Since the early days of the Rover nuclear rocket program, fission systems have been seen as a promising path for fast and efficient transportation. However, the goal of having a sustainable fission system for deep manned missions has not been achieved. On the contrary, fission power system development for space applications have had a frustrating growth history, with many starts and stops. As a result, the US has not had a fission system flown since SNAP 10-A in 1965, and the Russians have not developed a new system since TOPAZ in the 1980s. This panel will discuss the issues with past fission development efforts for space power and propulsion that have prevented them from achieving operational capabilities, and the possibilities for new approaches to system development that could lead to successful flight in the next decade.