DEPARTMENT OF HOMELAND SECURITY

INTERFERENCE DETECTION MITIGATION (IDM)

VIGILANCE ~ SAFEGUARDING AMERICA

DHS Position, Navigation & Timing (PNT)
Program Management Office
John Merrill – Program Manager

CGSIC September 2012

Agenda

- Governance
- Existing and Emerging Threats
- Critical Infrastructure Interdependencies
- Patriot Watch Architecture
- Public Outreach – Collaboration with other Agencies
- Conclusions

Interference Detection & Mitigation (IDM) per NSPD 39

- Identify
- Analyze
- Locate
- Attribute
- Mitigate

Existing and Emerging Threats

1,978,000 hits on "GPS Jammer"

Critical Infrastructure

Agriculture and Food

Banking and Finance *

Chemical

Commercial Facilities

Communications *

Critical Manufacturing

Dams

Defense Industrial Base

Emergency Services

Energy *

Government Facilities

Healthcare and Public Health

Information Technology *

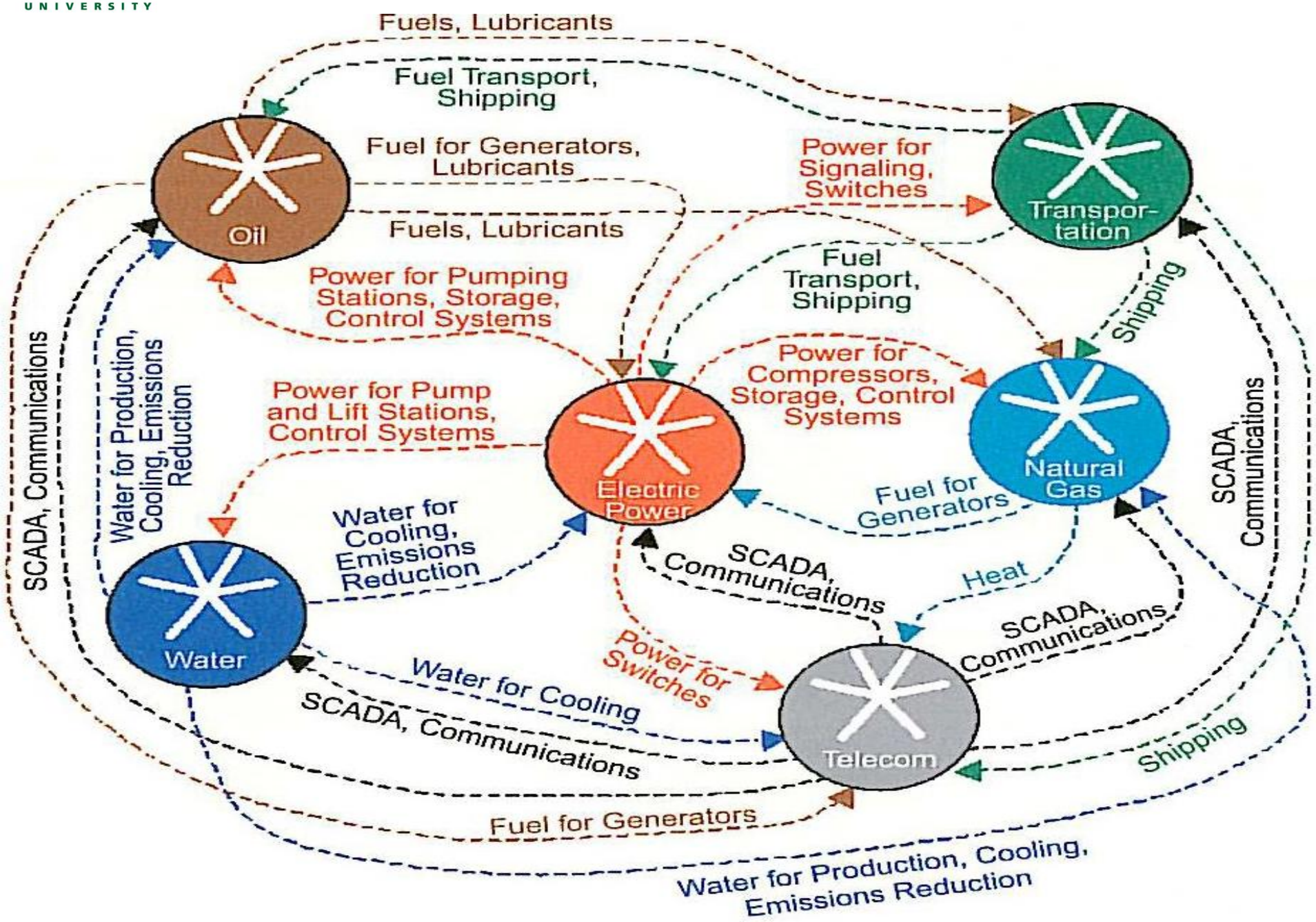
National Monuments and Icons

Nuclear Reactors, Materials and Waste

Postal and Shipping

Transportation Systems

Water


Fuels, Lubricants
Fuel Transport, Shipping
Fuel for Generators, Lubricants
Fuels, Lubricants
Power for Signaling, Switches
Oil
Transpor-tation
Power for Pumping Stations, Storage, Control Systems
Fuel Transport, Shipping
Shipping
SCADA, Communications
Water for Production, Cooling, Emissions Reduction
Power for Pump and Lift Stations, Control Systems
Power for Compressors, Storage, Control Systems
Electric Power
Natural Gas
SCADA, Communications
Water for Cooling, Emissions Reduction
Fuel for Generators
SCADA, Communications
Heat
SCADA, Communications
Water
Power for Switches
Water for Cooling
Telecom
SCADA, Communications
Shipping
Fuel for Generators
Water for Production, Cooling, Emissions Reduction

Patriot Watch™ Initiative

- Protect the Nation's 18 Critical Infrastructure & Key Resource Sectors (CIKR)
- System-of-Systems, Open Architecture, Multi-Phased/Multi-Layered Approach
- Near Real-Time Situational Awareness of Position Navigation and Timing (PNT) Interference
  - Leverage Existing mature capabilities & focus on the data, less on system/device
  - Common Data Structure for Information Sharing

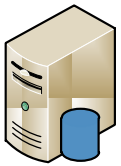
Patriot Watch™ Architecture

Monitoring & Collection

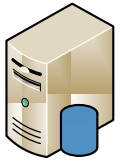
Processing

Analysis & Evaluation

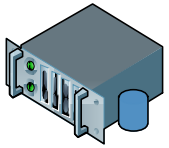
FCC/FAA Receiver/Sensors



FAA MINNOW

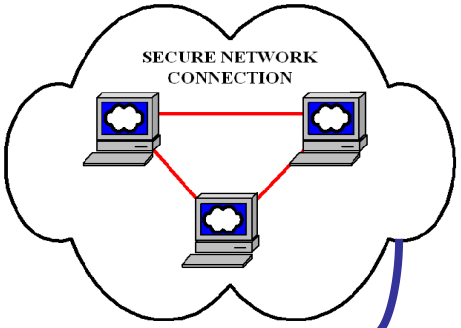


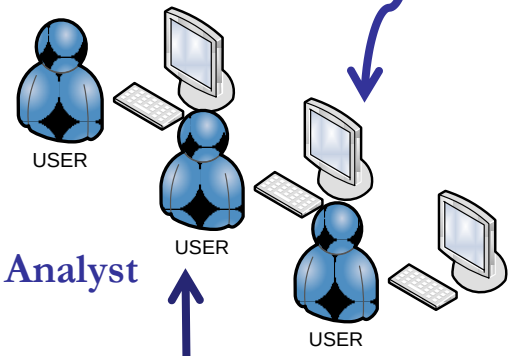
UNITRAC



UNCLASSIFIED

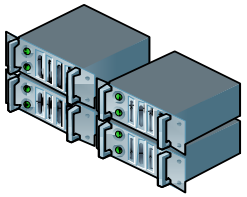
JLOC Master Station





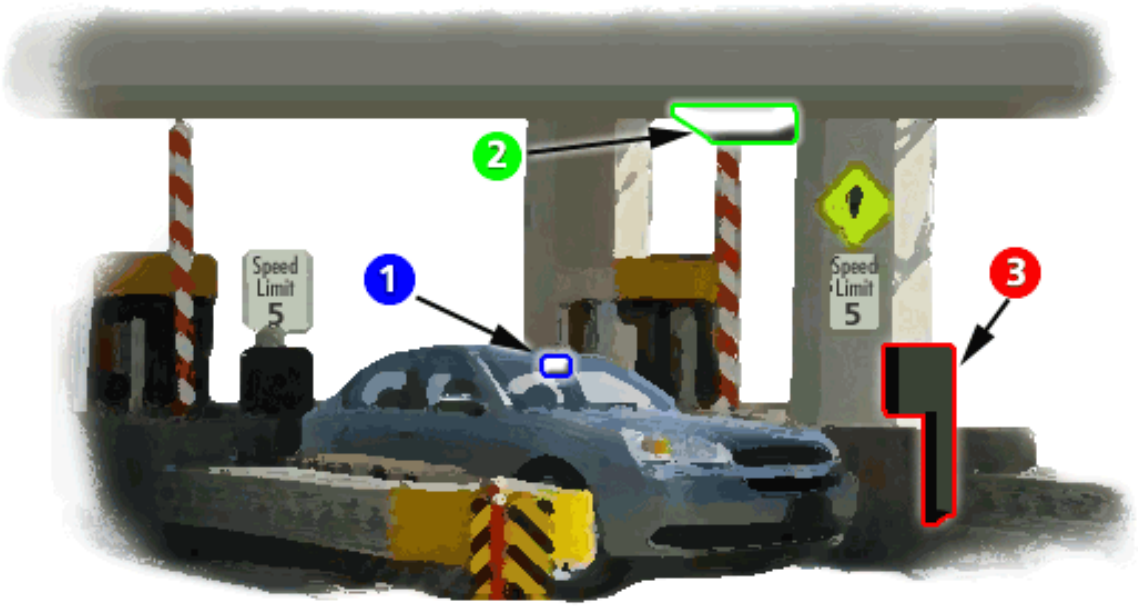
Analyst

Other Systems that use GPS that could provide near real-time data: DGPS, CORS, Cell Sites, Transport Companies



FAA PNTIP
SETS and COTS
Jammer Library

Toll-Booth Concept



1 Jammer

2 Jammer Sensor

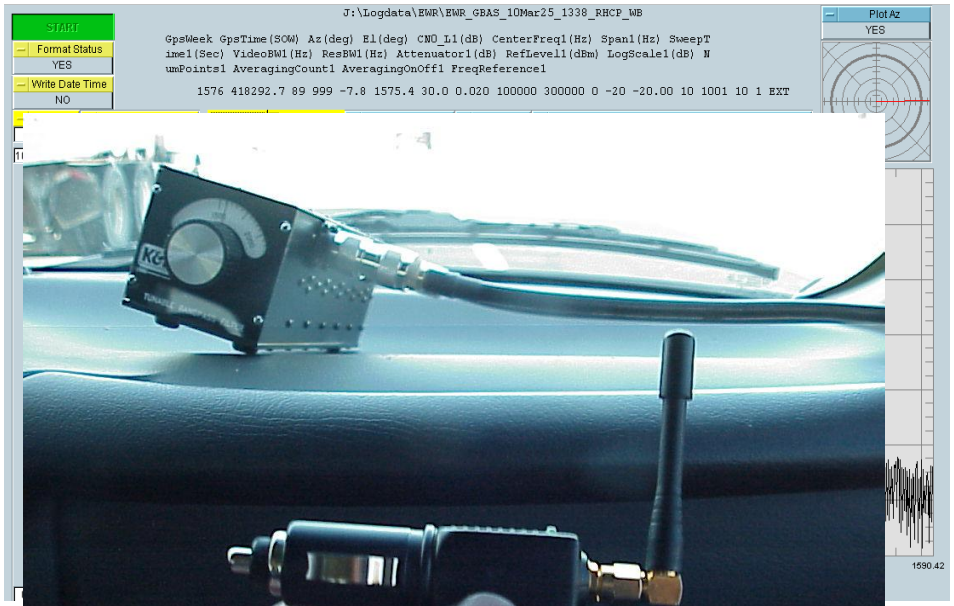
3 Integrated Camera System

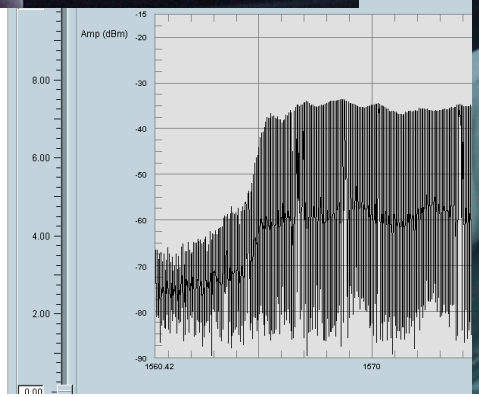
- Integrated with Camera System
- Alert Enforcement Personnel to Jammer Presence
- Detect & Track Jammers Approaching Entry Point
- Multi-Lane Distinction
- UNITRAC Database Connection

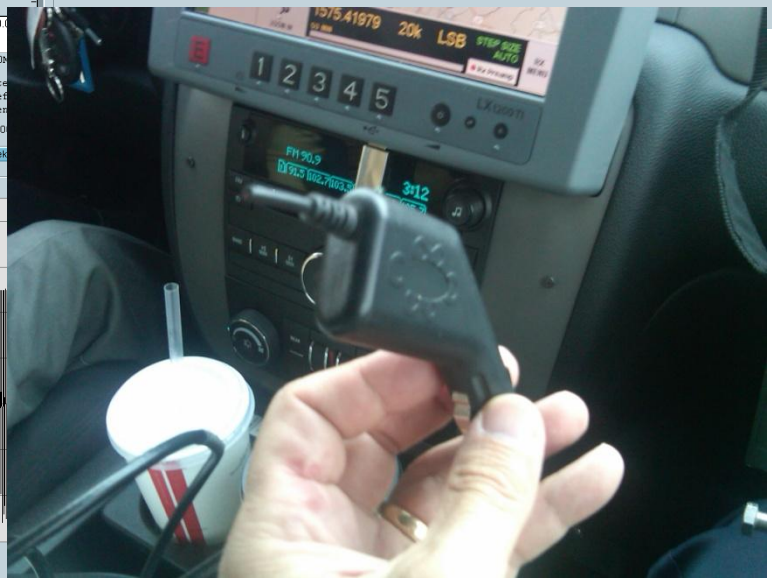
Graphic Source: http://www.northjersey.com/news/030211_NJ_Turnpike_to_accept_E-ZPass_in_all_lanes_.html

IDM Collaboration Sites

GPS COTS Jammer Digital Library







FCC Jammer Enforcement

http://www.fcc.gov/encyclopedia/jammer-enforcement

*****ALERT*****

Federal law prohibits the operation, marketing, or sale of any type of jamming equipment, including devices that interfere with cellular and Personal Communication Services (PCS), police radar, Global Positioning Systems (GPS), and wireless networking services (Wi-Fi).

"Jamming devices create serious safety risks. In the coming weeks and months, we'll be intensifying our efforts through partnerships with law enforcement agencies to crack down on those who continue to violate the law. Through education, outreach, and aggressive enforcement, we're tackling this problem head on."

-- P. Michele Ellison, Chief, Enforcement Bureau

For more information: http://www.fcc.gov/encyclopedia/jammer-enforcement

If you see something…

Say Something™

- **USCG Navigation Website:**
  - http://www.navcen.uscg.gov/?pageName=gpsUserInput
- **Federal Communication Commission website:**
  - http://www.fcc.gov/complaints
  - For further info e-mail: jammerinfo@fcc.gov

Conclusion

- Government (Federal and civil) agencies collaborating to address PNT IDM
- The ability to share information in a timely manner key to successful PNT IDM
- Leverage existing mature technologies that use GPS and harvest near real-time data
- Collecting data to support formal analysis; trends on jammers
- COTS Jammer Library will provide initial fingerprint of devices encountered

THANK YOU

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