

# TechAmerica

WHERE THE FUTURE BEGINS

THE ASSOCIATION OF COMPANIES DRIVING INNOVATION WORLDWIDE

A Day Without Space: If our GPS enterprise was compromised, what impact would it have on our nation's economy?

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# TechAmerica Federal Public Sector

## 2013 Update:

- Provided business intelligence and policy advocacy impacting over \$87B in public sector contracts.



## *Defense*

- Sequestration
- Intelligence Community
- DoD Acq. Reform
- Logistics Modernization
- Information Assurance

## *Federal/Civil*

- Big Data
- Cloud Computing
- Aviation & **Space**
- Mobility
- Data Center Consol.

## *Notable Events*

- “Defense Sequestration & U.S. National Security: A War Fighter's Perspective”- July 18 at TechAmerica
  - Senators Kelly Ayotte & Joe Lieberman
- “The Potential Impact of Sequestration on Non-Defense Federal Agencies”  
– October 22 at TechAmerica

## *Homeland Security*

- Cybersecurity
- Identity Management
- RFID
- Secure Borders

## *Procurement Policy*

- GSA
- Regulations
- Supply Chain Assurance & Counterfeiting

## *Vision Conference*

## *Federal CIO Survey*



# Space Enterprise Council-George Marshall Institute 'A Day Without Space' Forum Series

- Long standing forum series with George Marshall Institute focusing on the economic and national security ramifications if our space asset enterprise was compromised
- Members from the agriculture, aviation, defense, and transportation industries have all spoken at our forums

# GPS Impact on our Nation's Economy and Business verticals that are dependent on it

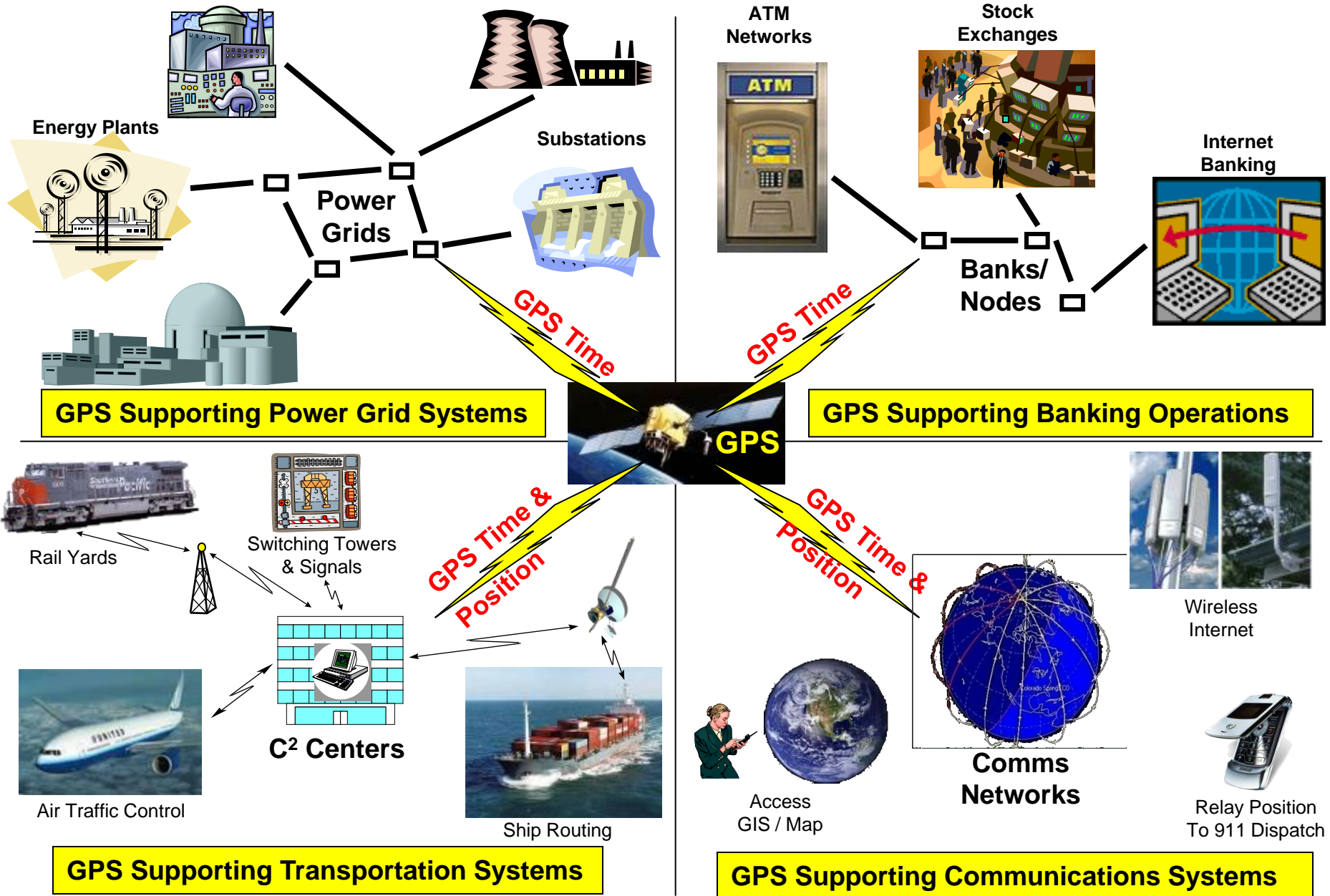
- According to a recent report from the GPS Alliance, the commercial GPS sector alone accounted for \$68 billion dollars and 3.3 million jobs
- Business verticals covered are:
  - Ground transportation
  - Aviation
  - Machine Control
  - Marine
  - People-tracking
  - Precision Ag.
  - Railway
  - Surveying/mapping
  - Timing/Synchron.



# GPS Equipment Revenues by Segment, 2005-2010 (in \$ billions)

	2005	2006	2007	2008	2009	2010	Growth
<b>Commercial</b>	<b>\$4.686</b>	<b>\$6.538</b>	<b>\$8.719</b>	<b>\$9.980</b>	<b>\$9.353</b>	<b>\$10.298</b>	<b>120%</b>
Ground transport.	1.205	2.145	3.479	4.233	4.085	4.213	250%
Aviation	0.209	0.278	0.314	0.361	0.271	0.325	56%
Machine control	0.32	0.367	0.408	0.443	0.467	0.551	72%
Marine	1.65	2.351	2.978	3.254	2.766	3.254	97%
People-tracking	0.013	0.014	0.016	0.018	0.035	0.06	352%
Precision Ag.	0.48	0.497	0.499	0.49	0.467	0.499	4%
Railway	0.006	0.006	0.006	0.006	0.006	0.006	0%
Surveying/mapping	0.517	0.563	0.673	0.736	0.7	0.833	61%
Timing/Synchron.	0.287	0.317	0.346	0.439	0.558	0.558	94%

# Extent of GPS Dependencies



# Different Scenarios for GPS Disruption

- Brownouts
  - Dr. Parkinson's presentation
- Intentional Jamming
  - North Korea/South Korea
- Spoofing
  - COTS spoofing kit available for under \$2K
- Unintentional Jamming
  - Most prevalent of the disruption scenarios

# Unintended Jamming

- Rome, NY, ADC (3 days/5 watts/ several hundred kilometers) (1997-1998)
- St. Louis Airport (1990s)
- Butte, Montana (? days, spurious harmonics)
- Monterey Bay (many months/ VHF/UHF TV antenna radiating above the L-band noise floor) (~2001)
- San Diego Navy Test Center (4 hrs, 500 mw) (2004)



# What is the economic impact to commercial GPS users if service is disrupted?

- According to the GPS Alliance, the direct economic costs to both commercial GPS users and manufacturers are estimated to be \$96 billion per year in the US, equivalent to 0.7 percent of the U.S. economy
- The chart listed below represents the estimated annual economic costs of GPS signal disruption:

<b>DIRECT ECONOMIC IMPACTS</b>		
	<b>100 percent Degradation (in \$ billions)</b>	<b>50 percent Degradation (in \$ billions)</b>
<b>Commercial GPS Users</b>	\$87.2	\$43.6
Foregone increased in productivity and cost-savings	\$67.6	\$33.8
Precision agriculture (crop farming)	\$19.9	\$10.0
Engineering Construction (heavy & civil, and surveying/mapping)	\$ 9.2	\$ 4.6
Transportation (commercial surface transportation)	\$10.3	\$ 5.1
Other commercial GPS users	\$28.2	\$14.1
Investment losses in GPS equipment	\$19.6	\$ 9.8
<b>GPS Manufacturers</b>	\$ 8.8	\$ 4.7
Foregone GPS equipment sales	\$ 8.3	\$ 4.1
R&D spending	\$ 0.5	\$ 0.5
Opportunity costs of R&D spending	\$ 0.1	\$ 0.1
<b>TOTAL</b>	<b>\$96.0</b>	<b>\$48.3</b>

# GPS as a critical national infrastructure

- Spoke before the Board (Nov. 2009)
- Asked the Board to re-examine GPS in the context of both Economic and National security
  - Board work has helped determine real (current) impact of GPS
  - Has also sparked discussion of a national operational risk assessment and mitigation plan
- Time is ticking on this issue
  - GPS Daily “US Army seeks new technology to replace GPS”
- No additional regulation
  - Regulation stifles INNOVATION

# GPS as a critical national infrastructure

- Impact of Mobility
  - Over the last decade, has transformed us as a nation
  - Has helped propel GPS technology into the mainstream
  - MOBILITY is the force multiplier that should be one of the driving factors that helps get GPS listed as a critical national infrastructure.
  - How can we get this to happen?

# PPD-21 Critical Infrastructure Security and Resilience

- Released in Feb. 2013
- Directs Executive Branch to update the National Infrastructure Plan and report out within 120 days
  - Integrated [interagency] Task Force will be integrating efforts for delivering PPD requirements



# Integrated Task Force Key Tasking: Cyber-Dependent Infrastructure Identification

- Responsible for identifying critical infrastructure where a cybersecurity incident could result in catastrophic regional or national effects on public health or safety, economic security, or national security, as well as evaluating how best to enhance the ongoing prioritization process for all critical infrastructure.
- Under this definition, the USG should give strong consideration to labeling GPS critical national infrastructure.