

# AFTRCC and NASCTN

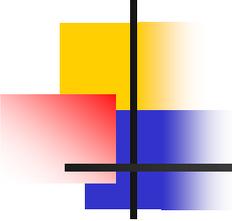
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## Presentation to ITEA

May 10, 2017

Las Vegas, NV

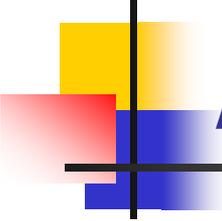
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505 9<sup>th</sup> Street, NW  
Washington, DC 20004  
202-776-5243



# AFTRCC

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- What is AFTRCC ?
  - Aerospace and Flight Test Radio Coordinating Council, Inc.
- Non-profit organization founded in 1954 to represent the aerospace industry on flight test spectrum policy issues, and for the coordination of flight test frequencies, telemetry and voice.
- Advocates aerospace interests in flight testing before policy-makers in Washington.
- Certified by the FCC as the non-government coordinator for flight test telemetry (aka aeronautical mobile telemetry, or "AMT") and voice frequencies.



# AFTRCC's Mission

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From AFTRCC's Certificate of Incorporation (emphasis added) –

- “advance the arts and sciences of radio communications and control, and the orderly and efficient allocation and utilization of the electromagnetic spectrum, as connected or employed in aeronautical and space flight evaluation of vehicles, spacecraft, related devices or major components thereof or as may otherwise affect the interests of the aerospace manufacturing industry; and
- concern itself with radio frequency management, planning, coordination and control in the aerospace manufacturing industry and any proposed or needed changes, amendments, or modifications of rules, policy or other governmental requirements relating to the usage of the electromagnetic spectrum which may affect the interests of the aerospace manufacturing industry.”

# AFTRCC Membership

**Bell Helicopter** **TEXTRON**

 **BOEING**

**Gulfstream®**  
A GENERAL DYNAMICS COMPANY

 **NORTHROP GRUMMAN**  
Electronic Sensors & Systems Sector



**National Security Technologies LLC**  
Vision • Service • Partnership

**communications**  
Integrated Systems

**Beechcraft**

  
**Cessna**

**Hawker**

**BOMBARDIER**  
**LEARJET**

**LOCKHEED MARTIN**

**SPIRIT**  
AEROSYSTEMS

TEXTRON AVIATION

**QUASONIX**

**ISA**  
Integrated Systems and Avionics Center

**L3 Telemetry East**



**communications**  
Communication Telemetry - East



**SIKORSKY**  
A LOCKHEED MARTIN COMPANY

**Raytheon**

 **HERLEY**  
Lancaster

**SCALED**  
COMPOSITES

Gilfillan

 **ITT Industries**

**Honeywell**

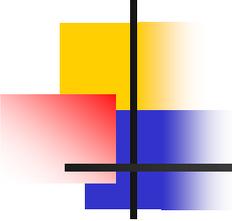
**Rockwell**  
**Collins**

  
**communications**  
Telemetry-West

**SAT CORPORATION**  
An Integral Systems Company [www.sat.com](http://www.sat.com)



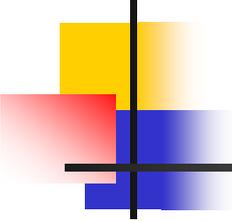
**Agilent Technologies**



# AFTRCC History

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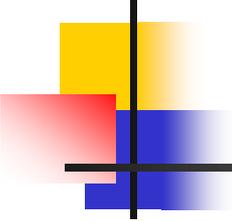
- Among its many achievements --
  - Represented aerospace industry in successful effort to secure allocation of the 1435-1535 band for Government/Non-Government telemetry; prepared and filed extensive materials with the FCC in support of same.
  - Advocated for addition of 2310-2390 MHz for AMT at 1979 World Administrative Radio Conference, and thereafter secured FCC adoption of rules to implement same.
  - Successfully defended L-band against 1990 allocation proposal by Satellite CD Radio (predecessor of SiriusXM Radio)



# AFTRCC History

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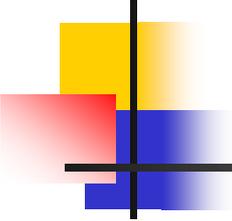
- Defended AMT interests at FCC *versus* out-of-band interference from WCS operators in 2345-2360 MHz; helped secure changes in FCC Rules for tighter roll-off.
  - Developed sophisticated software with Johns Hopkins Applied Physics Lab to facilitate coordination of WCS (AT&T) licensees in 2345-2360 MHz vis-à-vis AMT at 2360-2390 MHz.
  - Works closely with AFCs in resolving WCS carrier coordination requests.



# AFTRCC History

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- Represented AMT interests in FCC litigation with GE Healthcare and Philips Healthcare, and subsequent negotiations regarding FCC rules for secondary medical telemetry allocation in 2360-2390 MHz.
  - AFTRCC designated as AMT coordinator for medical telemetry proposals in band.
- Recently represented AMT interests before the FCC in connection with rules applicable to wireless microphone use of 1435-1525 MHz on a secondary basis.
- Throughout, AFTRCC consults closely with its government partners in the AMT community.

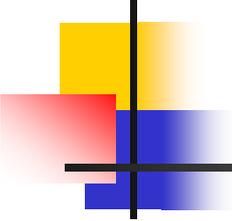


# Significance of The Mission

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AMT spectrum is in the critical path for U.S. aerospace:

- The U.S. aerospace and defense (“A&D”) industry has the largest trade surplus of any U.S. industry -- \$90 billion in 2016 – a distinction the industry has enjoyed for decades.
  - A&D accounted for 10% of all U.S. exports in goods and is the nation’s second largest gross exporter.
  - Civil aerospace exports accounted for 85% of total A&D exports in 2016.
- In 2015, the U.S. A&D industry generated \$608 billion in sales and employed *1.7 million* Americans in high-wage and high-skill sectors across the economy.

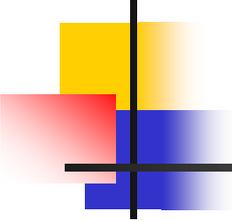


# Significance of The Mission

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- U.S. civil aviation, which relies on aerospace products, employs nearly *12 million* people, including many highly skilled, high paying positions.
- The average salary of an employee in the U.S. aerospace & defense industry is 44 percent above the national average, or \$93,000 in wages and benefits.
- Sale of goods/services tied directly or indirectly to civil aviation constitutes \$1.3 trillion, or about *5.6% of U.S. GDP*.
- U.S. leads the world in aerospace research, development and manufacturing

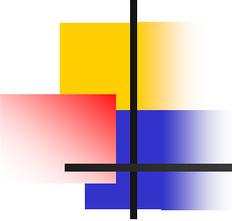
Source: Aerospace Industries Association, 2017.



# Significance of The Mission

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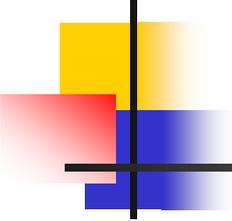
- AMT spectrum used for telemetry of test aircraft parameters such as strain gauges on the wings, engine temperatures, and fluid pressures, data regarding complex avionics systems, and HD video of control panel and pilot stresses, is vital to pilot safety and industry productivity
- More testing and data required for completion of aircraft certification.
  - For example, when Boeing 707 flight tested in late '50s, 300 data points were monitored; when 777 flight tested, 40,000 data points monitored.



# Significance of The Mission

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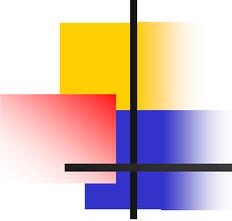
- Flight testing represents as much as 15-20% of cost of developing a new aircraft.
  - Flight test programs are complicated evolutions frequently involving hundreds of range and contractor personnel and numerous assets like chase planes, emergency medical crews, calibration of antennas, optical trackers, etc. Once delayed, it may take several days to re-assemble/re-calibrate all assets.
  - Flight test delays are extremely expensive, e.g. delays for a major program can exceed \$1 million per hour
  - Besides direct costs, delays impact delivery schedules and handicap global competitiveness



# Significance of The Mission

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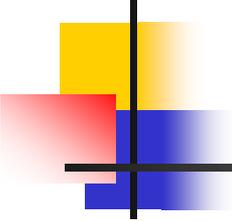
- Delays not only contribute to cost overruns, but can impact combat capability
- AMT spectrum will remain under threat of reallocation along with much of the rest of spectrum below 6 GHz
  - Going forward, any spectrum shortfall will not only mean delay in major programs, but also prevent the US from testing system-of-systems type weapons in the way the total system is intended to be deployed.
- *AFTRCC is committed to its mission of protecting spectrum set aside for flight testing.*

The logo graphic consists of a vertical black line on the left, a horizontal black line below it, and three overlapping squares: a yellow one at the top left, a red one at the middle left, and a blue one at the bottom left. The text 'NASCTN' is positioned to the right of the vertical line.

# NASCTN

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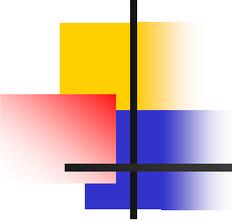
- What is NASCTN ?
  - The National Advanced Spectrum and Communications Test Network
- Where is it located ?
  - Located at Center for Advanced Communications (CAC), Boulder, Colorado



# NASCTN

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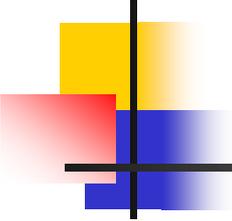
- Dept. of Commerce (DOC) established NASCTN to:
  - Improve coordination between Federal and non-Federal spectrum users
  - Engage DOD and other Federal Departments and Agencies at the earliest points of industry development of spectrum sharing concepts
  - Support the decision process in regards to spectrum with scientifically validated data
  - Mission: increase commercial and Federal access to the spectrum by helping to accelerate the design and deployment of spectrum-sharing technologies through accurate testing and modeling.



# NASCTN

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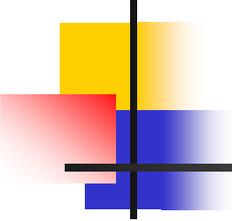
- Via NASCTN, DOC -- together with DOD and other agencies -- facilitates a trusted test environment.
- Contributors include:
  - National Institute of Standards and Technology (NIST)
  - National Telecommunications and Information Administration (NTIA)
  - DoD Chief Information Officer (CIO)
  - DoD Acquisition, Technology and Logistics (AT&L), Test Resource Management Center (TRMC)



# NASCTN

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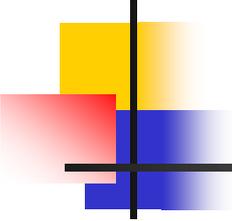
- Objectives include:
  - Provide a trusted capability for federal, academic and industry spectrum users to facilitate spectrum sharing studies; optimize access to engineering capabilities; and engage federal, academic and industry spectrum users' in active collaboration
  - Provide a source for spectrum test data, analyses and reports that can be made available to assist in testing, technology assessments and other research; and facilitate coordination, rapid access and engagement of member engineering capabilities while protecting proprietary, classified, and sensitive information



# NASCTN

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- NASCTN will:
  - Lead outreach and engagement activities to identify spectrum-related testing and evaluation needs.
  - Disseminate information about participating, modelling and simulation, laboratory and testing capabilities, availability and access requirements.
  - Facilitate access to test data, analysis and reports for DoC, DoD, industry, academic and government organizations so as to assist in policy making, technology assessments and other research efforts
  - Establish rules to maintain fairness, transparency, and integrity in all NASCTN efforts

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# NASCTN

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- Benefits:

- Arranging spectrum sharing tests with Federal systems
- Influencing current and future spectrum plans
- Sharing of resources and experts
- Provide fast and efficient means to engage a wide range of capabilities
- Assist with shared spectrum issues

Source material: NASCTN Presentation