The Aerospace & Defense Forum

"The Changing Face of Unmanned Systems"

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Presentation by

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"Look, in the sky, it's a bird, it's a plane, it's . . ."

For many of us Baby Boomers who followed the adventures of Superman, either on our black and white TV screens or by reading the Superman comic book series, completing this statement is easy. But that was then and this is now. Today, instead of "Superman", one might instead substitute the word "drone", or insert the preferred description "unmanned aerial vehicle." For, as our speaker Larry Osborn asserted, one day in the future, unmanned systems will be "ubiquitous."

Having recently visited the Northrup Grumman facility in Lancaster with the A&DF, where the U.S. Air Force and Navy build their unmanned aerial vehicle (UAV) Global Hawk, Larry Osborn's presentation nicely augmented what we learned during that field trip. Larry spent time sharing his perspectives regarding the future of unmanned systems, touching upon commercialization, market growth, regulatory pressure, commoditization, autonomy, miniaturization and proliferation.

There are almost 7,000 unmanned vehicles currently owned by the U.S. military according to Larry. In the next 5 to 10 years, Larry believes, commercial usage will grow dramatically. Instead of being used for military and scientific purposes, unmanned vehicles will find their way into agriculture, the supply chain, on the open road and in the air.

- Agriculture – Possibly the area of most "low hanging fruit." Imagine a programmed vehicle, without a driver, that can deliver the proper amount of water, seed and/ or pesticide based on historical data and/ or current need.

- Supply Chain – Amazon recently announced plans in the next 4 to 5 years, called "Prime Air", to deliver packages to our doorsteps within 30 minutes of placing an order. How will that be done? "Delivery-by-drone" is how Amazon describes the service.
- Open Road – Google recently publicized their plans for "autonomous cars." Code named Google Chauffeur, picture driving to work but instead of eyes fixed on the road you're getting the latest news from you PDA, iPad or laptop, while the Chauffeur drives.
- Air Travel – Larry believes that we're not too far away from unmanned air freight. His caveat though is that it won't happen in the U.S. Regulations (more on this in a bit) will be too restrictive, however in places like Europe and Africa the chances are much more likely.

"Remember the Univac computers?" Larry asked the group. For us long-in-the-tooth, we can remember back to the days when computers were these huge monstrosities, custom built, all self contained, where all peripherals were part of the system. Look how things have changed over the years. Systems are open, like Linux's open source operating system. Peripherals are completely independent. Everything today is downloaded through a USB port with built in drivers.

Larry believes that unmanned systems are headed in the same direction. Platforms will be decoupled from control systems. There will be a trend toward a common user interface, data link and network. Items, such as autopilot devices or GPS, will be purchased separately off the shelf. More and more will be a commodity, easy to access and integrate.

Google uses the term "autonomous" when labeling their driverless car of the future. To demonstrate how unmanned systems could become autonomous in the future, Larry walked us through a pictorial of the progression of elevators. From needing an operator pulling down on a brake lever to stop an elevator, today we walk into a modern office building, enter a floor number onto a nearby computer screen and then walk over to an elevator that will whisk us directly to our floor . . . without having to press a button. Will unmanned systems be this easy? Possibly. However, according to Larry, our cultural paradigms will require some shifting.

Unmanned systems. Maybe an oxymoron? As Larry shared, most everything today that is "unmanned" requires the support of people. To put a Predator UAV into 24-hour orbit, it takes an "army" of almost 200 to make it happen. One of the primary purposes of unmanned systems is to decrease head count, thus reducing one of the biggest expenses on a financial statement. It will be an interesting journey to see if that goal is ultimately met.

So what does the future hold? According to Larry, the drivers . . . and constraints . . . of growth of unmanned systems will include . . .

- Regulation. Likely the single biggest problem to expansion, particularly in the aerial systems space.
- Practicality. Like with Amazon, how practical will it be to have these flying UAVs delivering packages in high density areas?
- Price. Whatever is cheaper and more efficient will win the day.

- Integration. How do the unmanned systems of the next generation get integrated into what exists today?
- Privacy. Did anyone read the recent L.A. Times article describing the use of, in this case, a manned airplane secretly conducting aerial surveillance over the city of Compton? What rights do citizens have to know that they're being watched, whether with manned or unmanned equipment?
- Safety. How safe will these unmanned systems be? Can airplanes fly safely without a trained pilot in the cockpit? Can cars navigate the roads safely while drivers are preoccupied?

Larry and his company, DreamHammer, are in the thick of the unmanned system universe. The company is uniquely positioned to address this emerging and evolving market segment, enabling intelligent control of complex systems. If you have questions related to this topic, his presentation or DreamHammer, I'm sure Larry would be happy to field your questions. He can be reached at losborn@dreamhammer.com or his office number at 703-663-9393.

Lee Schwartz, former CEO and President of manufacturing and distribution companies, is principal of the Schwartz Profitability Group (SPG) that, for over 13 years, has uncorked the operational bottlenecks of manufacturing and distribution companies, boosting their bottom line results. Lee's clients range from smaller family run companies to Fortune 500 firms, including those in aerospace and defense. His work helps clients find solutions related to process improvement, supply chain management, inventory control, workflow design, and operational performance. Results consistently include cost reduction, improved efficiencies and increased profitability.

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