



# **MBE and NASA**

**Michael Conroy, Kennedy**

**10:20 – 10:50 am**

**Model Based Enterprise  
Supplier Education and  
Training Summit**



# Recent History

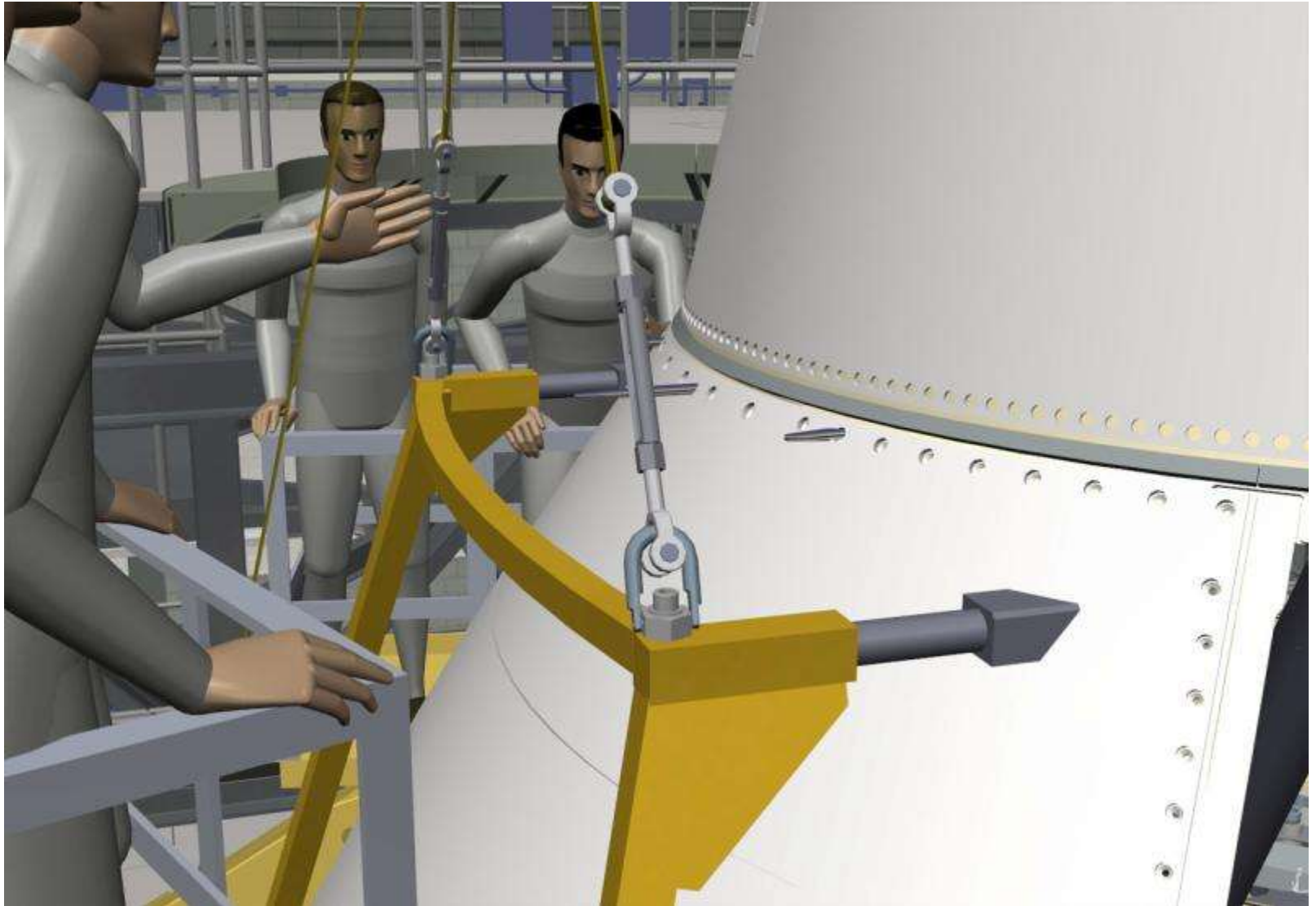
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- CxP MaST
  - NASA Constellation Program
  - Modeling and Simulation Teams
- Started a little late in the life cycle
  - Major focus on system engineering and integration
  - Looking at all the CxP systems
    - Launch Vehicles
    - Upper Stages
    - Crew Vehicles
    - Support Systems
    - Destinations



# We did Design Vis & Human Factors





# At a Fairly Large Scale



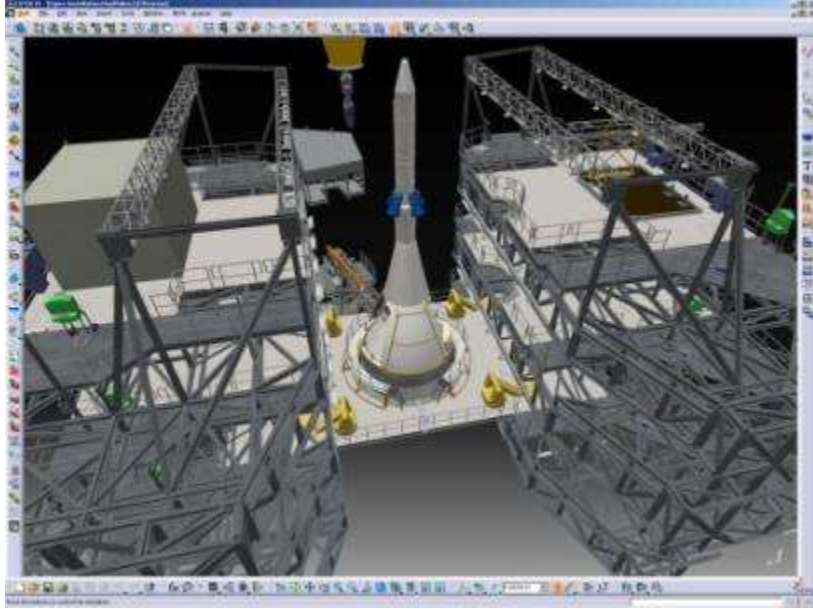
MaST – Modeling and Simulation Teams





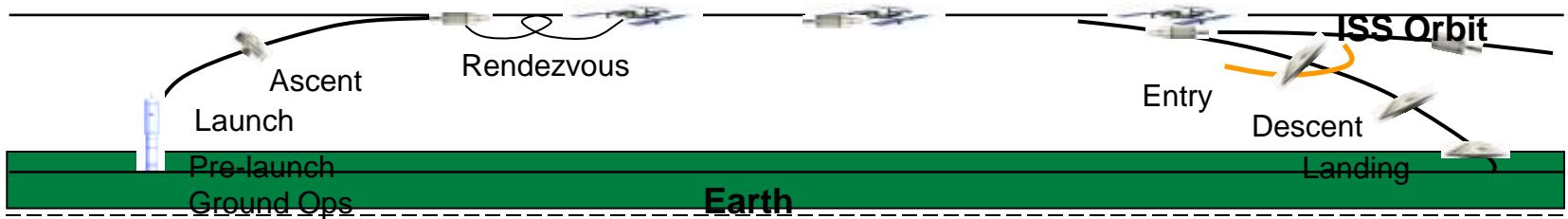
# Then Huge Scale

MaST – Modeling and Simulation Teams

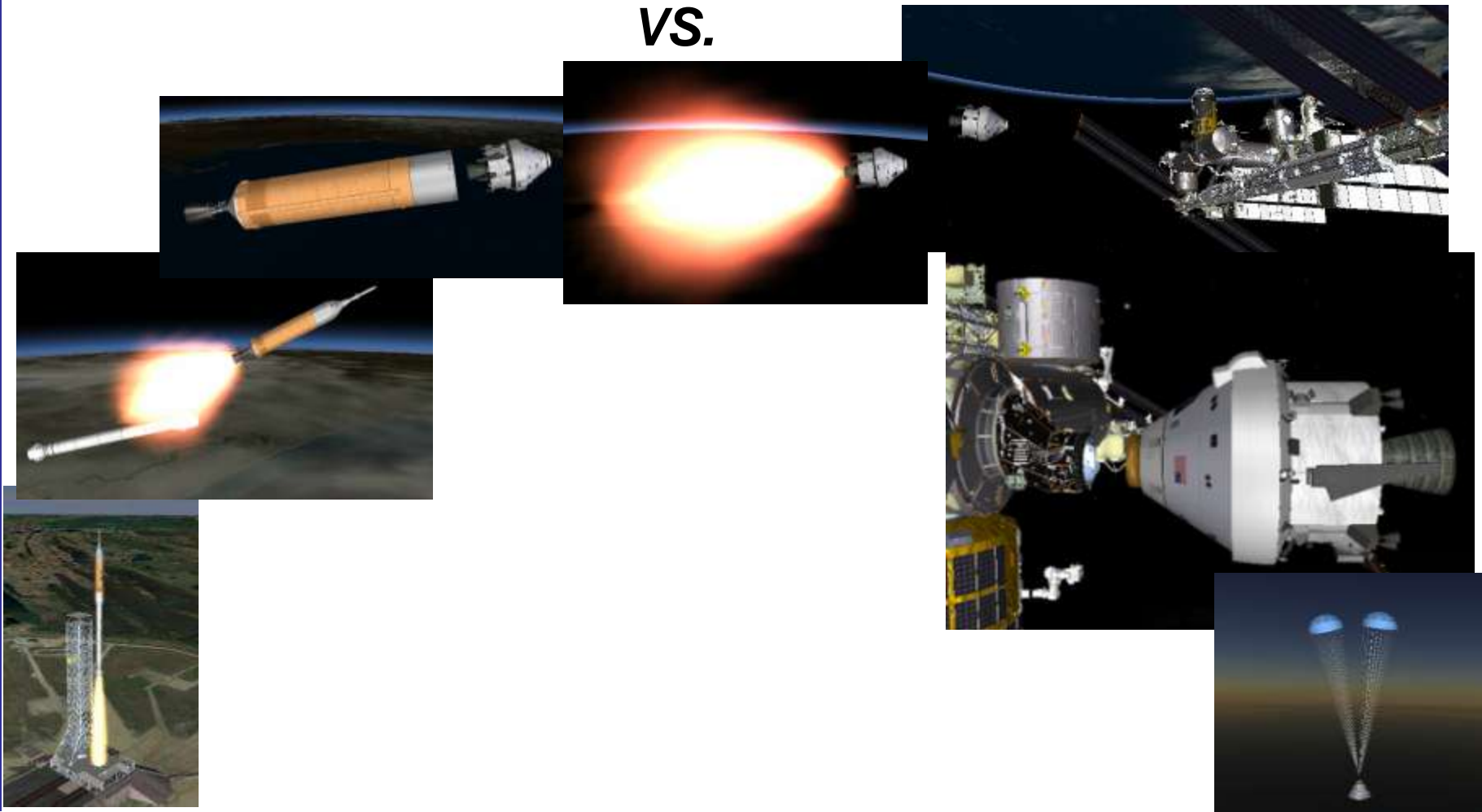




# Replaced Cartoons w/ Simulation



VS.



MaST – Modeling and Simulation Teams



# In the End

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- Lots of Success in Design Visualization
  - Drove cost from \$96,000 a minute to \$9 a minute
  - Increased input from a select few to hundreds of Subject Matter Experts
  - ROI ranged from 10:1 to 100's:1
  - But, have hit a plateau on cost and ROI with existing systems (Shuttle, Station, Operations)
- However, there are now a LOT of new systems coming our way



# A Discussion

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- We achieved a great deal of success:
  - By getting more critical information in the hands of more people
    - Engineers, Managers, Stewards, Technicians, Scientists, Planners, Schedulers, Safety, Quality...
- The next round of success needs even more
  - The community that will actually make what we use to build these systems
  - The community that makes the stuff to make what we use to build these systems





So,



- Past success involved Removal of Barriers
  - Drive down cost of simulation (technology problem)
  - Drive up participation (organizational problem)
  - Standardize data (religious problem)
- What are the New Barriers?
  - Legal, Procurement, Intellectual Property, Computers, Security, Processes, EAR, ITAR?
  - Culture, Money, Schedule, Tools, Need, Desire?
- What is the best way to remove them?