

## **The Road Ahead for Unmanned Air Vehicles**

Mark Halverson  
Northrop Grumman

### **Abstract:**

The history of Unmanned Aerial Vehicles (UAVs) has been a long and convoluted one. Large amounts of time and money have been expended in the development, test, and operation of UAVs, and there have been many examples of unexpected as well as dangerous incidents. Most expect an ever-expanding application of UAVs in both military and commercial applications. However, the future of UAVs depends upon easy access to public airspace and flying over populated areas. There are two major roadblocks on the road ahead for UAVs: an international workable regulatory environment, and UAVs that provide adequate airworthiness to fulfill public expectations of air/ground safety.

This presentation examines the history of aviation, and in particular of unmanned aerial vehicles, and then provides an overview of the present situation for UAVs. The current state-of-the-art and the current regulatory environment are exposed. Finally, the road ahead for UAVs is discussed.

### **Author Bio:**

Mr. Halverson has a BS in Electrical Engineering and a MS in Systems Engineering from the University of Michigan. He recently obtained a certificate as a Professional Systems Engineer from the University of California, San Diego. In addition, he is certified as a Quality Engineer and a Quality Manager by the American Society for Quality. Mr. Halverson worked on the development of the first cruise missiles in the 1970's, and on the development of innovative unmanned aerial vehicles at Northrop Ventura Division in the 1980's. He is currently employed at the Northrop Grumman Unmanned Systems Division in San Diego, California.