



EpiGrid Cloud Solutions **Enables Rocket Mavericks to** **Soar Above the Clouds**

— SOLIDWORKS® solutions in the cloud enable Rocket Mavericks to accelerate their design schedule and better enable collaboration with their worldwide team —

It takes just one conversation with Thomas Atchison to be infected with his passion for space. Thomas is the founder of [Mavericks Civilian Space Foundation](#), a non-profit organization dedicated to the notion that space should be accessible to all humans, not just the government and commercial aerospace companies. Mavericks Civilian Space Foundation (commonly referred to as The Rocket Mavericks) was created with the idea to combine the resources of academia, amateur rocket enthusiasts and professionals from the aerospace industry to bring space exploration to the masses.

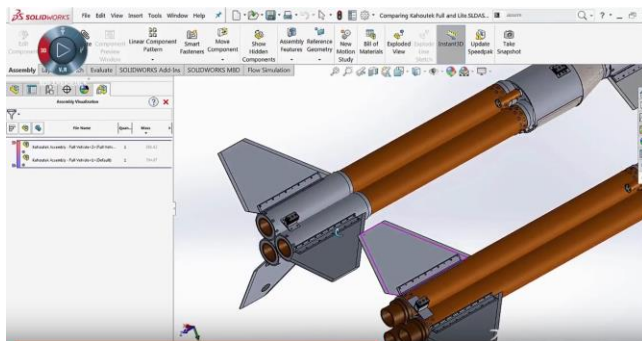


Who are the Rocket Mavericks?

This is by no means a Rocketry Club. This is a serious collaboration of engineers, scientists, students and enthusiasts and includes oversight from the federal government. With that many pieces to the puzzle, practical and effective design and data collaboration are critical. Building rockets that can soar to the edges of our atmosphere requires a lot of knowledge Thomas Atchison explained, “It isn’t practical to have one team create the whole rocket design on their own. It is more practical to learn from the efforts of others and to collaborate when possible using the work and success accomplished by others. The desire is to create an open source style community for space exploration vehicles and technology so that we can leverage the

experience of contributors while fostering the open exchange of design information. Design and engineering teams focus on certain elements of the rocket design. Creating the final product is truly a collaborative effort.”

Historically teams have seen failures due to an inability to provide appropriate focus on the multitude of engineering requirements. Designing rockets that reach the edge of Space requires a huge amount of technical skill in a wide array of disciplines, from avionics to stabilization and propulsion. By distributing the design effort across many teams around the world, and by creating cross functional collaboration, Mavericks can provide the focus each engineering requirement demands.



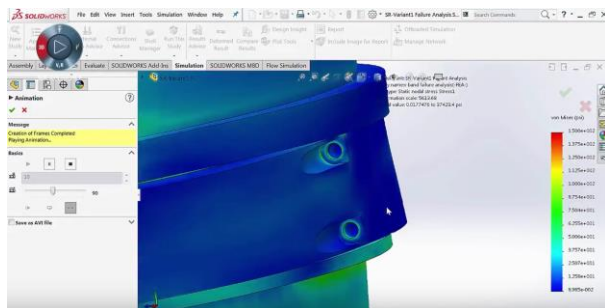
Specialized and Distributed Design Teams

Mavericks is made up of design teams from around the world. Nearly fifty individuals residing in dozens of locations around the globe made up the several design teams that comprise the Mavericks organization. Teams from universities in Cambridge and Oxford, England must collaborate with teams from Stanford University in California. Engineers from Canada need to coordinate their design and analysis work with engineers in the United States. Teams are organized around functional elements of the rocket such as Payload Management Systems, Propulsion, Stabilization and Trajectory Analysis and of course Mechanical Structure design.

Each of these design elements requires intensive and scalable computing power to complete the analysis and simulation essential for the success of the design. Atchison describes the enormity of the simulation and analysis required when explaining that not only must a design team know the trajectory of the rocket, it must also be able to predict to within 99.9% accuracy, where every piece of a malfunctioning rocket would land within a predefined envelope. Software tools such as SOLIDWORKS Enterprise PDM and the array of analysis tools available in the SOLIDWORKS portfolio proved essential in accomplishing the design objectives,

but the Mavericks team faced a serious technical challenge. With such a widely distributed team, how can they all take advantage of the capabilities of the software tools available and still achieve the appropriate level of design collaboration and data exchange? This challenge is compounded by the idea that each member of the team needs to have access to serious and scalable computational power to achieve the types of simulations and analysis required.

Atchison is careful to describe the teams that make up Mavericks and the kinds of skills and expertise possessed within those teams, but nowhere on the list is IT expertise. So how does a worldwide collaborative of engineers, scientists, designers and rocket experts deal with the monumental computational and IT challenge presented by their project scope? Of course, they turn to “The Cloud”! Enter, Chad Garrish and the team from EpiGrid.



Cloud Computing

EpiGrid provides cloud computing solutions for product development and engineering. EpiGrid hosts and manages engineering applications in the cloud. Users

access their applications with a VDI from anywhere with virtually any device, even “ultra-thin clients.” EpiGrid enabled the Mavericks team to accelerate rocket design and validation using their flexible, scalable, and secure private cloud environment to meet the aggressive timelines and computational demands of Mavericks’ simulation, analysis, and design data collaboration. EpiGrid’s flexible cloud resources could be used easily, efficiently, and properly by Mavericks teams to reduce the complications encountered during a project such as this.

To meet the demands of this unique project, EpiGrid implemented a hybrid cloud environment that leveraged existing network and PDM environments allowing engineers from around the world to collaborate and access critical design data. EpiGrid also deployed a Virtual Desktop Infrastructure, or VDI, to provide the computing “horsepower” required to run the intensive simulation studies demanded by the project. These robust virtual workstations easily handled the heavy compute power required by the types of launch simulations run by the

Mavericks team and could be scaled up or down as the project demanded. This solution provided a scalable infrastructure and with open access to this powerful VDI whenever the required hardware was otherwise unavailable.



The Results: Enhanced Collaboration and Accelerated Design

To empower the type of design collaboration required by the Mavericks team, EpiGrid integrated a cloud infrastructure with their existing network and

PDM vaults. Teams from all around the world had immediate access to data and unparalleled collaboration capabilities on demand. As icing on the cake, EpiGrid provided all of the required IT infrastructure and CAD administration support services, allowing design teams to focus on design, not IT administration.

As a result of the powerful environment provided by EpiGrid, Mavericks was able to accelerate their design cycles using flexible computing resources, collaborate on designs and share data on a global scale, reduced design validation costs and the need for specialized hardware for simulations needs. Combined with their ability to focus on design and not on IT obstacles, Rocket Mavericks was able to see an overall reduction in costs.

Atchison states that “There was no way we were going to be able to stand up the processing platform required to handle the huge design, analysis and simulation challenges we faced without EpiGrid.”

About EpiGrid

EpiGrid hosts SOLIDWORKS and other engineering applications in the cloud and provides user access with virtually any device using their secure, private cloud VDIs. The EpiGrid VDI™ is a high-performance virtual desktop for engineering applications that is cost-effective, secure, and accessible from virtually any device including thin clients and tablets. For more information visit www.epigrd.com.