

# PNW AIAA PRESENTS 2021 TECHNICAL SYMPOSIUM

NOV 6, 2021

Event Begins at 7:50 AM (PST) - register at <https://pnwaiaa.org/ts2021/>

## Morning Highlights

### *The Raymer Mars Manned Plane (RMMP)*

Dr. Daniel Raymer - President, Conceptual Research Company

Opening Keynote  
8 - 9 AM



Dr. Dan Raymer is President of the design and consulting company, Conceptual Research Corporation, and serves as Program Manager, Configuration Designer, and Chief Engineer for its varied projects. Currently these include the DARPA Flying Missile Rail, the Raymer Manned Mars Plane, and a proprietary high-altitude UAV.

RMMP: A two-man vehicle was developed based on overall requirements similar to the capabilities of the classic Jeep of WWII fame, namely a crew of two plus cargo to a total of 500 lbs, carried at least 260 nmi. It is assumed that the flight control system will be capable of fully autonomous operation when desired and that when carrying humans, they need not be trained pilots. VTOL operation is assumed due to the deplorable lack of paved runways on Mars.

### *Inventing the Fluidic Propulsive System*

Dr. Andrei Evulet - CEO, Jetoptera

Aviation Track  
9 - 9:30 AM



"Fluidic Propulsive System" developed by Jetoptera, and protected by 48 patents and counting, will be described together with its development - from its beginnings in a garage in Ohio to its wind-tunnel and in-flight testing to-date. The patented FPS is scalable and has applications in both V/STOL unmanned and manned platforms, including General Aviation. In recent years Jetoptera has achieved a thorough characterization of FPS performance - from efficiency to noise to deployment in conjunction with a wing. Some of these results will be presented.

### *How to Land a Rover on Mars*

Dr. Dieter Zube - Engineering Fellow, Aerojet Rocketdyne

Space Track  
9 - 9:30 AM



Beginning with the 1976 Viking missions, NASA has pioneered a variety of concepts to conduct successful soft landings on Mars, using throttled as well as pulsed rocket engines, air bag cocoons, and the "sky crane" concept of the 2012 Mars Science Laboratory Curiosity and the 2021 Mars Perseverance rovers. All these missions utilized and relied on rocket engines provided by Aerojet Rocketdyne's Redmond, Wash., Operations. In his presentation, Aerojet Rocketdyne's spacecraft propulsion technical fellow Dr. Dieter Zube will discuss the concepts behind the landing technology, the decision process that led to their selection, and the associated technical challenges. He will also provide an outlook at future missions and concepts in the planning stage.

