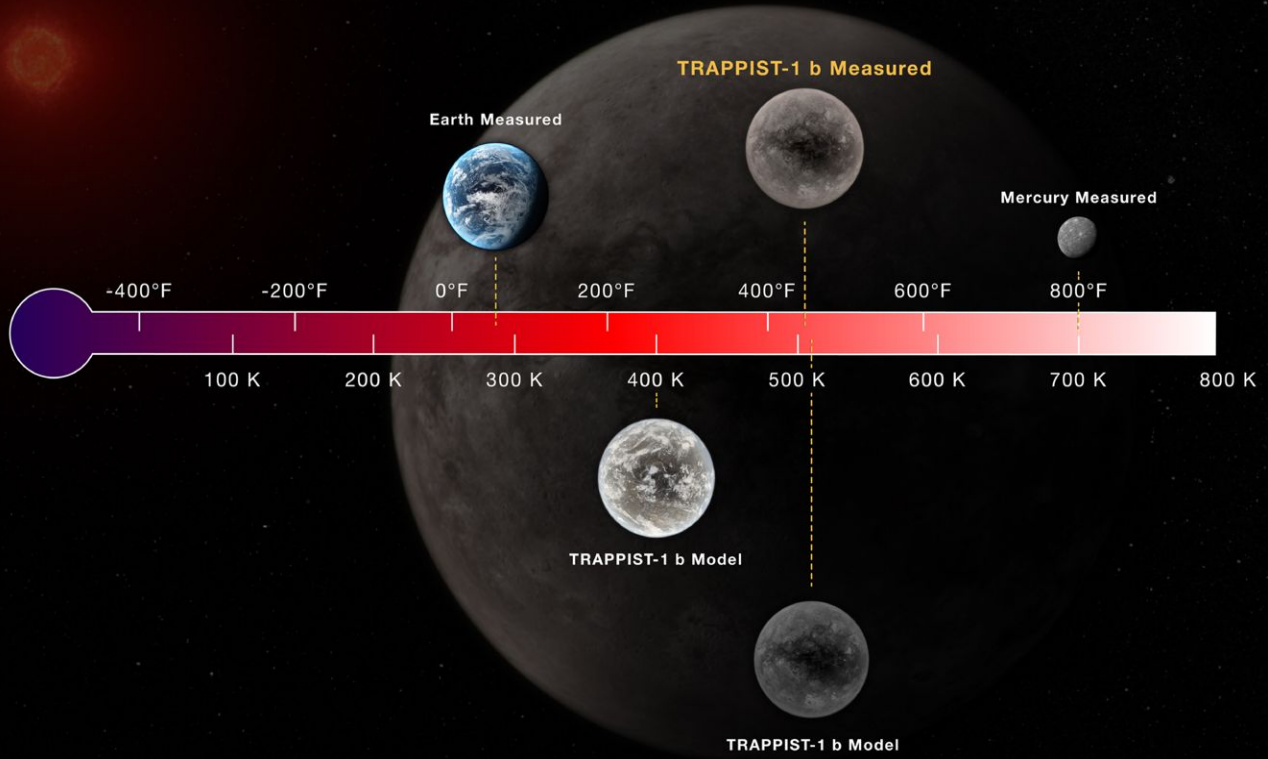


Jupiter’s Storms, Auroras, and Hazes

Water Vapor Plume On Saturn's Moon



Looking for Rocky Exoplanet Atmospheres



TRAPPIST-1 b Dayside Temperature Composition (Real Data Paired with Models)

Questions?

Contact: David Carter
dacarter@stsci.edu
410-338-4546

Evaluate Session