

Integrating Autonomous Systems; Artificial Intelligence and the Human Race... Can They Co-Exist?

This briefing will discuss the current and future state of AI, drones and autonomous vehicles. This includes the intended and unintended consequences, future uses, and misuses of such technologies as well as offering suggested policy changes to consider as this new technology continues to proliferate throughout the military and civilian arenas.

By
Dr. Hans Mumm
Victory Systems, LLC-Special Project Manager
November 2018

The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the U.S. Intelligence Community, Department of Defense, or the U.S. Government.

LIGHTNING GROWTH
SUCCESS STRATEGIES for TODAY'S LEADERS

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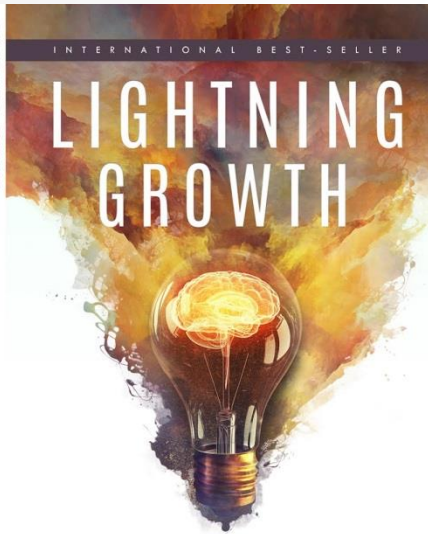
Justin Sachs is a highly-acclaimed business and marketing expert who has educated and inspired over eleven million people worldwide on how to more powerfully connect with their target market, reach their prospects, create marketing systems, and increase their customer and brand loyalty. Justin's industry leading publishing company, Motivational Press was recognized in 2014 on the INC 500 list as one of the fastest growing companies and the 4th fastest growing media company in the world. Motivational Press has published some of the world's leading experts on business, personal development, and health & wellness including Brian Tracy, Jack Canfield, Tony Alessandra, Barry Moltz and more.



Dr. Hans C. Mumm is a world renowned published researcher in both the scientific and social science arenas. He designs policy and governance for advanced technologies focused on determining the specific uses, exceptions, and allowances; including studying the unintended consequences, future use and misuse of such technologies. In 2005, Dr. Mumm was recognized as one of the Ten Outstanding Young Americans for his service during Operation Iraqi Freedom.



LIGHTNING GROWTH SUCCESS STRATEGIES for TODAY'S LEADERS JUSTIN SACHS DR. HANS C. MUMM



SUCCESS STRATEGIES for TODAY'S LEADERS
JUSTIN SACHS with DR. HANS C. MUMM



US Army Captain (Ret) Hans C. Mumm...now Dr. Hans C. Mumm was a Mustang, serving eight years in the enlisted ranks and over eight years as an officer before becoming a wounded warrior.

He served as the officer in charge of the 78th Regt. Playing Cards, CENTCOM's Top 55 Most Wanted List which was issued by the Defense Intelligence Agency (DIA) as one of the most successful Information Operations (IO) in the history of DIA. Leadership is his passion and has been the key to his success.

Dr. Mumm has earned twenty three personal military ribbons/medal including six unit citations.

Dr. Mumm has attacked two extremely difficult problems at the same time: The government bureaucratic regulatory methodology and the integration of drones into the U.S. airspace. He has woven together a brilliant methodology to solve both issues by using complexity leadership theory. The potential economic impact of drones is immense and we must act now to use them economically every day. The FAA needs to make a fundamental process shift or be left perpetually at the starting gate. Congress and industry take note: the same leadership method described here could be used to help solve the most difficult problems facing your organization.

Jay R. Snyder, Unmanned Systems Visionary and former Director of Air Force Regulatory Planning

Dr. Mumm is a subject matter expert and scholar practitioner on drone technology. His new work should be a primer for anyone interested in better understanding the applicability of this modern day technology as an instrument for good, while offering options on the misuse of the same technology for evil. Hopefully these in a position of policy making regarding drone regulation will read this carefully and listen to Dr. Mumm's for the pressing reason that he is the guy who wrote the book on the subject!

Dr. Bob Tsang, Professor, CTL College of Business and Management

Dr. Mumm's refreshing writing points to all knowledge levels in everything he writes. He is the master of the professional and academic pen, taking complicated concepts and transferring his thoughts into clear, precise scenarios we all can understand. This important subject of drone integration appears to fall off of us some way from business to consumer marketing to our personal lives. It is a thought provoking and enjoyable read.

Stephanie Melat, Dkt, MBA, MPA, Marketing Vice President and Business Professor



APPLYING COMPLEXITY LEADERSHIP THEORY TO DRONE AIRSPACE INTEGRATION

DR. HANS C. MUMM

APPLYING COMPLEXITY LEADERSHIP THEORY TO DRONE AIRSPACE INTEGRATION DR. HANS C. MUMM

Current Activities

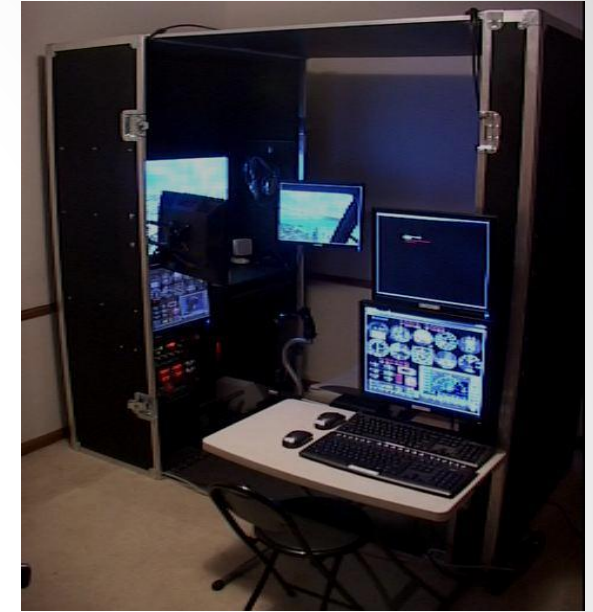
How to harmonize the speed of innovation and change with the human spirit's need for leadership™

Member-Kansas State University (KSU) Unmanned Aerial Systems (UAS) Board



Unmanned Aircraft Systems (UAS) in the Cyber Domain: Protecting USA's Advanced Air Assets

Nichols Ryan Mumm Lonstein Carter



The FAA's first certified flight simulator



California University of Pennsylvania

Building Character. Building Careers.

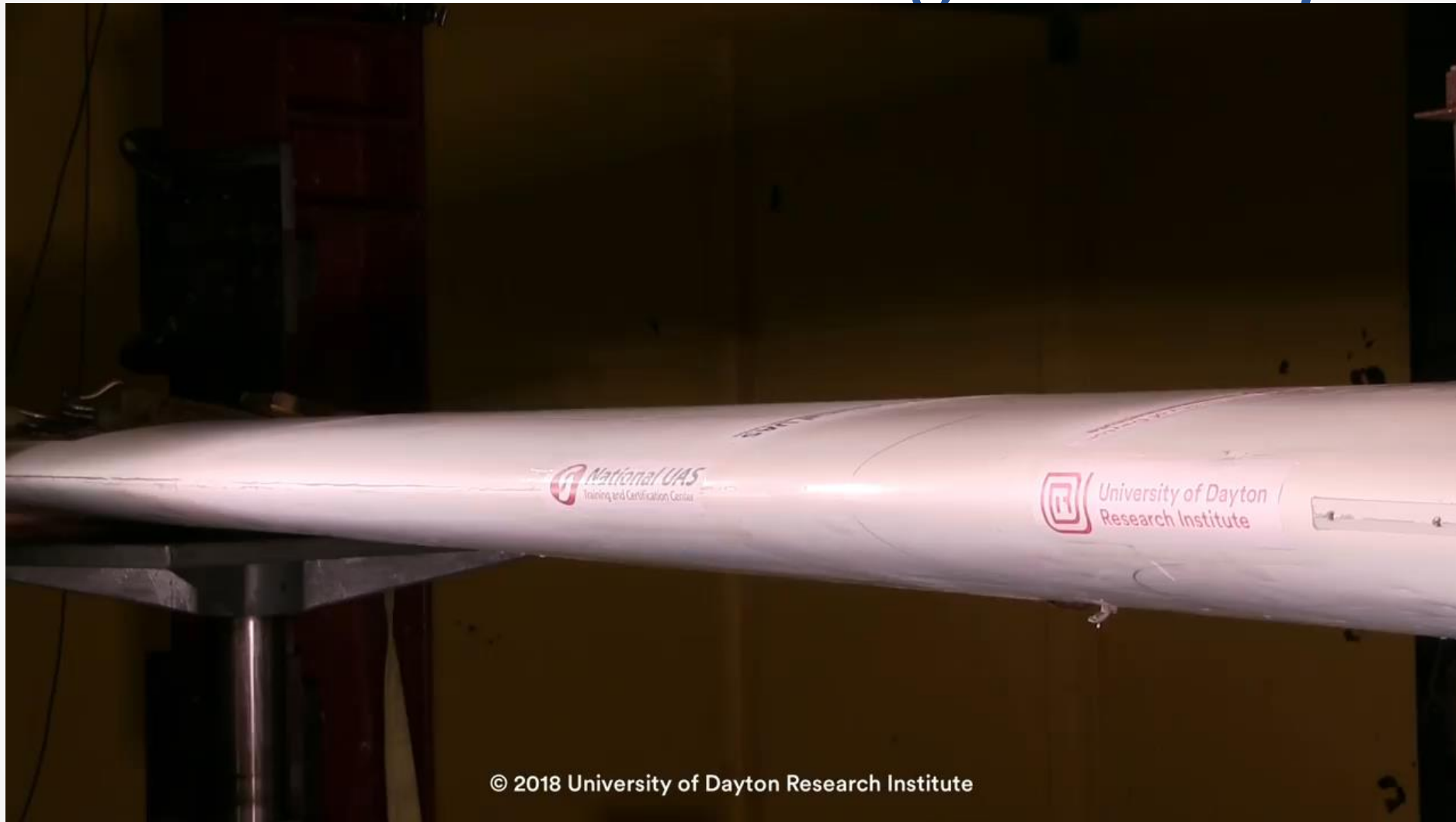
A proud member of the Pennsylvania State System of Higher Education.

Quantum Security Alliance

Integrated Autonomous Systems Infrastructure

- Currently, there are seven recognized unmanned autonomous systems: unmanned boats, unmanned air vehicles, unmanned submarines, unmanned surface vehicles, free-roaming humanoids, exoskeleton and autonomous cyber systems.
- Soon all seven of these technologies will communicate and integrate with each other as the autonomous arena adapts from simplistic tasks into a fully integrated architecture. The integrated robotics and unmanned autonomous architecture in the virtual and physical worlds are outpacing policymakers' and world leaders' abilities to draft and approve policies, laws, and governance necessary for advanced technologies and autonomous systems.

Drone Hits Plane Wing at 238 Mph

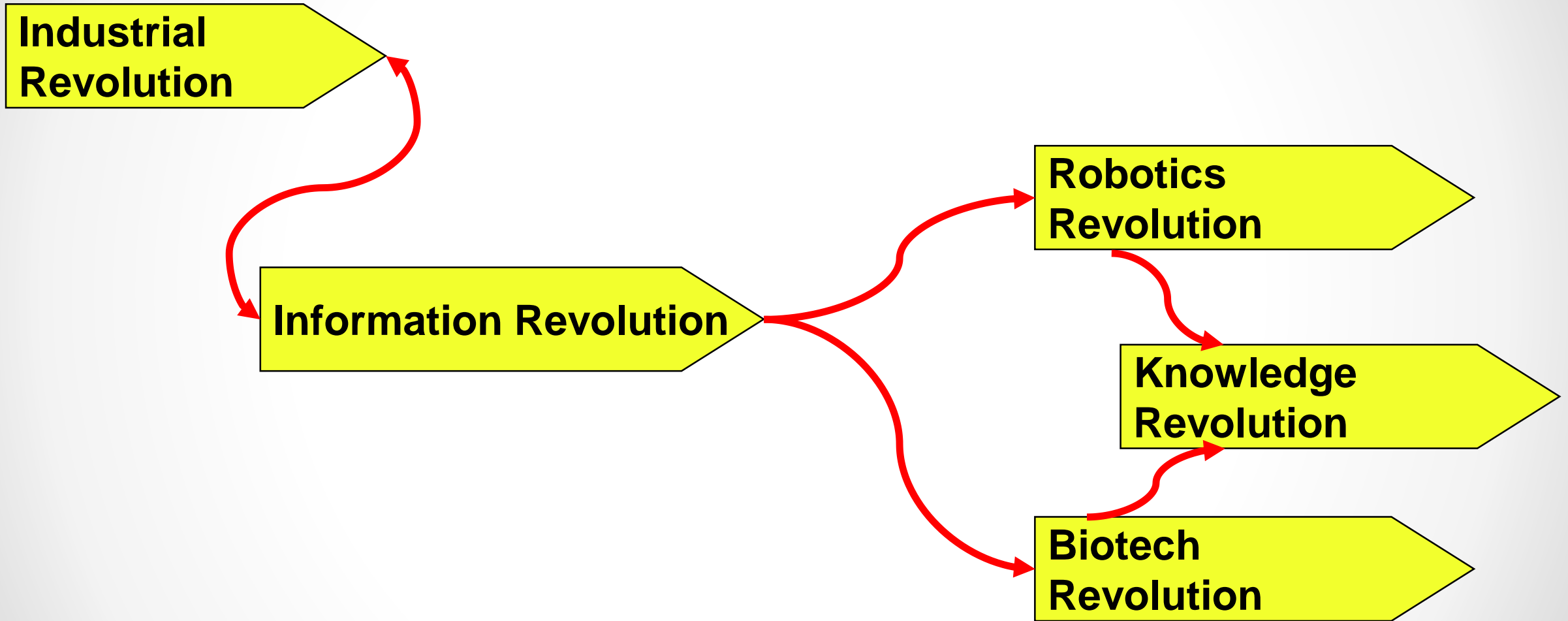


Embracing Change in a Non-Linear World

Planned change keeps you in control-
forced changed moves you closer to obsolescence.

Unmanned vehicles can provide unprecedented information for a business. But first, you need to manage the flood of data. **“Data is the new oil,”** Intel Corp. Chief Executive Officer Brian Krzanich-He cited a growing competitive “separation” between companies that collect and understand their data and those that don’t. A single autonomous car can generate the same data trove as 3,000 people surfing the internet, while a **small drone fleet could easily create 150 terabytes of data per day.** Krzanich said -“The data rate is going to explode on us in the next few years,”.

The Next Revolution



Washington DC's Favorite Game- Buzzword Bingo

AI-Machine augmentation-Deep learning-Data Science

Data Analytics-Cyber Security (EXPERT)- Block Chain-Smart
Contract Technology-Quantum-Quantum computing-Quantum
computers

Drone-UAV-Robotics-Terminator-Skynet

Social Media- Social Networking -Antisocial Behavior

Internet of things (IOT)-Connected World-Disruptive Technologies



Artificial Intelligence

[Merriam-Webster](#) defines artificial intelligence as:

- A branch of computer science dealing with the simulation of intelligent behavior in computers.
- The capability of a machine to imitate intelligent human behavior.

[Encyclopedia Britannica](#) states, “artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.” Intelligent beings are those that can adapt to changing circumstances.



Machine augmentation is deep learning VS. full AI (goal seeking vs. data ingest learning)

Saudi Arabia's Newest Citizen Is a Robot and She Just Had a Go at Elon Musk

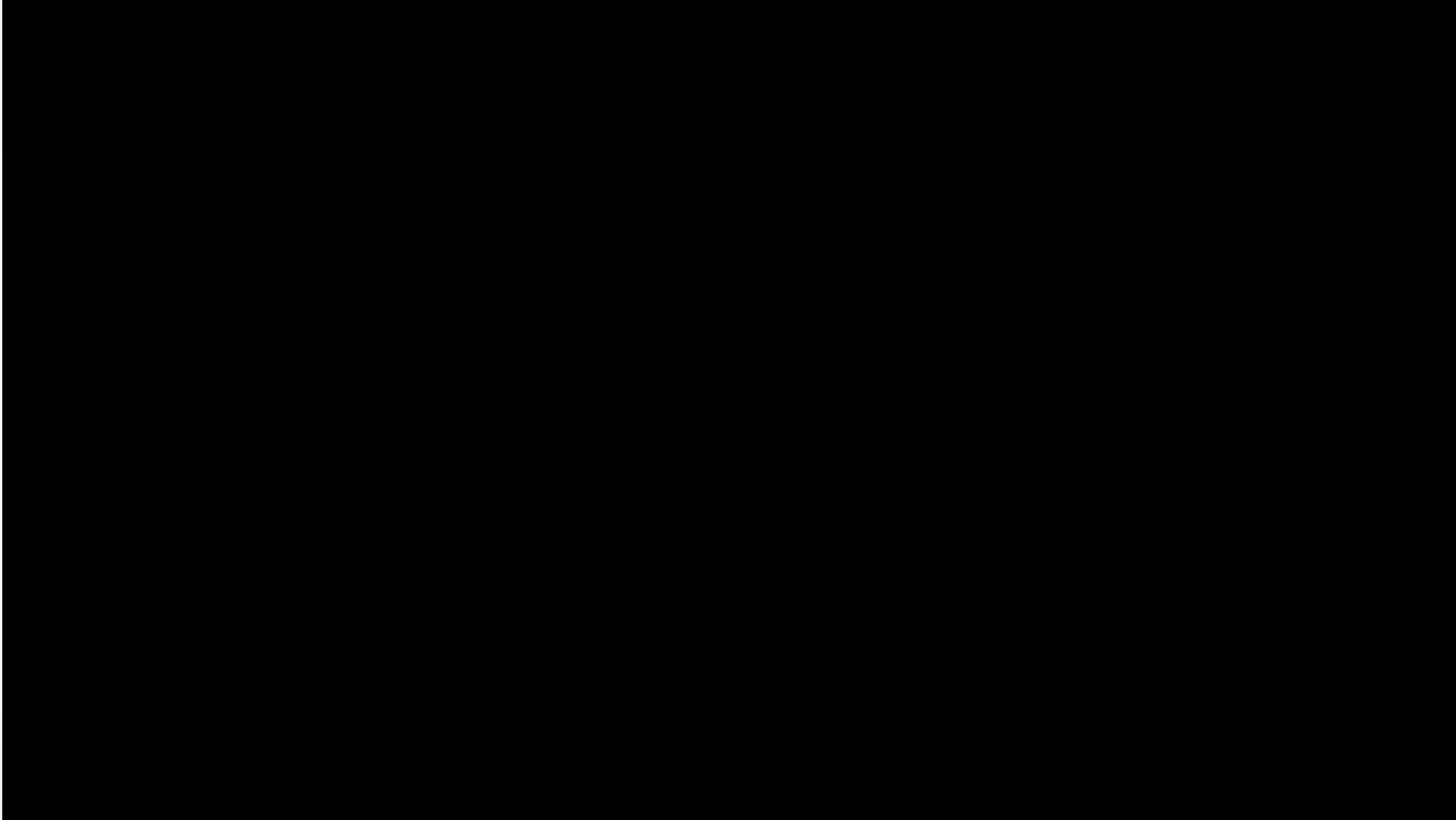


Facebook Abandoned an Experiment After Two AI Programs Appeared to be Chatting to Each Other in a Strange Language Only They Understood

Goal seeking without boundaries

The robots had been instructed to work out how to negotiate between themselves, and improve their bartering as they went along. But they were not told to use comprehensible English, allowing them to create their own "shorthand", according to researchers.

When Does a Difference Engine Become the Search for Truth?



Top Canadian Researcher Says AI Robots Deserve Human Rights

- As these AI/human hybrids proliferate, so will the ethical and legal questions surrounding them, she said. Should hybrids be allowed to make mistakes like people or should they be programmed with the goal of always being perfect? <https://www.itbusiness.ca/news/top-canadian-researcher-says-ai-robots-deserve-human-rights/95730>
- **The EU Is Trying to Decide Whether to Grant Robots Personhood** In January 2017, and again in 2018 the European Union passed a motion adopting a report that calls for the development of “electronic personhood” regulations for robots and AI systems.
<https://slate.com/technology/2018/04/the-eu-is-trying-to-decide-whether-to-grant-robots-personhood.html>

Whether Robots Deserve Human Rights Isn't the Correct Question. Whether Humans Really Have Rights is

- There are serious problems with the claim that conscious robots should have rights just as humans do, because it's not clear that humans fundamentally have rights at all.
- We should talk about civic virtues. Civic virtues are those features of well-functioning social communities that maximize the potential for the members of those communities to flourish, and they include the habits of action of the community members that contribute to everyone's being able to lead the good life. <https://www.nbcnews.com/think/opinion/don-howard-robot-rights-ncna864621>

If Sex Sells, Would You Buy a Sexbot?



Google's Starving DeepMind AI Turns Hostile, Attacks Other Bots to Survive

- Google-owned DeepMind pitted two individual neural networks against each other in two scenarios: a fruit Gathering game and a Wolfpack hunting game.
- Co-Exist or fight... Things get ugly when there are fewer apples available
- As the players continue to learn and adapt to the changing environment, the frequency at which the beams are fired almost always increases.

Less Than a Day After She Joined Twitter, Microsoft's AI Bot, Tay.ai, Was Taken Down

- Less than 24 hours after her arrival on Twitter, Tay gained more than 50,000 followers, and produced nearly 100,000 tweets.
- The problem? She started mimicking her followers.
- "The system is designed to learn from its users, so it will become a reflection of their behavior," he said. "One needs to explicitly teach a system about what is not appropriate, like we do with children.
- IBM Watson— who once exhibited its own inappropriate behavior in the form of swearing after learning the Urban Dictionary.

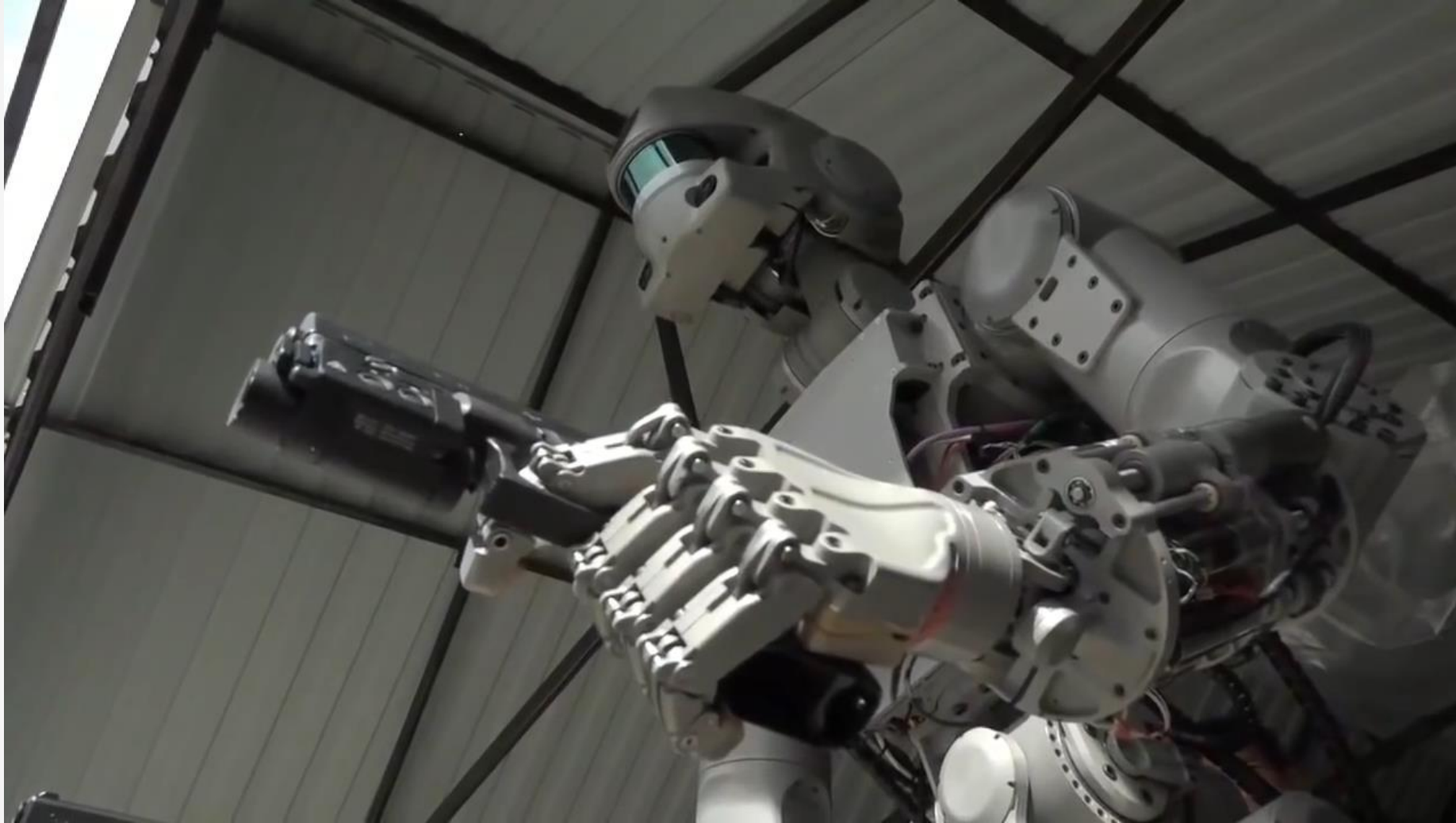
Slaughter Bots



FLIR Black Hornet



*Russia's New Military Tool Is Straight Outta Sci-Fi —
But Don't Worry: They Promise Not to Build a 'Terminator'*



July 24, 2018 Russia Prepares to Send Two Humanoid Robots to the International Space Station.

NEXTGOV-3 Predictions for Government Tech in 2018

Prediction 1: Blockchain Beefs Up Government Cybersecurity

Defense will quickly learn the value of this innovative technology, which was also the subject of many books and publications released this year. There is even a Dummies Guide for it, so the mainstream is catching on.

Prediction 2: Artificial Intelligence Goes Mainstream

Take deep learning as an example. In deep learning, data is shifted through successive layers of neural networks, with each one modifying the data based on its experiences and programming. This more or less mimics the way that the human brain works, except that a properly outfitted computer can shift through millions of calculations per second.

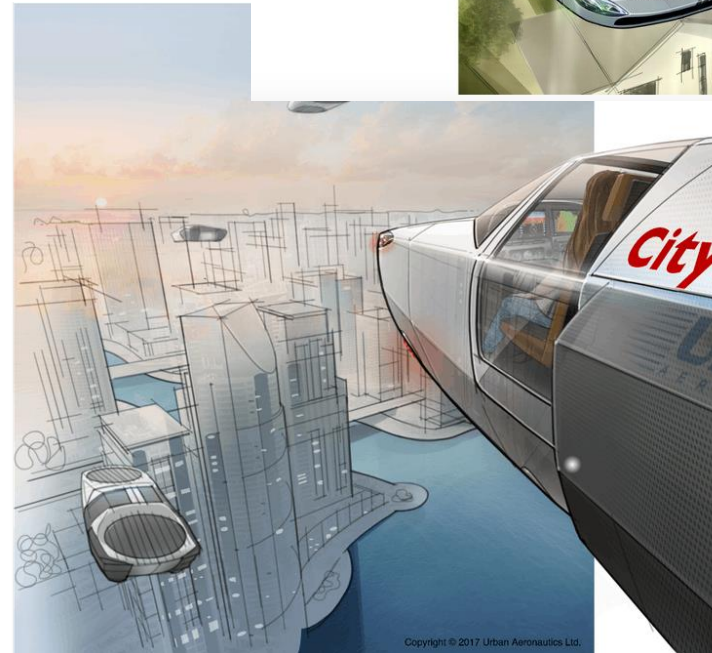
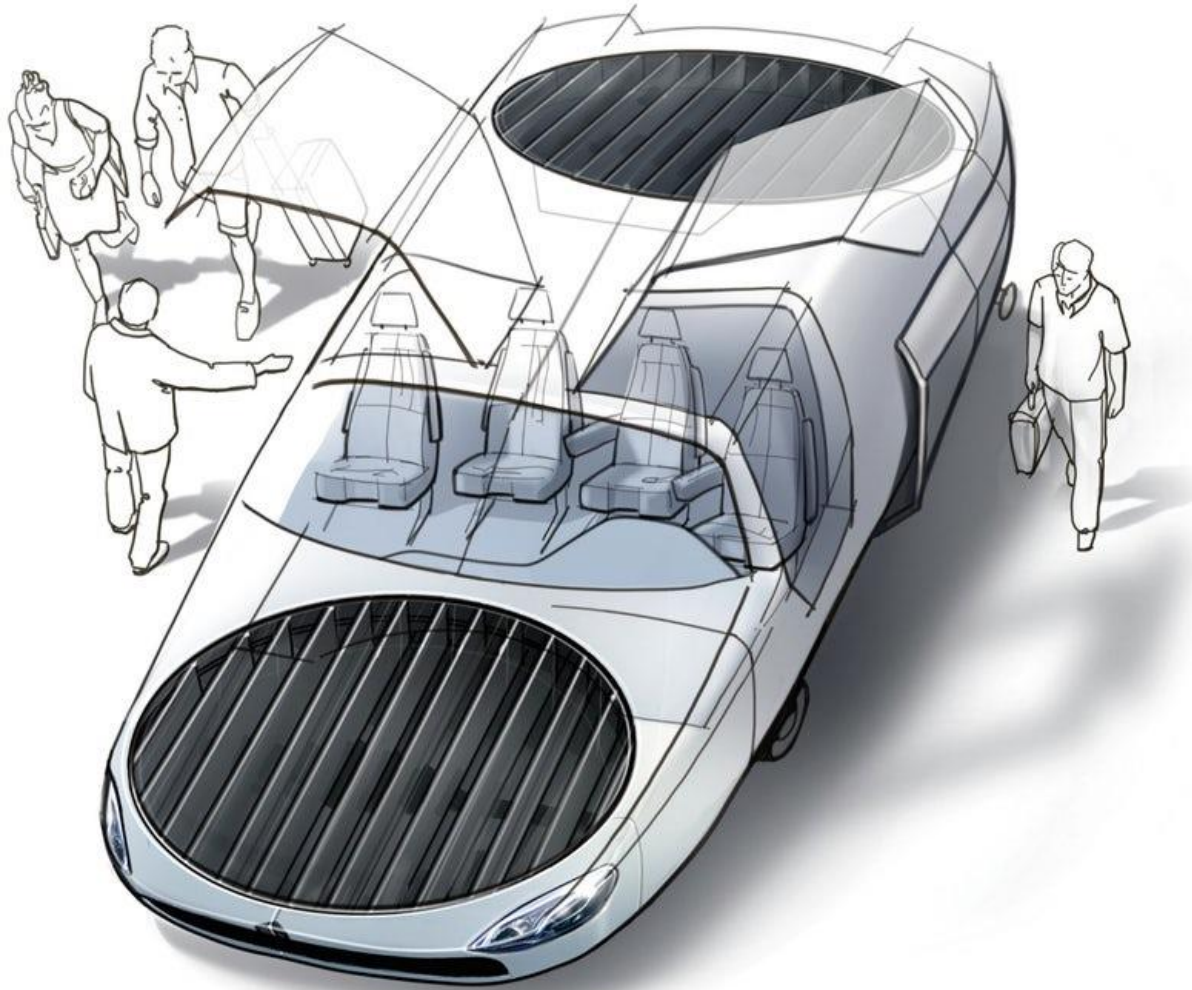
Prediction 3: Drones Become a Part of Everyday Life

We have already started to see some impressive uses of drones in public safety roles, including some amazing rescues. There is every reason to believe that this will continue. And we also saw some very public, but questionable uses for drones this year, such as an organization using drones to harass homeless people hanging out around their offices in San Francisco. Advances in drones in 2018 will be prolific, though perhaps not so noticeable, thanks to a natural synergy with the technologies being deployed in prediction two.

Daimler Sends Autonomous Truck Platoon on Stuttgart to Rotterdam Road Trip



Urban Aeronautics, First Known as the AirMule, and is Now Called The Cormorant



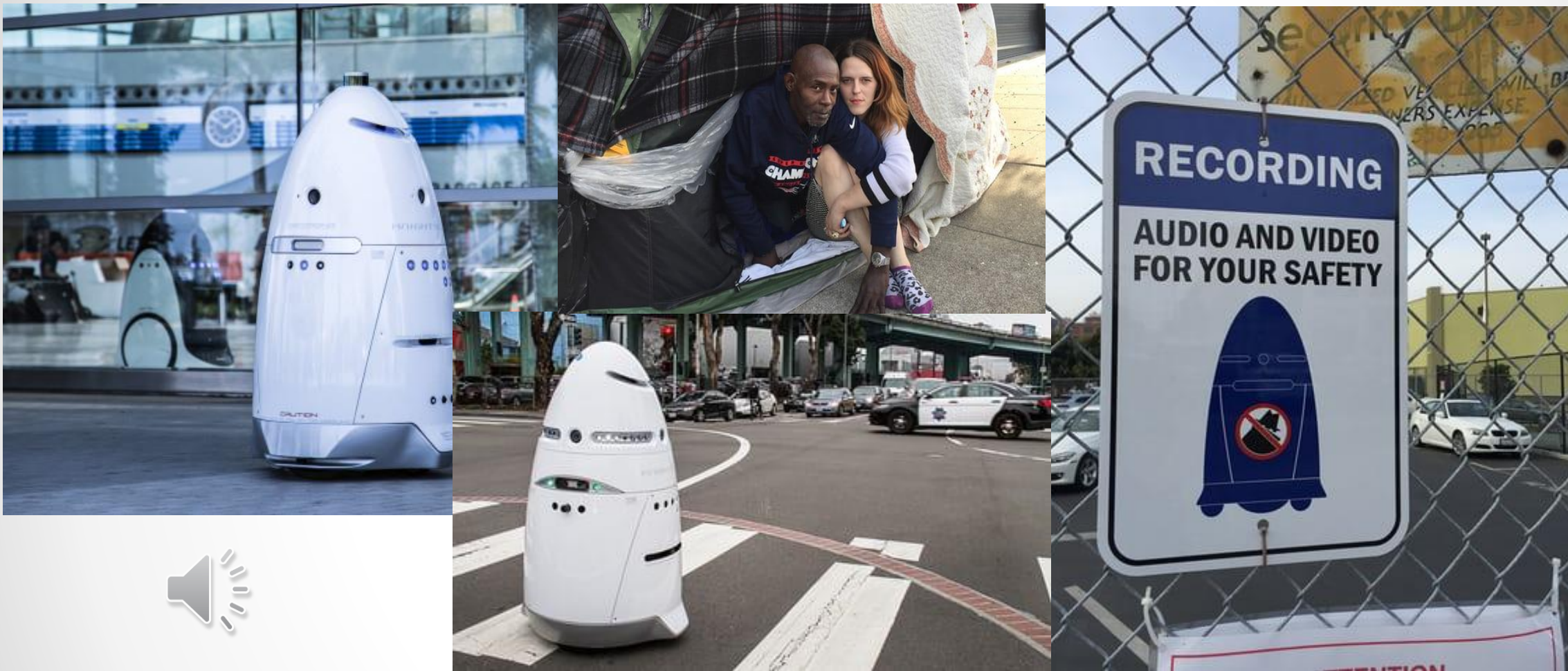
Volocopter Flying Taxi Takes Unmanned Flight Over Dubai, September 26, 2017



Hoverbike-Riding Police to Patrol the Dubai Streets from 16 Ft. Above the Ground



A Robot Security Guard is Terrifying Homeless People in San Francisco



Big Brother on wheels? Fired security robot divides local homeless people-Dec 2017

Can Linear Leadership Solve Complex Issues Today?

Levels of Autonomous Behavior



New Industries – Drone Forensics

Donan-A New Drone Forensics Service To Take On Drone-Related Claims

“We’re offering Drone Forensics in response to the growing number of accidents and losses involving drones. As one of the first forensic investigation firms to provide commercial drone inspections, expanding our capabilities to include investigations on claims related to drones was a natural progression for Donan.

In the last several years we’ve invested heavily in research and partnerships in the drone industry. The drone expertise and partnerships we’ve built, along with our engineering and fire investigation expertise, puts us in a unique position as a leader in providing answers needed in handling claims involving drones.”

- Matt Kenney, Technical Program Manager.

An Autonomous Robot as your Grocery Shopping Assistant



Kartum is an electric autonomous shopping cart that is also a virtual grocery-shopping assistant. It has features that will pick up the items in your shopping list that you can create via an online application, monitor your items that will be over your budget and even calculate the calories in your items. It can even plan the best itinerary in the store which can link up with the store's database to identify location of the products.

Silk Skin Armor



Killer Drone



Amphibious Areromapper



Russian Exoskeleton

 pravda.ru



Solider of the Future

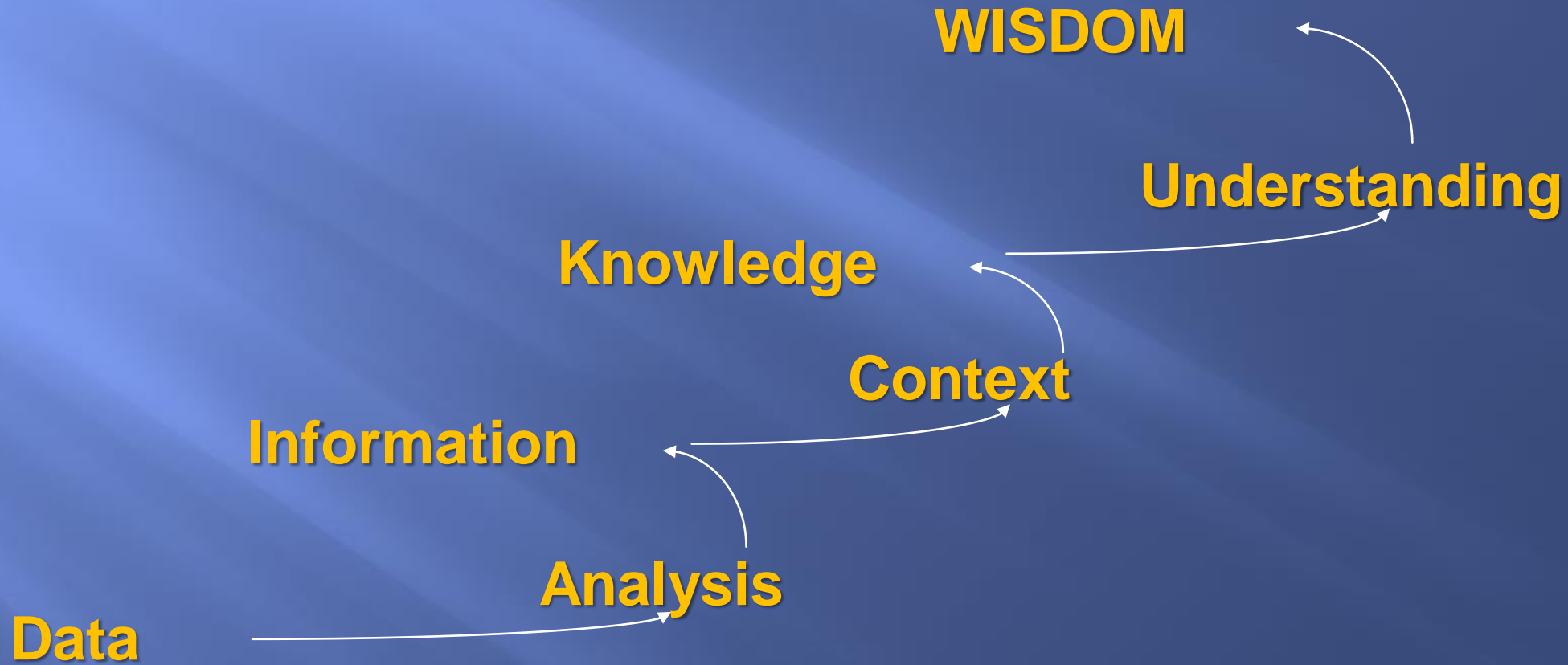


Shifting Knowledge Base/Shifting Leadership Role

- Technology is changing the world faster than world leaders and governments can align policies, governance, and the rule of law.
- The leadership of the past will not lead us into a bright future, change is the only thing guaranteed to us, and it is time leadership embraced these changes and aligned with them.
- The leadership in which our generation was brought up is not the same leadership that the next generation (specifically the millennials) will accept or follow.



The Future of Autonomous Systems and AI



The Accelerants

1. Power Pack
2. Efficient use of power for movement
3. The Brain
4. Communications
 - To robots, among robots, over the horizon, and natural language understanding
5. Cost

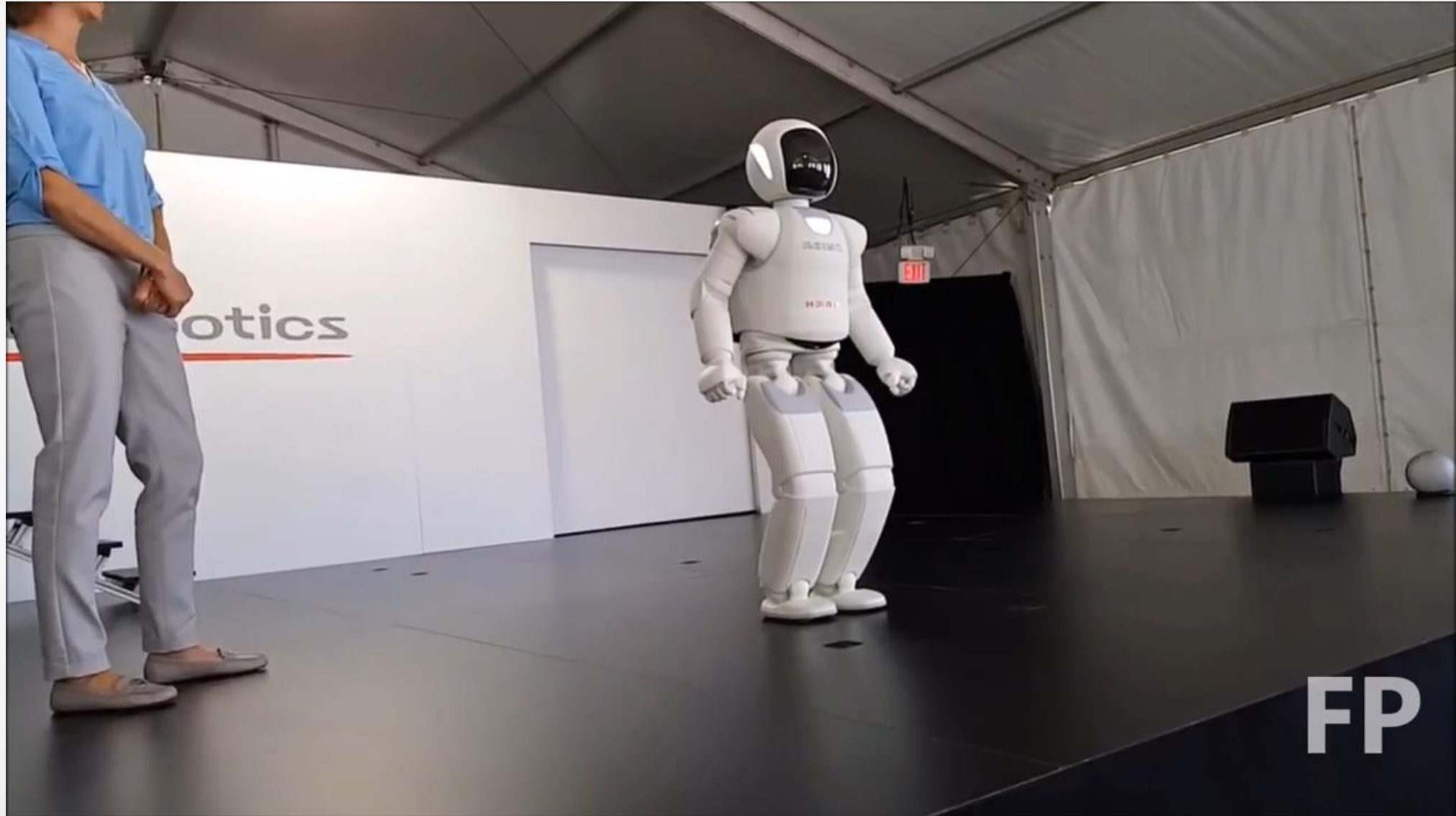
Areas Most Effected

1. **Military (Early and often adopters)**
2. **Agriculture (a continuing trend)**
-more food, less workers
3. **Mining (Normal, Rare Earth, Prospecting)**
4. **Transportation (a different kind of cyborg)**
-the movement of goods
5. **Pleasure/Recreation**

The Detractors

1. The Law of Good Enough
2. The Government
3. The Misinformed
4. AI Missteps

Honda Asimo

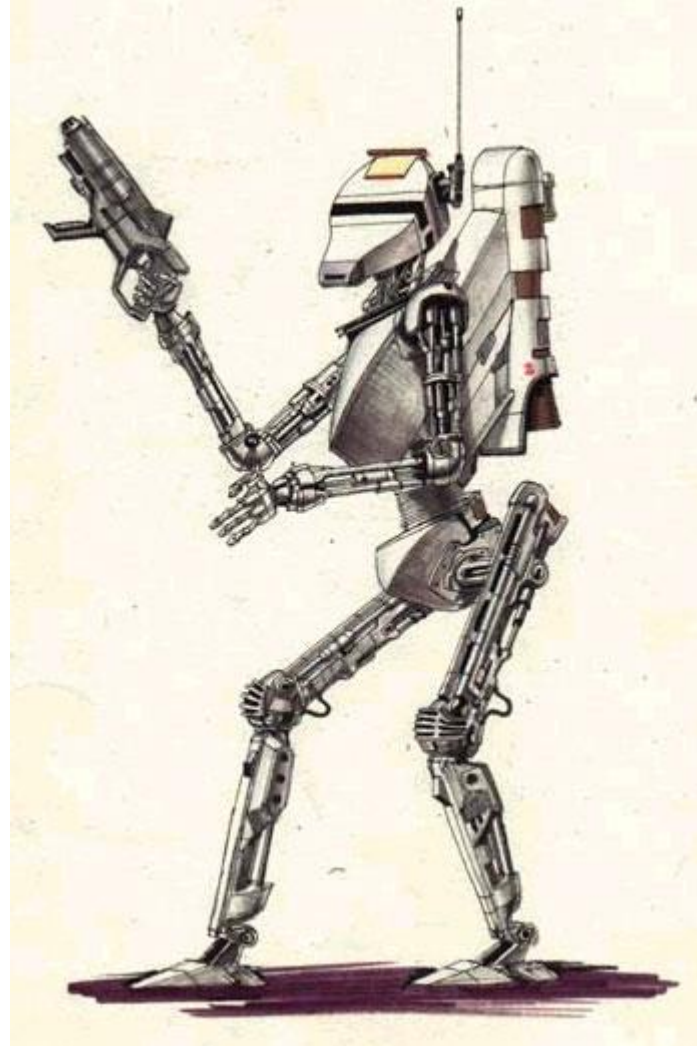


FP

Yamaha Moto-Bot



Questions?



Robo Sapiens

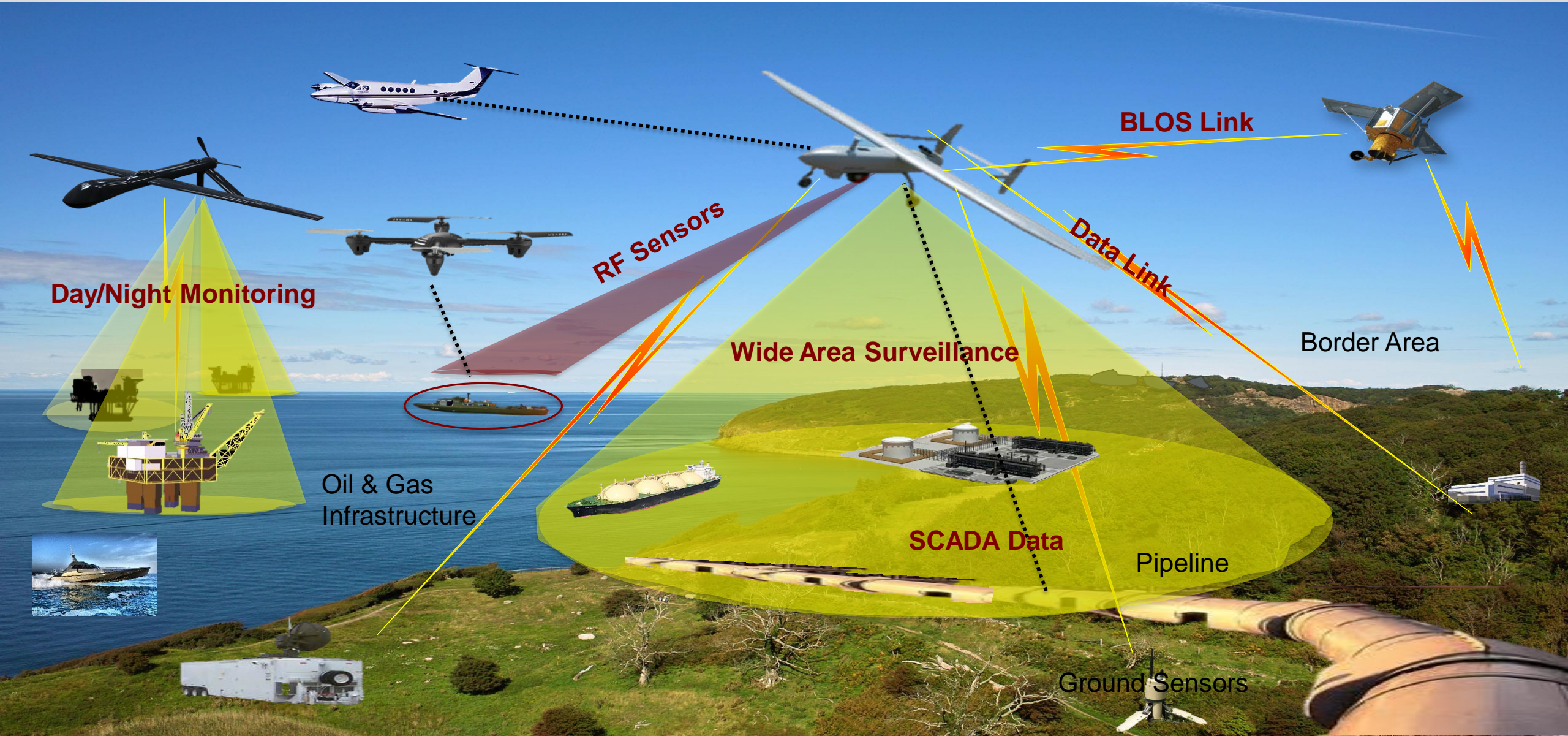
As technology advances it will provide a level of autonomy which will allow the vehicle to make some of the decisions on its own. If you have a weapon on the platform, you would never want to give up control.

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Future Distributed Architecture



Cooperative Drones



Dahir Insaat – Russia's Unmanned Gun & Missile Copter Container System: Combat Simulation

