

**KANSAS UNMANNED SYSTEMS CONFERENCE
MANHATTAN, KANSAS
OCTOBER 15, 2013**

Thank you for inviting me.

Today I wanted to speak to you about technology, how we integrate it into our lives, and then provide a little advice pulled from my current job, my old job as a former state representative... and also as an observer of change throughout history.

During every great leap of technological innovation, there is always a period of uncertainty, suspicion and fear. There are many reasons, but I've grown to believe that humans are hardwired to initially view new ideas and inventions as threats to traditions and social stability. Let's face it... technology can radically change how we live... how we think ... and how we interact with each other... often much faster than people are comfortable with.

No doubt that with the invention of the light bulb, there was intense debate about the number of candle and lamp makers who would lose their job... discussion about the societal impact of children staying up "unnaturally" later than they should... the health impacts of "artificial" light produced from light bulbs versus "healthy" light from lamps... and great conjecture about how the light bulb would change the very fabric of our homes, cities, families and future in many unknown ways.

This is true for every technology, discipline or process that has given power and previously unknown endowments to the human race. Think for a moment of the incredible changes that occurred with the following:

Fire... Plow... Cement... Sawmill... Gunpowder... Blast furnace... Printing press...
Vaccines... Rail... Pasteurization... Internal combustion engine... Anesthesia...
Chemical fertilizer... Telephone... Light bulb... Automobile... X-ray machine... Assembly
line... Airplane... Plastic... Kitchen refrigerator... Television... Penicillin... Turbine
engine... Radar... Nuclear power... Satellites... The Internet... GPS... Twitter...
smartphones... and, of course... Pilotless and Driverless Vehicles

Although we take these things for granted today... they were game changers when they first emerged from the human mind and were formed into practical tools for our use. Each individual technology gave us more control of nature... more abilities... and more things to learn about, manage, and further refine.

Today, the same human hands that first guided a plow through rocky soil, are genetically engineering crops with entirely new characteristics. This level of sophistication... of applied use of advanced tools and scientific understanding is nothing short of remarkable... and we are just beginning. Humans are now mastering the very structures of DNA and matter itself... developing revolutionary advances in robotics, artificial intelligence, energy production, nanotechnology and bio-engineering.

All of this will result in great advancements and new tools to improve human life... and create a better world that our grandparents and parents would find unrecognizable.

However... the journey will not all be smooth sailing. Just as in the past, there will be attempts to roll back the use of new technologies. Some of the reasons involve self-interest... others, just plain fear. Either way, history is our best guide to follow as we test the waters on how new technology will be received by the public.

Twenty-four hundred years ago, Socrates made it clear what he thought of the technology of writing, saying to his student Plato, "It destroys memory and weakens the mind, relieving it of work that makes it strong. It is an inhuman thing!"

In 1811, the Luddites (who were English textile workers) began smashing factory machinery and burning wool and cotton mills. Today, there is a group in Britain called *Luddites at 200* which celebrates the original luddites and calls "For action against technology hurtful to commonality." By the way... their **web site**... (yes, I see the irony here)... makes it clear they are NOT big fans of unmanned systems.

In 1874, when the butter substitute *margarine* made its debut, dairy farmers were outraged. After failed attempts to outright ban margarine across the country, congress finally agreed to allow a specific tax on margarine that wasn't repealed until the 1950s. The states of New York, Michigan, Maine, Pennsylvania, Ohio and Wisconsin all banned the sale of margarine, and three other states required that margarine be dyed a bright pink color to discourage its purchase.

The great American composer John Philip Sousa testified before congress against Thomas Edison's gramophone and the player piano out of fear that the devices would destroy the livelihood of musicians. Sousa repeatedly said that the ability to sing would be completely lost from the human voice when people could just listen to recording, versus going to the effort of learning how to sing.

When advancements in electronics made elevator operators a thing of the past, there were predictions of utter catastrophe. Apparently, untrained people simply could NOT be trusted with walking into an elevator and pressing a button. We shake our heads now, but this same thinking is alive and well today. In fact, just a couple years ago... a particular group (I won't mention their name) said that a proposed plan to eliminate 16 elevator operators could not be allowed to happen... saying: "*Without constant staffing, the elevators can be very dangerous... especially for women alone late at night.*"

Although these examples to stop technological progress seem silly to us, more recent examples may be a little more familiar. Within the last two years, there have been calls to ban or heavily restrict the following: Cell phones... Nuclear power... Cloning... Laser pointers... 3D printed weapons... Genetically modified food... Facial recognition systems... Natural gas fracking... Facebook and Twitter... E-cigarettes... Google glasses... and, of course... unmanned aerial vehicles.

Things get really interesting when we shift from talking about margarine, gramophones and elevator operators... to things like artificial intelligence, robotics, customized genetic engineering, programmable matter and nanotechnology. When the public hears about these sorts of things (just as with all new and unfamiliar technologies)... they tend to have a strong visceral reaction.

Hear the term *artificial intelligence* and *robotics*... and we tend to immediately conjure up images of Skynet and the glowing red eyes of a T-800 series Terminator chasing us down a dark alley. Hear the term *genetic engineering*, and we tend to automatically think of the shrieks of cloned Jurassic Park velociraptors eating our co-workers... or hordes of The Walking Dead outside our windows.

Think about it... can you name a single movie where technology is actually portrayed as a good thing? Almost every movie that deals with technology has a not-so-subtle warning for the public: *When you tinker with technologies and things you shouldn't... very bad things happen.*

No big deal right?... it's just a movie. But movies and popular forms of entertainment play a huge role in shaping the public's opinions about the inherent "goodness" or "badness" of technology itself. If you don't believe me, watch C-Span sometime when a congressional committee discusses a cutting edge technology. As a former legislator, I can tell you that it's not all that different at the state or local level.

But even when we don't have a strong emotional reaction... down deep, we dread the idea of suddenly finding ourselves obsolete... or out of business... or under the yoke of some new, powerful and invasive system. In the midst of that emotion, we tend NOT to think very clearly... letting our emotions lead the way. We over-estimate the bad that MIGHT happen... and ignore the tremendous good that CAN happen.

Please know that I'm not naïve about the risks associated with technology. Dealing with the threat of technological misuse by criminals, terrorists and countries that wish us harm... of technological accidents that would be catastrophic... is a big part of what I do. But make no mistake, technology and innovation waits for no man or woman. With 7.1 billion people on Earth, technology will move forward... and I would prefer that the United States lead the way.

So what does all this mean for the unmanned systems consortium? How do we move forward in a way that encourages innovation and job growth, but does so in a way that also encourages the support of Kansas policymakers and the public?

From what I've seen, unmanned systems have two major hoops to jump through to be successful. The first hoop involves reliable, consistent and ultra-safe operation around other vehicles and people. This, of course, includes stuff like crash avoidance, codified procedures and intelligent hazard avoidance... in other words, making sure that our machines don't harm people.

Let me be clear... I am **NOT** worried about this challenge... I know the hardware and software to do this sort of thing can be wildly complex and hard to develop... But I have an enduring belief that American scientists, engineers, programmers and entrepreneurs, like you... will overcome these challenges. You will figure this stuff out... I'm sure of it.

The second hoop makes me much more nervous... and it's the area where I want to give you some unsolicited advice. The second hoop involves educating and gaining the support of the public and policymakers. Even if you do everything right on the actual technology piece (the first hoop), you will face some major and perhaps insurmountable challenges if you do not make a coordinated attempt to earn and maintain the support of the public.

As I outlined, the general public doesn't always react with pure logic when they are shown a new technological tool. They may try to kill it, ban it or even require it to be dyed pink. You should anticipate as you present new unmanned devices and capabilities you will be treated with suspicion, resistance and maybe even fear. The more advanced (and unknown) the technology... (in other words, stuff that really blows your socks off)... the higher the possibility of an emotional and unhelpful reaction. The developers and engineers will see great potential... the public will be afraid.

Currently, there is a lot of discussion about unmanned systems at the state and federal level... it's not my place to comment on specific pieces of legislation... but some of what is being proposed would have **significant** (and unwanted) effects on our ability to compete in the growing unmanned market.

The goal should **NOT** be to avoid or politically outmaneuver people with real concerns about technology they are unfamiliar with... that never works out well. The goal should be to engage them in an open and transparent way... educate them about your efforts... and slowly earn their respect and trust. I know this sounds like a lot of effort... and it is. But if not addressed... it is your Achilles heel... and your greatest challenge.

Here are three specific, but very straightforward things I would suggest:

1. Get out of the lab and engage the public & policymakers – invite them to your place, let them get “hands on” with the technology... explain what the ultimate goal is... make them comfortable with what you are doing. Get to know policymakers by name... don't assume they know what you are doing... or why you are doing it.
2. Demystify the technology and show the potential for good – talk to the public and policymakers about the great opportunities the technology will allow us to do good things for people... *at levels of efficiency that will be required in future budgets*. Your goal should be to replace the image of the evil red-eyed Terminator, with an image of a safe and valuable tool that allows Kansas first responders to save grandma after her house was hit by a tornado.
3. Show the Kansas connection – show policymakers the great potential for job creation in Kansas... explain how Kansas businesses and universities can be at the forefront of an ethical high-value industry. Let them see how unmanned systems can dramatically enhance the aviation, manufacturing and agricultural industry... Encourage them to participate, share their thoughts, concerns and hopes for what this larger effort might someday become.

As adjutant general, director of homeland security and head of emergency management for Kansas, I need you to be successful. Future budgets will require new levels of efficiencies... new approaches... and new ideas. You are a critical part of ensuring that the people of Kansas, and the brave men and women who protect her, have the tools they need to be successful.

I wish you all the greatest of luck. Thank you.