

William J. Hughes Technical Center



FAA Labs in a Distributed and Collaborative Environment to Support V&V

October 10, 2012



FAA

External Facilities



Cockpit Simulators
 - NASA LaRC
 - NASA Ames



- Florida TB
 - NASA NTX
 - Research Partners
 - e.g Boeing



NAV Air

Tech Center Labs (Big Picture)

High Fidelity NAS Labs



ERAM



STARS



Common ARTS



Oceanic

Voice Comm



NIEC Display Lab



UAS Simulation



Cockpit Simulator



Tower Simulator

R&D Domain External Enclave

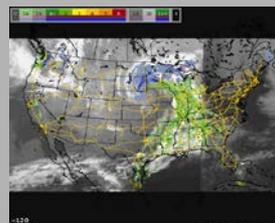


Simulated RADAR(s)

Target Generation Facility (Aircraft Simulation)



ATC Simulation



Weather Displays



TMU Displays



TMU Work Stations



AOC Dispatch Position

NextGen Surveillance (Live ADS-B Data)



360° Tower Simulator

Weather

Specialty Labs

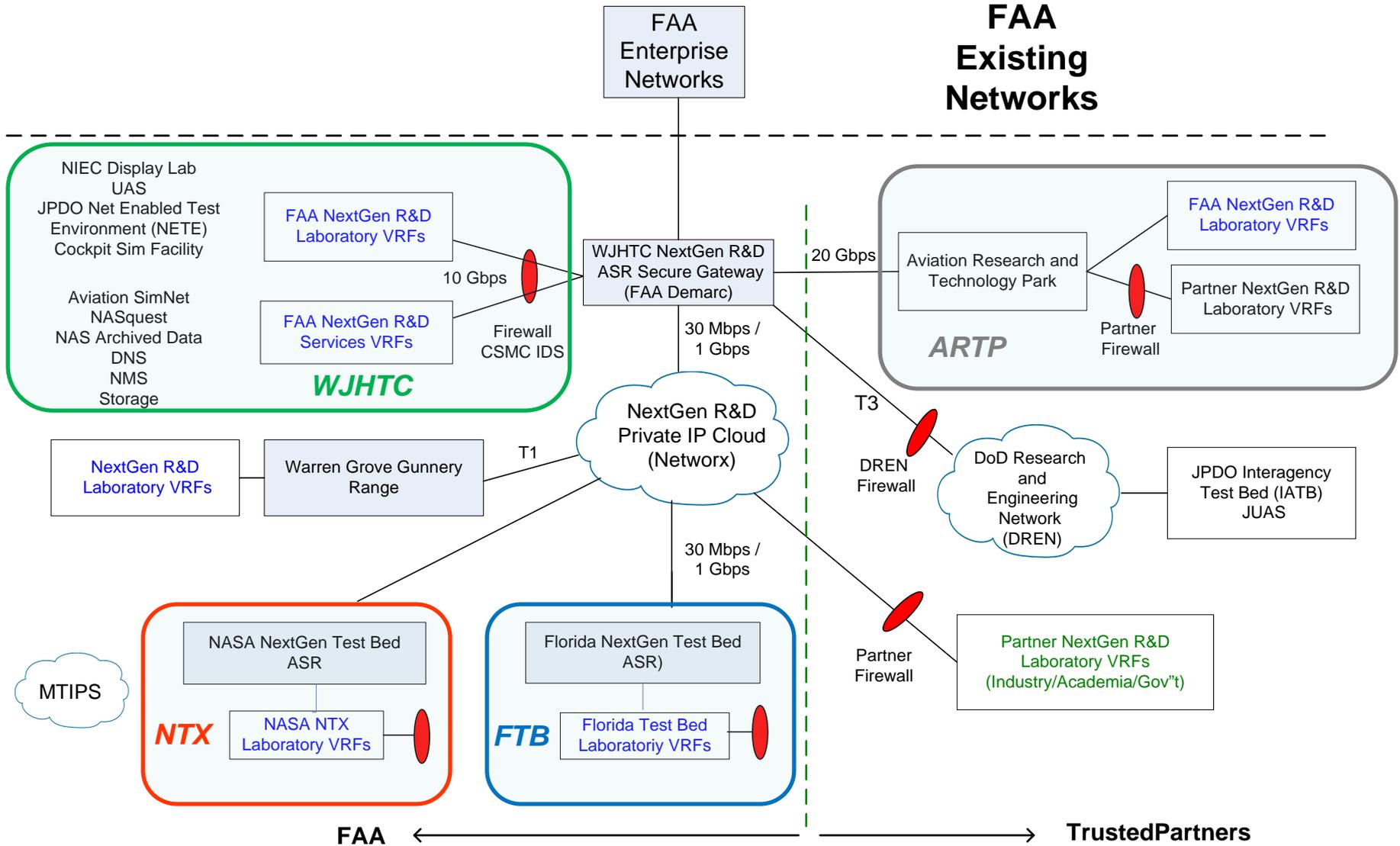


Data Comm

SWIM

Traffic Flow Mgmt

NextGen R&D Domain External Enclave



Distributed Simulation Demonstration

- **Distributed testing environment demonstrated in August, 2012.**
- **Multiple aircraft simulators (located at 5 different facilities) flying within common airspace simulated by the NIEC Display Laboratory**
 - **NIEC Display Lab**
 - Tower Simulator - DFW Center Tower
 - ATC Simulator – DFW TRACON
 - **Five Individual Cockpit Simulators**
 - NASA AMES Boeing 747
 - DoD NavAir Pax River RQ7 Shadow
 - Boeing Palmdale Boeing 737
 - Boeing Philadelphia V22 Osprey
 - FAA WJHTC Airbus 320



Successful Collaboration

- Shows “we can” have a more integrated Government and Industry platform to perform T&E activities
 - Tech Center Labs are integral part of that platform
- Shows “we can” overcome:
 - technical challenges of data exchange using different IT frameworks.
 - cultural challenges of working with different organizations outside FAA
- **Multiple tools & protocols used to share data & voice**
 - DoD’s Test Resource Management Center (TRMC)
 - Joint Mission Environment Test Capability (JMETC)
 - Test and Training Enabling Architecture (TENA)
 - Aviation SimNet
 - Voice over Internet Protocol (VoIP) using Plexsys equipment



Show Video



Lessons Learned

Mostly Administrative / Cultural

- Need to get agreements in place ahead of time
- Learned that some organizations need to figure out employees charge their time
- Learned about approval processes (e.g. OK to show video of each others capabilities)
- Intellectual Property Concerns

Some Technical

- IT Security
- Different networks and databases
 - Ways to address latency issues

Going Forward

- **Keep momentum going by setting up future CRDA's and possibly regular working groups**
- **Identify the key ATC and aircraft/avionics issues this capability could address**
 - Can this capability can be leveraged across the whole acquisition lifecycle?
- **Address intellectual property and security concerns**

