

THE VALUE OF PERFORMANCE.  
**NORTHROP GRUMMAN**

# Program Management

## Lessons Learned:

*“WHAT YOUR MOTHER NEVER TOLD YOU  
ABOUT PROGRAM MANAGEMENT”*

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- Sorry, you are not as special as you think you are:
  - It’s the management of the invention, not the invention itself
  - The unique technical aspects of a program are rarely the source of difficulty
  - Things that go wrong have themes

## **MARS CLIMATE ORBITER TEAM FINDS LIKELY CAUSE OF LOSS**

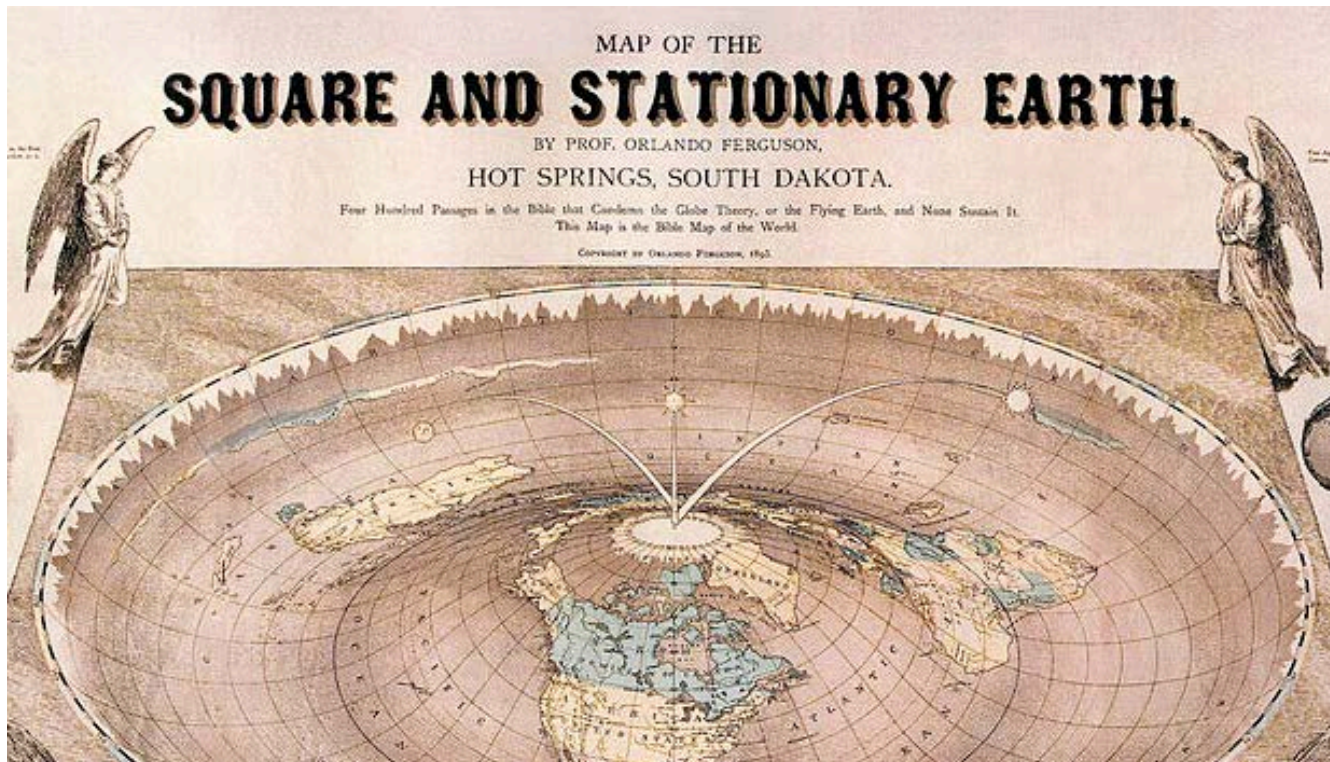
A failure to recognize and correct an error in a transfer of information between the Mars Climate Orbiter spacecraft team in Colorado and the mission navigation team in California led to the loss of the spacecraft last week, preliminary findings by NASA's Jet Propulsion Laboratory internal peer review indicate.

"People sometimes make errors," said Dr. Edward Weiler, NASA's Associate Administrator for Space Science. "The problem here was not the error, it was the failure of NASA's systems engineering, and the checks and balances in our processes to detect the error. That's why we lost the spacecraft."

The peer review preliminary findings indicate that one team used English units (e.g., inches, feet and pounds) while the other used metric units for a key spacecraft operation. This information was critical to the maneuvers required to place the spacecraft in the proper Mars orbit.

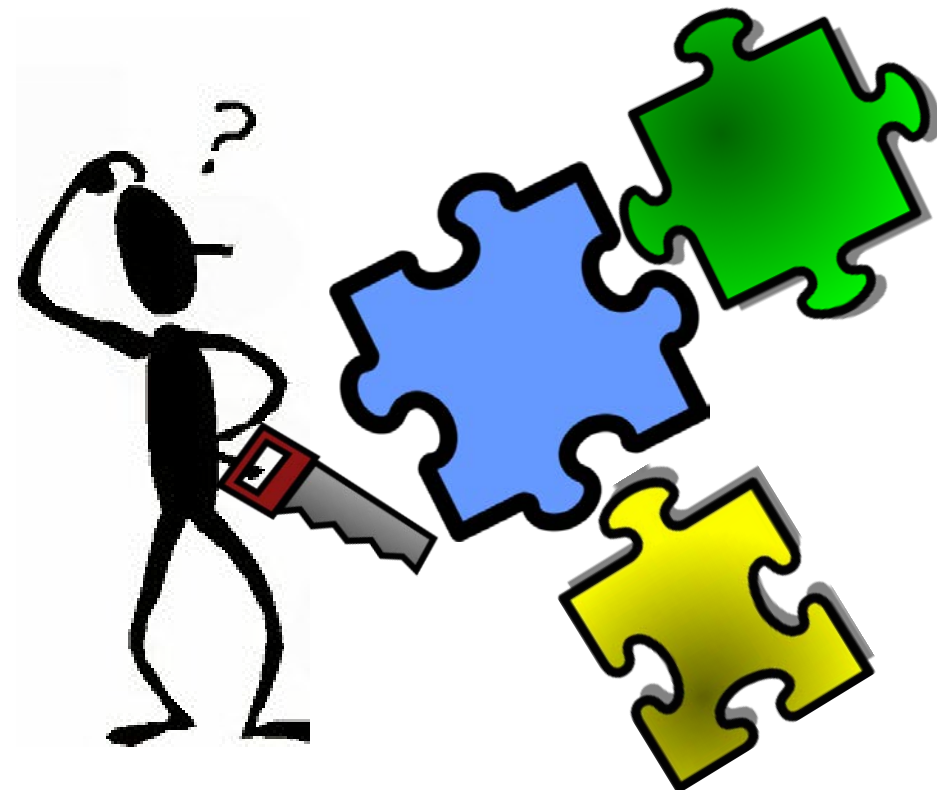
<https://mars.jpl.nasa.gov/msp98/news/mco990930.html>

- Gravity? > External Interdependencies ?
- “Make 3 the same as cheap as 1”
  - Manage requirements



# “There’s no development, just integration”

- It’s never just integration
- Integrating complex processes and systems is development



Enoch Lai, <https://commons.wikimedia.org/wiki/File:Toppledominos.jpg>

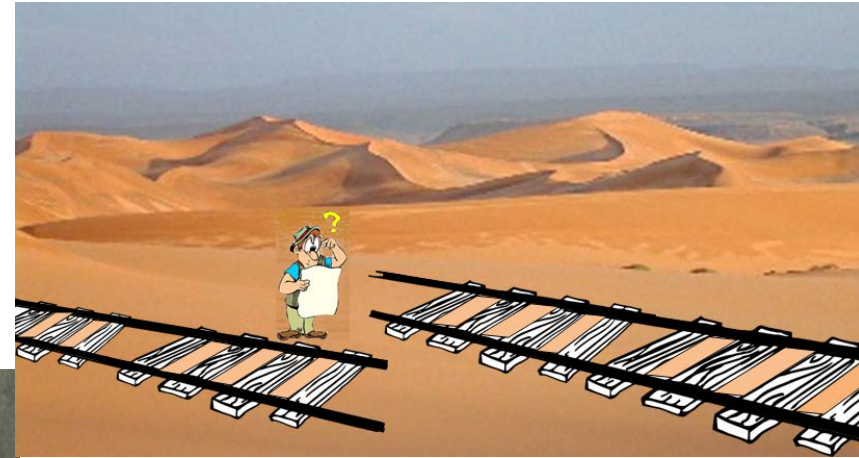
# Don't confuse years of Experience with Acumen

- Dream Team or Nightmare? How do we know?

Position	Phase			Contract		Contract Size		
	Dev	LRIP	Prod	FP	CPIF	>20M	>200M	>1B
PM	Blue	Green	Yellow	Yellow	Green	Blue	Green	Yellow
Dep. PM	Blue	Green	Green	Grey	Green	Blue	Green	Green
SEIT	Green	Green	Grey	Yellow	Green	Green	Green	Grey
Hardware	Yellow	Grey	Grey	Yellow	Yellow	Green	Yellow	Grey
Software	Blue	Blue	Green	Yellow	Blue	Blue	Blue	Green
Quality	Yellow	Yellow	Grey	Grey	Yellow	Yellow	Yellow	Grey

# If you think managing a program is easy, you likely don't understand the problems

- If everything is going smoothly, either:
  - a. Everything is perfect
  - b. You're missing something



[https://commons.wikimedia.org/wiki/File:Stöwer\\_Titanic.jpg](https://commons.wikimedia.org/wiki/File:Stöwer_Titanic.jpg)

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