# Lessons Learned from Large NASA Projects

The November 15, 2018, NASA Virtual Project Management Challenge addressed the following six lessons learned that were identified by NASA's Human Exploration and Operations Mission Directorate and Science Mission Directorate.
Learn more at **nasa.gov/vpmc**.

1. **Focus more on people to prevent mistakes and their consequences.**

   Good people and culture are essential. Procedures and processes alone are not sufficient.

2. **Re-evaluate how we assess the development of flagship missions at various stages.**

   The standard review process may not be uniformly effective for all large, multidecadal projects.

3. **Realistically account for assembly, integration and testing (AI&T).**

   The most time-efficient schedule is likely not robust enough to survive the reality of learning and development that occurs during AI&T.

4. **Recognize that first-time build challenges are inevitable.**

   New technologies and their risks tend to interact as systems that can't be fully characterized in the initial development process.

5. **Establish a culture of transparent and open communication at all levels.**

   Management needs to continually and intentionally work to create an environment where concerns and issues can be shared up, down and across reporting chains.

6. **Ensure oversight is organized and staffed appropriately at each phase of mission development.**

   Effective oversight requires both "positive tension" and a mix of "in-depth" and "30,000-foot" views.