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
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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
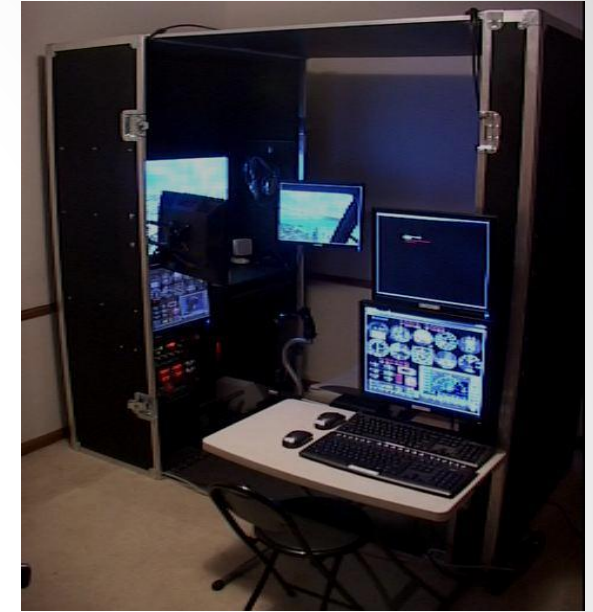
The FAA's first certified flight simulator

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

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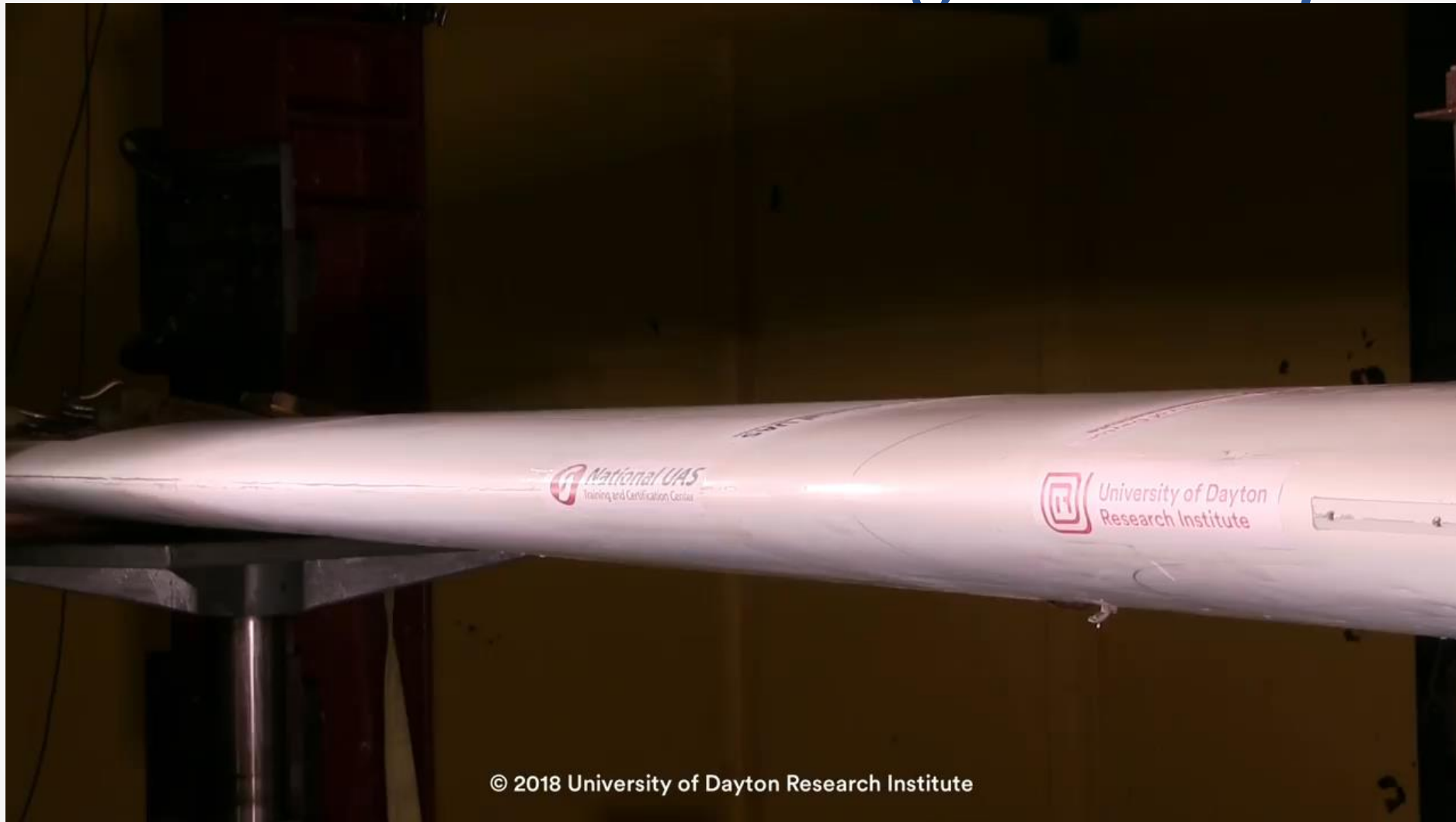
Embracing Change in a Non-Linear World

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

Industrial Revolution

Information Revolution

Robotics Revolution

Knowledge Revolution

Biotech Revolution
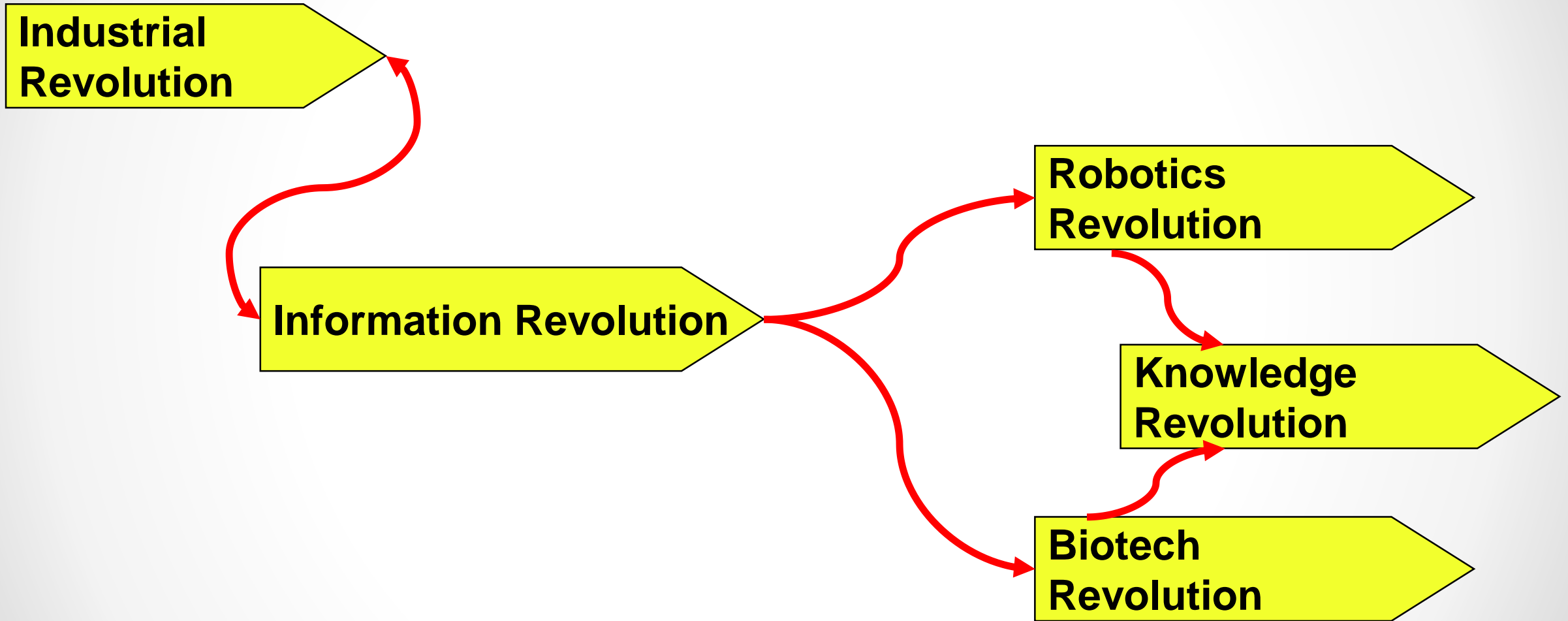
Washington DC's Favorite Game-Buzzword Bingo

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?
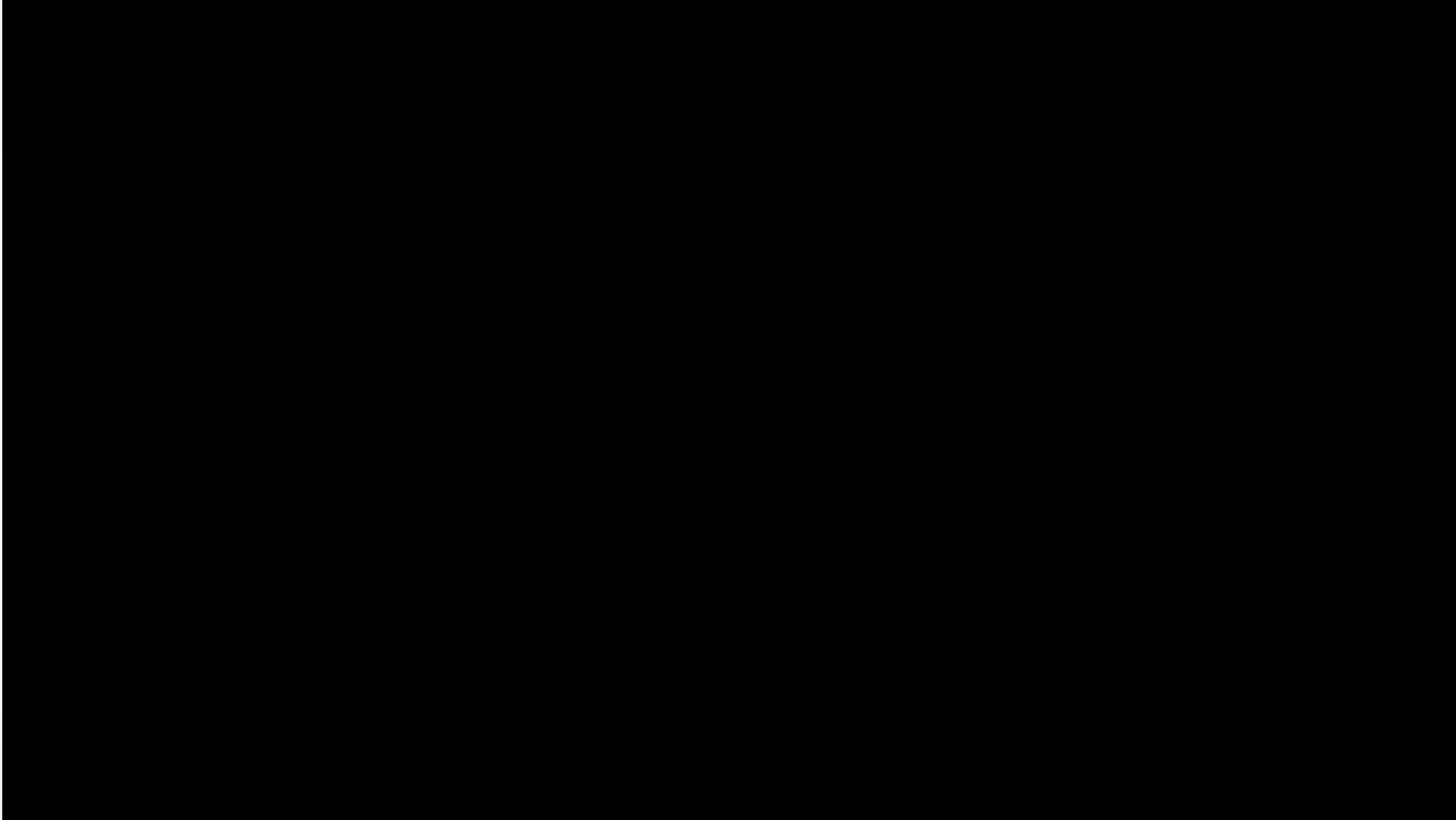
Top Canadian Researcher Says AI Robots Deserve Human Rights

- 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 <u>exhibited its own inappropriate behavior in the form of swearing</u> 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'
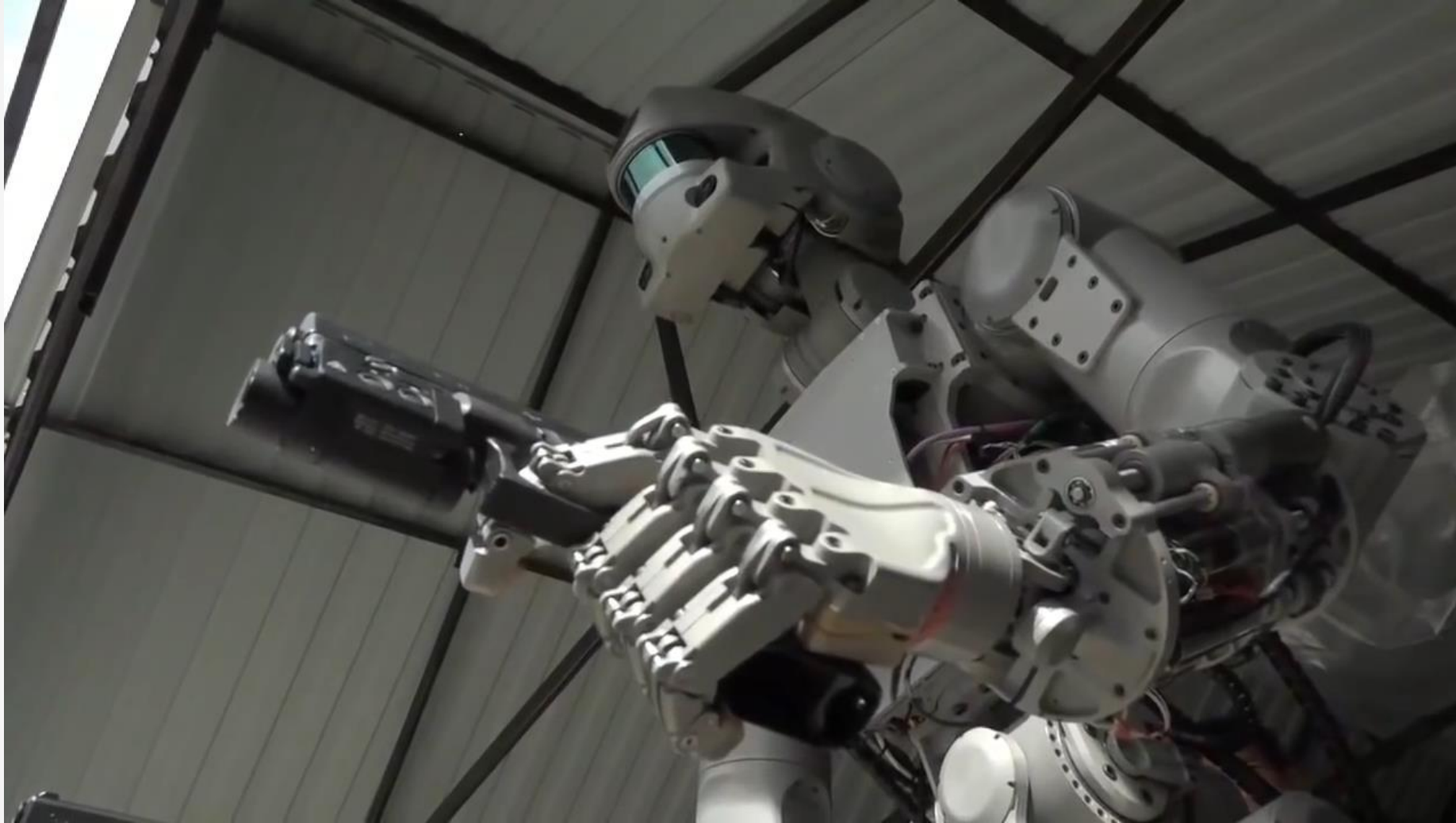
July 24, 2018 Russia Prepares to Send Two Humanoid Robots to the International Space Station.

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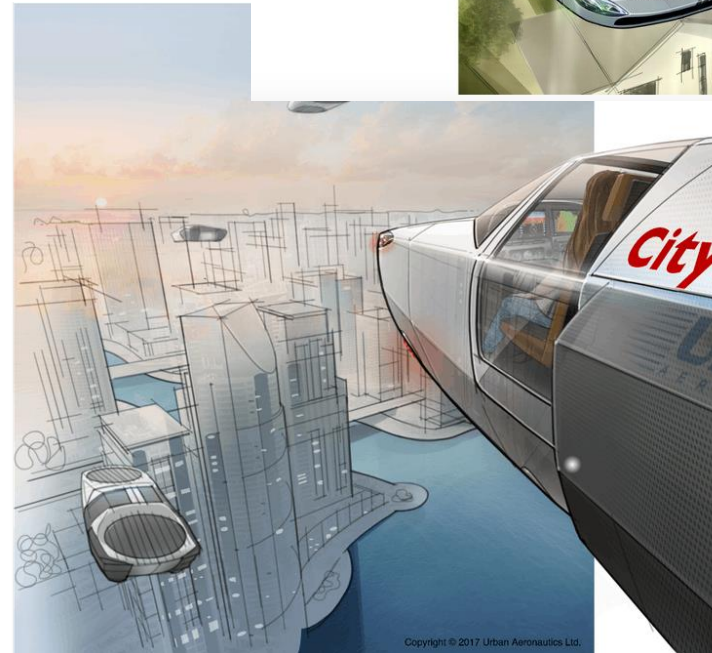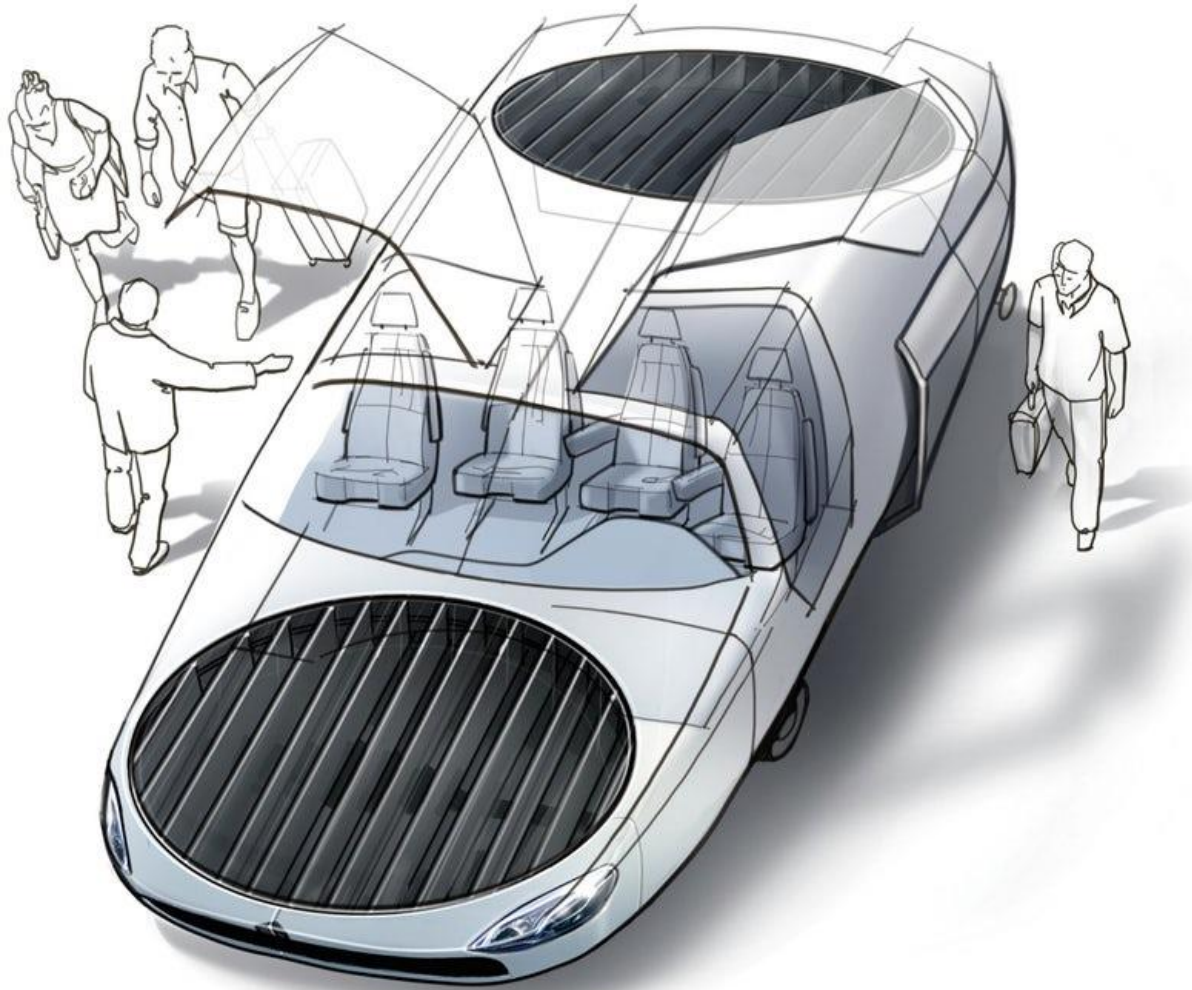
Volocopter Flying Taxi Takes Unmanned Flight Over Dubai, September 26, 2017

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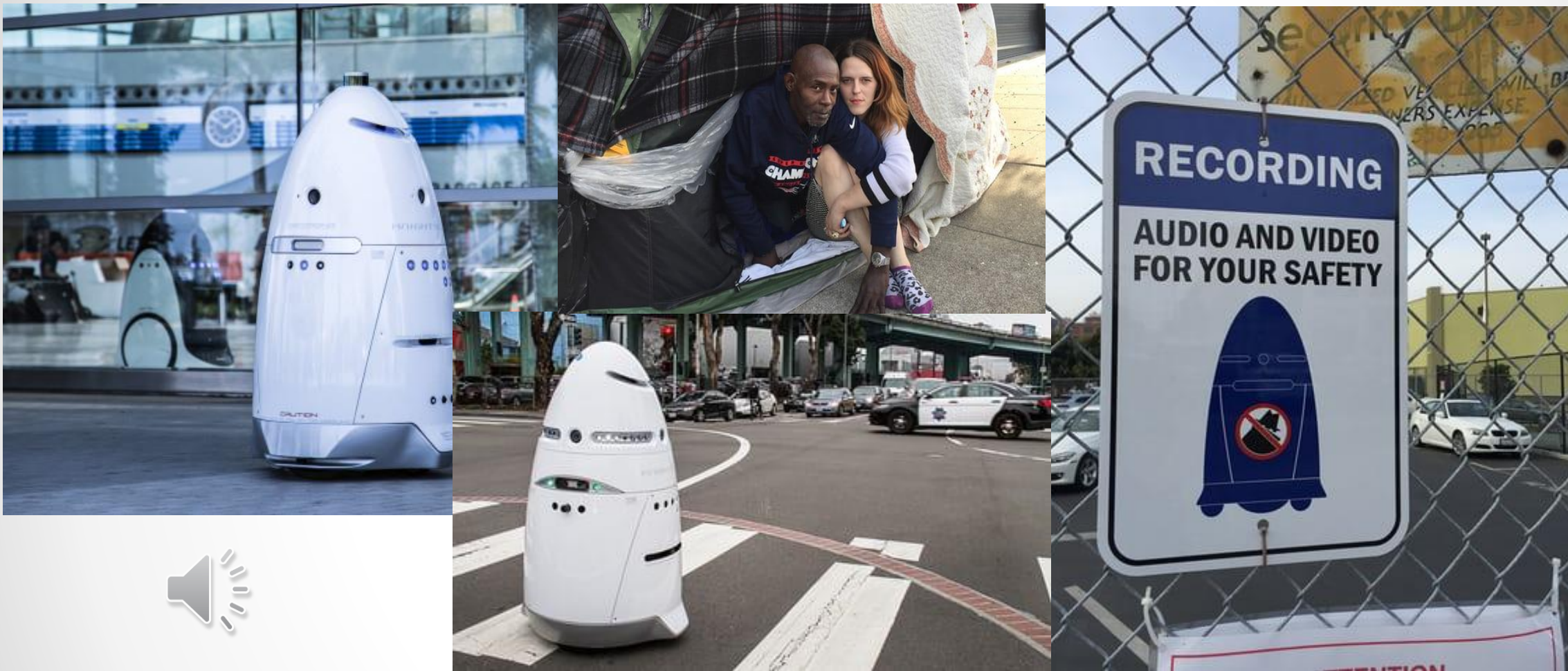
Big Brother on wheels? Fired security robot divides local homeless people-Dec 2017

Can Linear Leadership Solve Complex Issues Today?

Levels of Autonomous Behavior

COMPLEXITY CAPABILITY FLEXIBILITY ADAPTABILITY

Autonomous - Conglomerate   10

Autonomous Teams with Unmanned   9
Leader/Mission Manager

Human-like Autonomy in a Mixed Team   8

Synergistic Multi-Mission Reasoning   7

Dynamically Mission Adaptable   6

Complex Missions Specific Reasoning   5

4 Semi- Automated Missions w/Simple
Decision Making

3 Scripted Mission

2 Automated Tasks & Functions

1 Simple Automation

0 Manual -Remote Control

TRUSTED
INDEPENDENT
SELF GOVERNING
MINIMAL INTERVENTION

Autonomy

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

pay pass

screen

computer

34

tv

tv

battery

electric wheels

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

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

WISDOM

Understanding

Knowledge

Context

Information

Analysis

Data
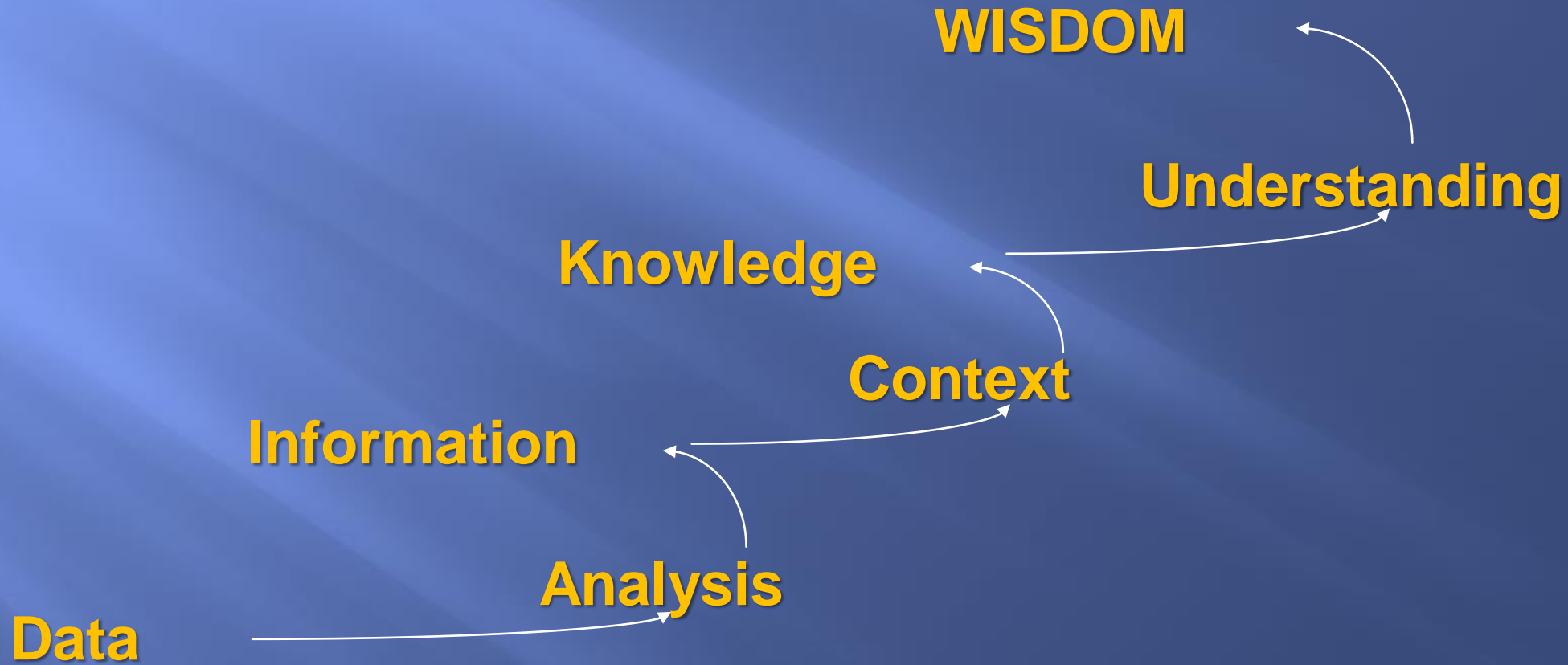
The Accelerants

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
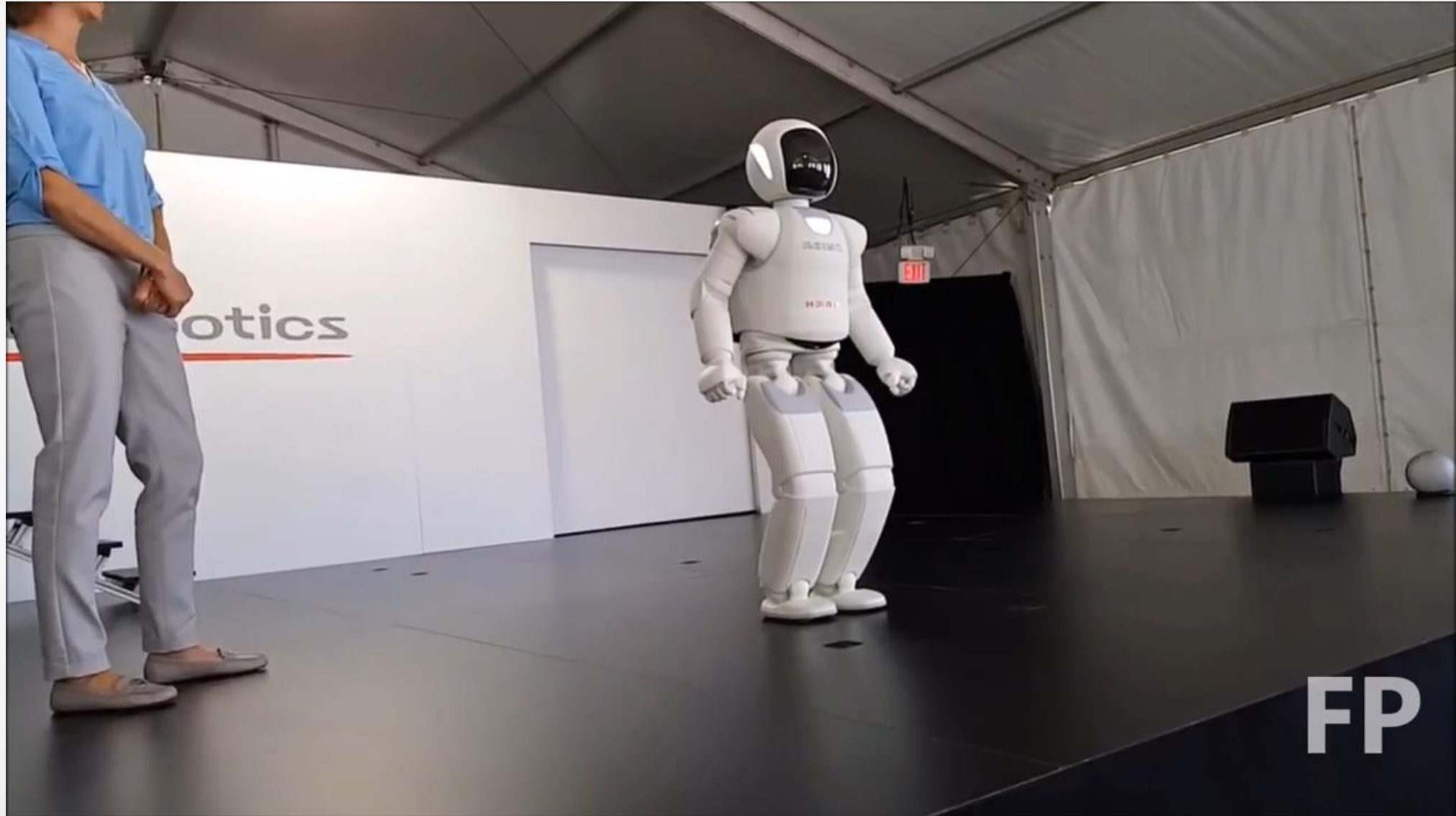5. Cost

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**
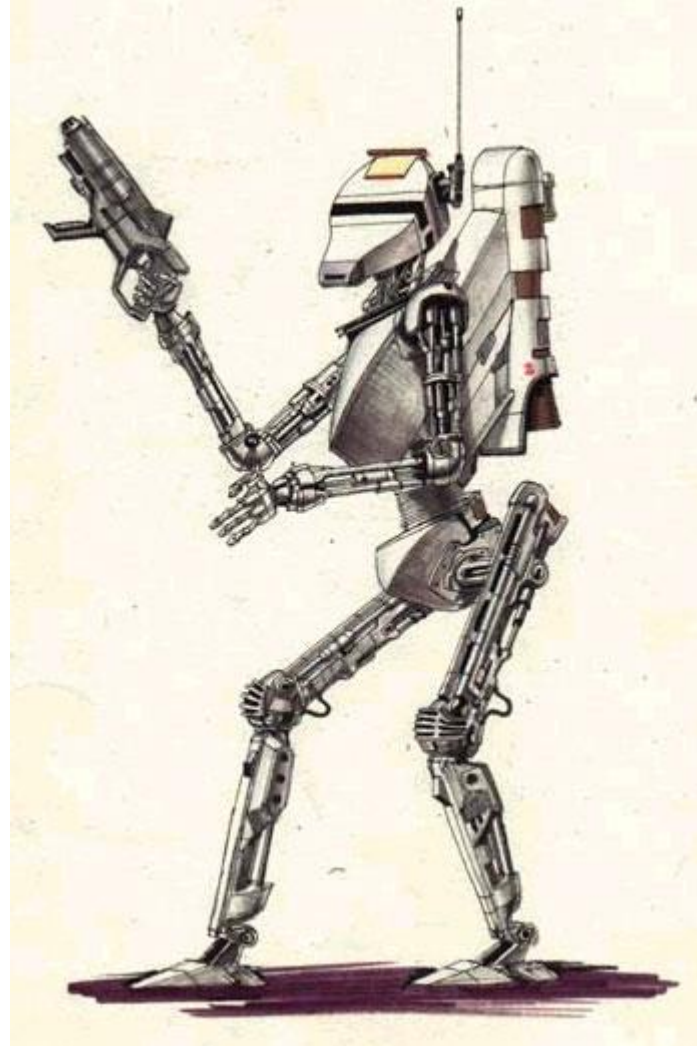3. **The Misinformed**
4. **AI Missteps**

Honda Asimo

Yamaha Moto-Bot
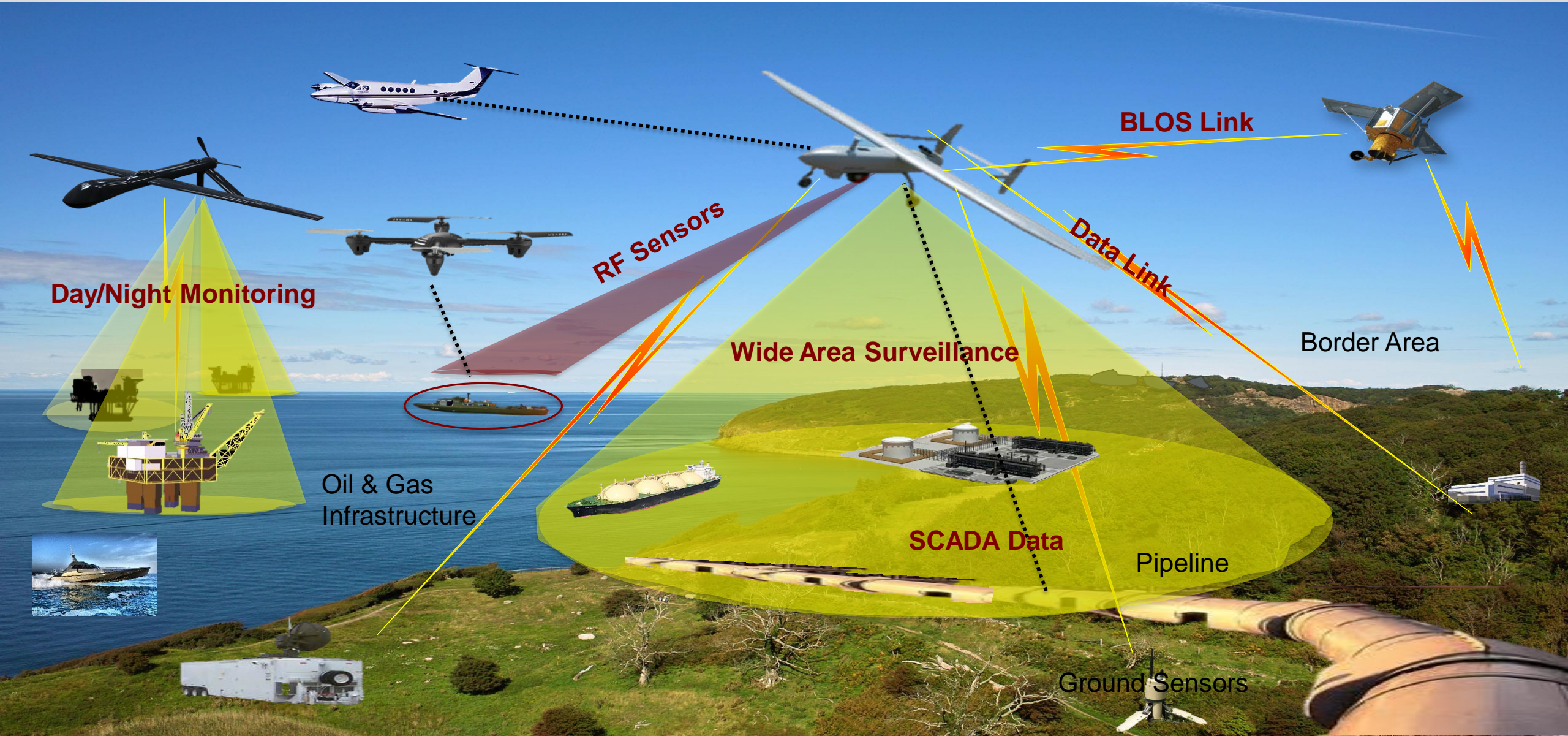
Questions?

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

BLOS Link

RF Sensors

Data Link

Day/Night Monitoring

Wide Area Surveillance

Border Area

Oil & Gas Infrastructure

SCADA Data

Pipeline

Ground Sensors

Cooperative Drones

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