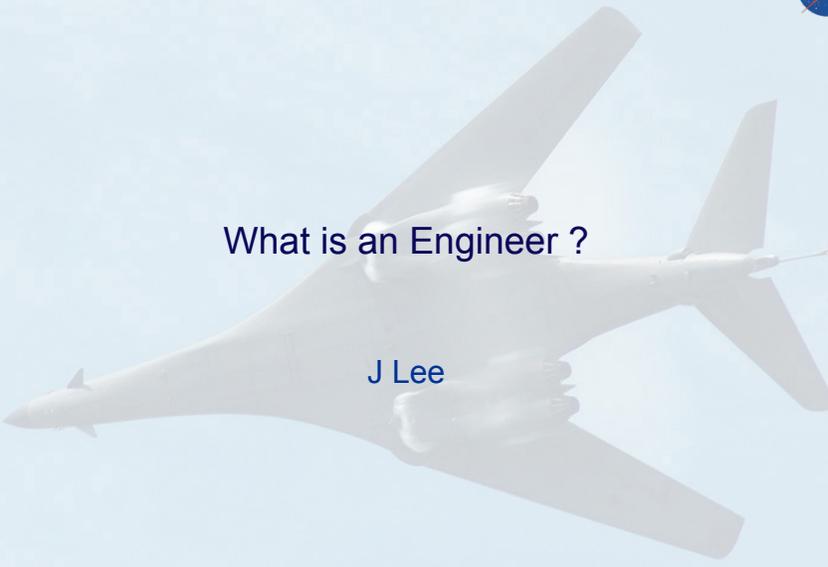


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What is an Engineer ?

J Lee



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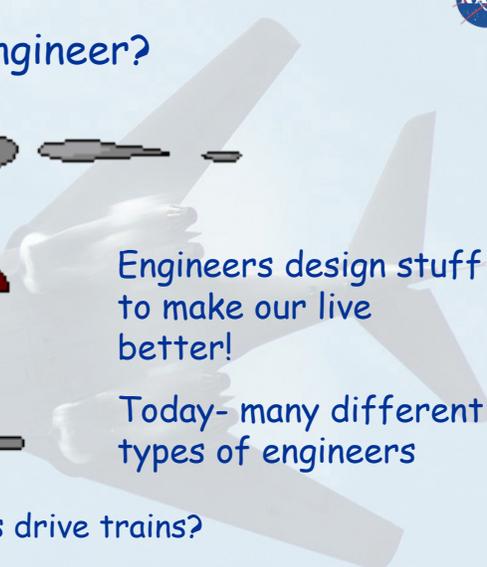
What is an engineer?



Engineers design stuff
to make our live
better!

Today- many different
types of engineers

Engineers drive trains?



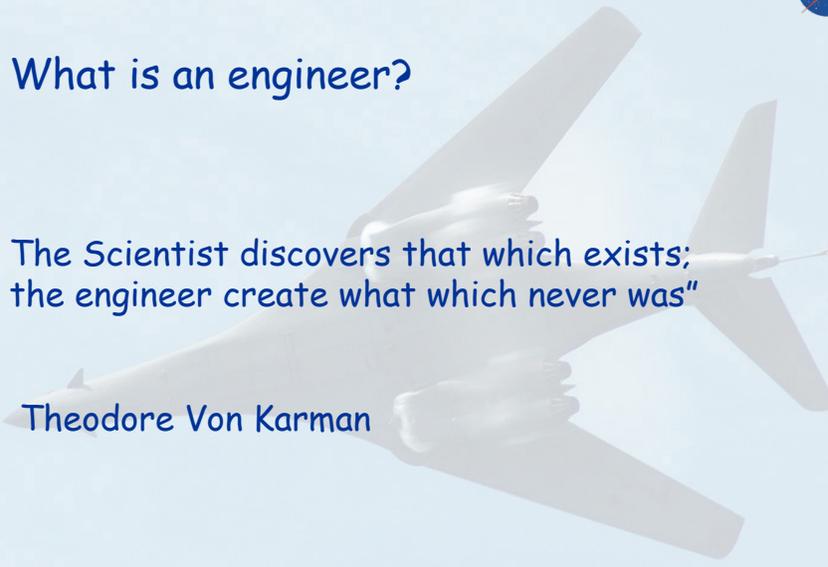
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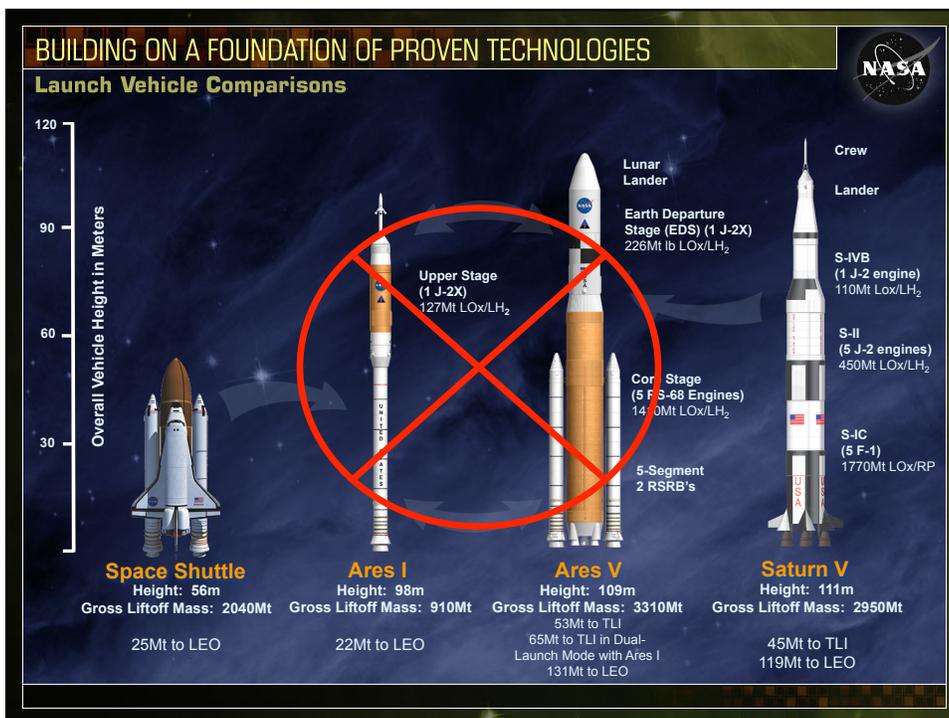
What is an engineer?

The Scientist discovers that which exists;
the engineer create what which never was"

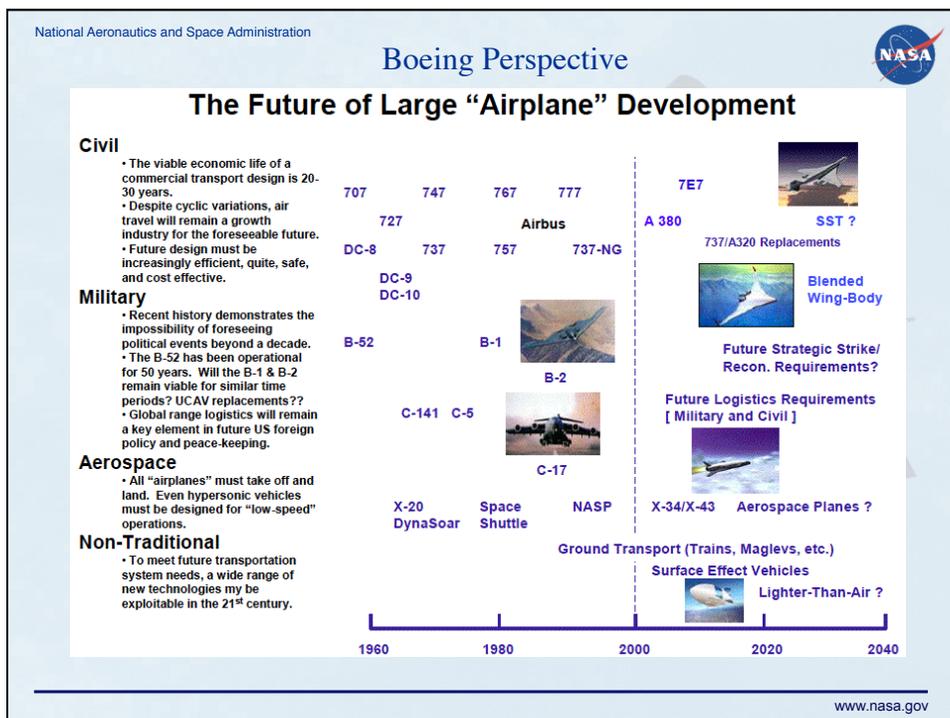
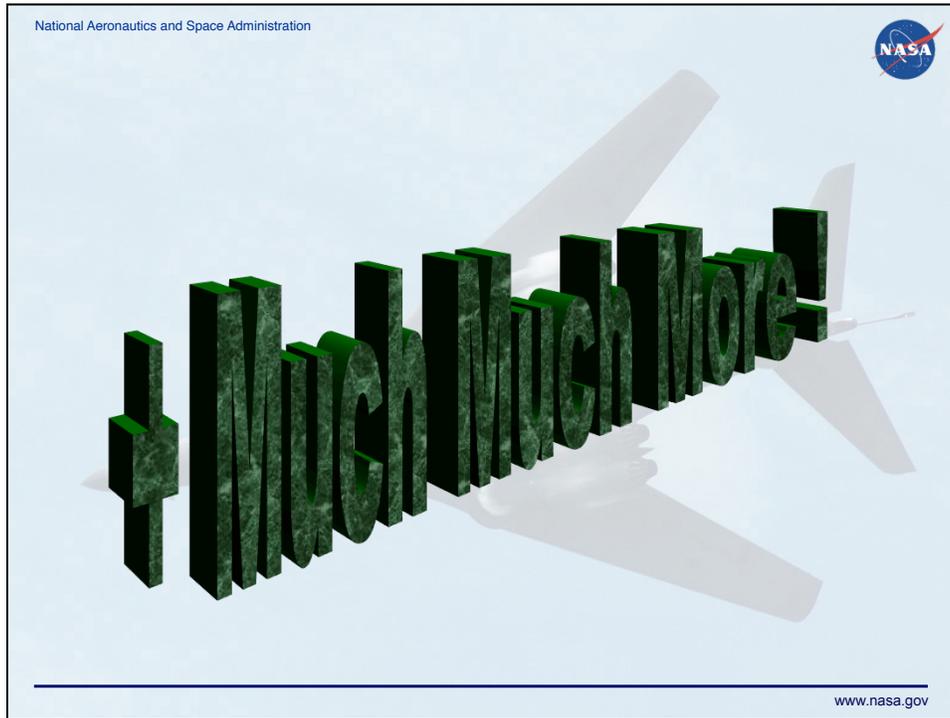
Theodore Von Karman

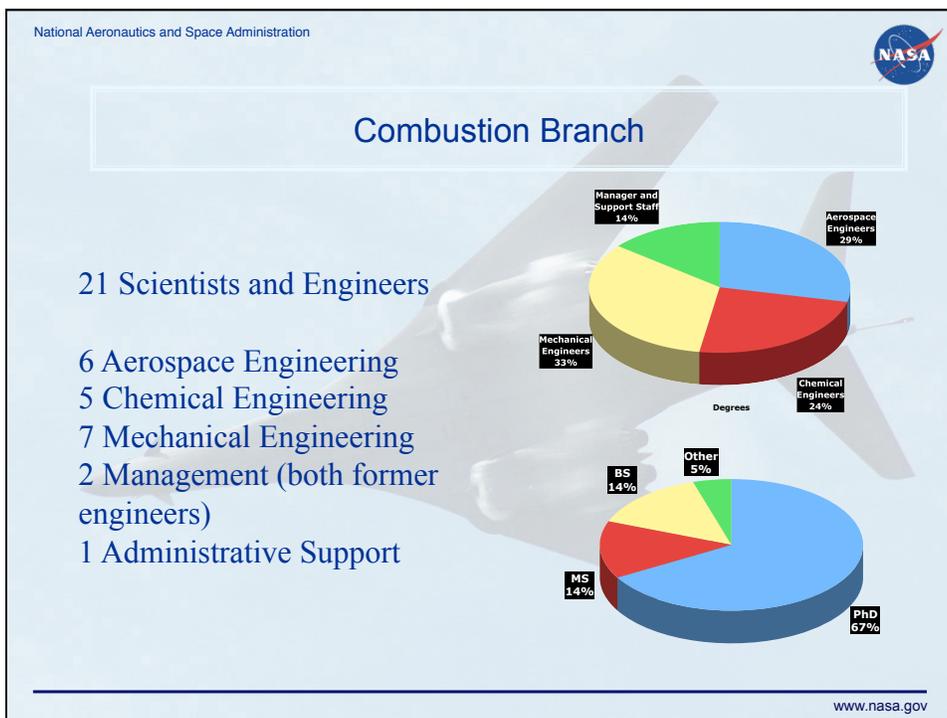
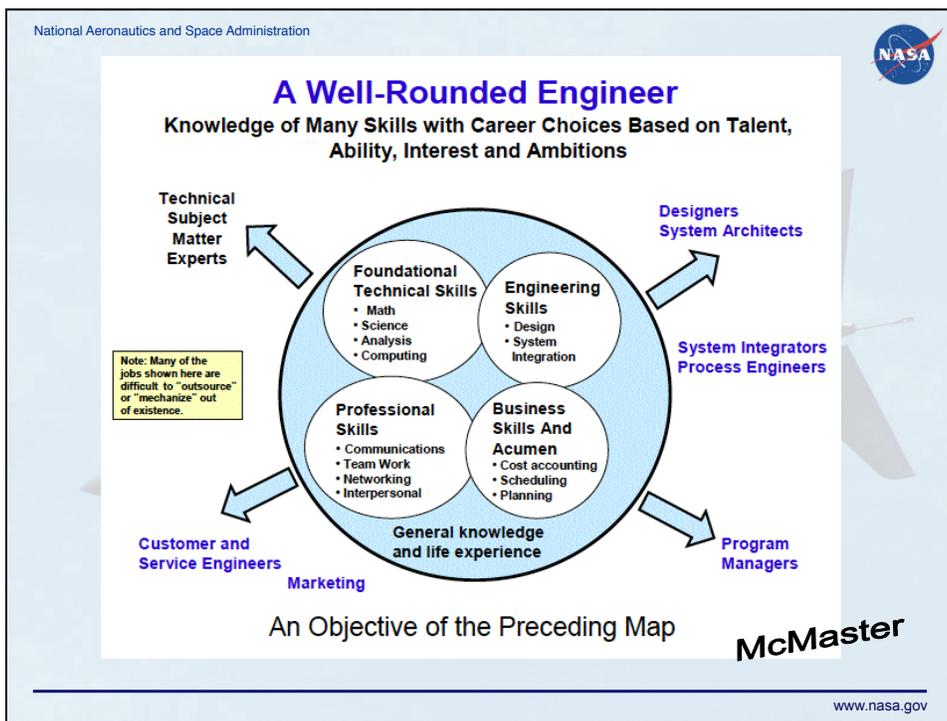


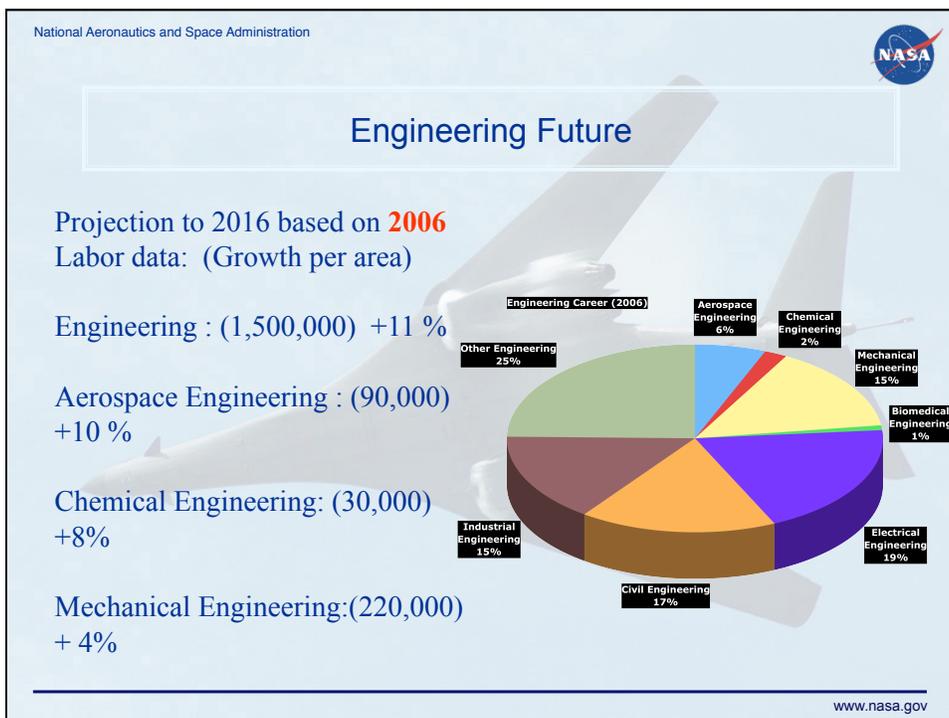
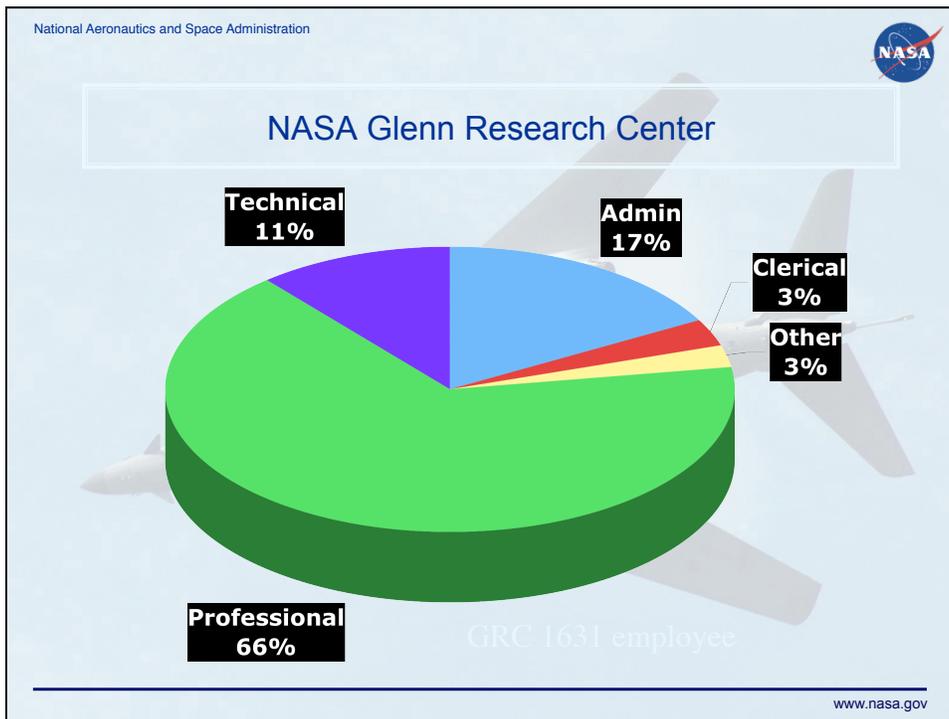
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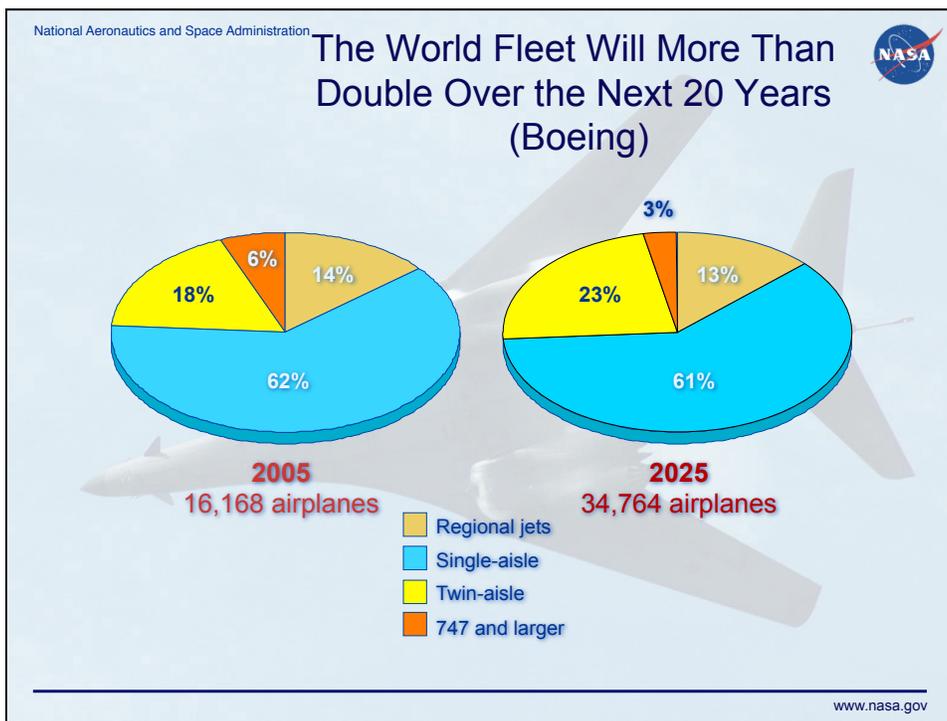












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What is Aerospace?

There are two primary divisions within Aerospace

- Aeronautics: Focuses on systems that operate in the Earth's atmosphere



- Astronautics: Focuses on systems that operate in space



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National Aeronautics and Space Administration 

Aeronautics

- **Aeronautics:**
Design, development, analysis, testing, and production of **aircraft** for both military and civilian markets.
- **Private companies and government agencies:**
 - Mainly aerospace, mechanical, structural, and electrical engineers
 - Also other type of engineers, scientists, and technicians from a variety of specialties.
- **Specific disciplines:**
Aerodynamics and fluid dynamics; propulsion, guidance, navigation and control, aircraft structures and materials, mechanical design, electronics systems and flight control, manufacturing and operations, communications; systems engineering; software engineering; and computer engineering.



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Principal Divisions in Aeronautics

Military aircraft (70% of total aircraft sales)



Civilian aircraft (30% of total aircraft sales)



Aircraft engines



Missile systems (33% of total rocket sales)



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Astronautics

- **Astronautics:**
Design, development, analysis, testing, and production of rockets, spacecraft, and global space systems.
- **Private companies and government agencies:**
Engineers, scientists, and technicians from many specialties.
- **Specific disciplines:**
Aerodynamics and fluid dynamics; propulsion, guidance, navigation and control; spacecraft and rocket structures and materials; mechanical design; electronics systems and flight control; reentry physics and technology; space processing, manufacturing and operations; human and environmental factors in design communications; systems engineering; software engineering; and computer engineering.



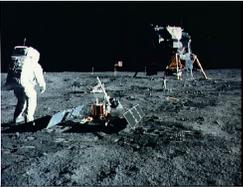
©2008 NASA - Photographed 1988
Lift-off of Shuttle STS-28

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Principal Divisions in Astronautics



Launch vehicles (66% of total rocket sales)

Global space systems (national and multi-national)



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Typical Educational Scenario

- BS (minimum) 4-5 years
- MS (recommended) 1-2 "
- PhD (think about it) 4-6 "

Areas of Specialization

- **Aerodynamics** - The study of fluid motion around a body moving through the atmosphere at speeds that range from subsonic to hypersonic.
- **Dynamics & Control** - The study of techniques for aerospace vehicle guidance and the analysis of flight vehicle trajectories, orbits, and dynamic motion.
- **Propulsion** - The study of basic principles of propulsion and the application of gas dynamics to internal flows.
- **Structures** - The study of the principles of mechanics and analysis techniques necessary to ensure structural integrity of a vehicle, primarily an aircraft or spacecraft.

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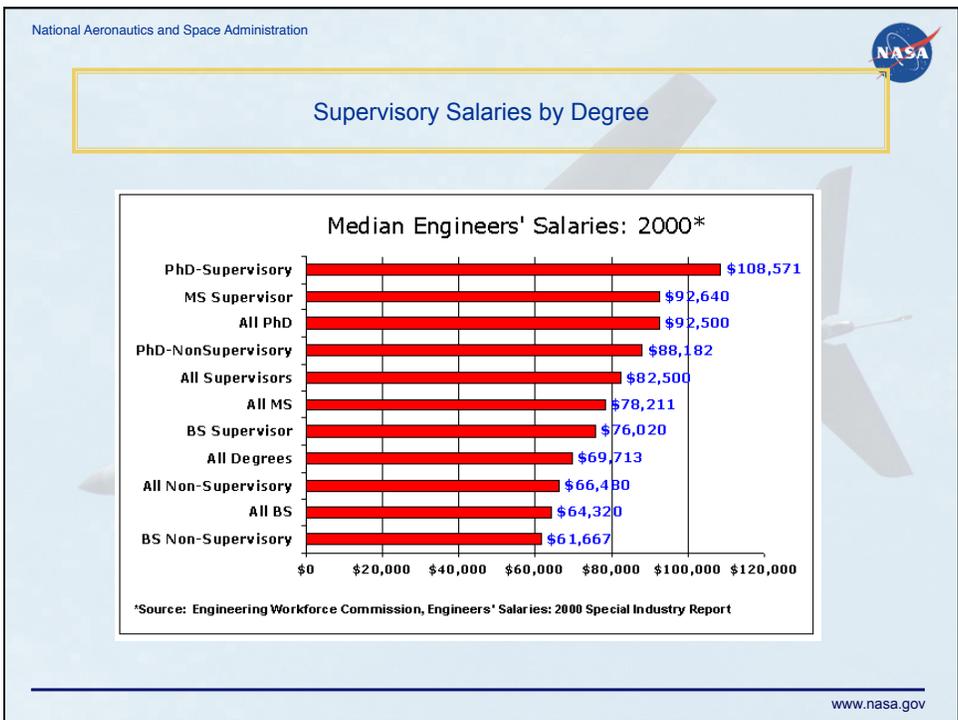
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15 top-earning degrees

1 Petroleum engineering	\$83,121	9 Systems engineering	\$57,438
2 Chemical engineering	\$64,902	10 Engineering technology	\$56,447
3 Mining engineering	\$64,404	11 Actuarial science	\$56,320
4 Computer engineering	\$61,738	12 Aeronautical engineering	\$56,311
5 Computer science	\$61,407	13 Agricultural engineering	\$54,352
6 Electrical engineering	\$60,125	14 Biomedical engineering	\$54,158
7 Mechanical engineering	\$58,766	15 Construction management	\$53,199
8 Industrial engineering	\$58,358		

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Salary Information by Degree

