Distributed Net-Centric Interoperability Certification Testing

Ric Harrison
Defense Information Systems Agency
Joint Interoperability Test Command / JTEC
Ft Huachuca, AZ
(520) 538-5124 DSN 879-5124
ric.harrison@disa.mil

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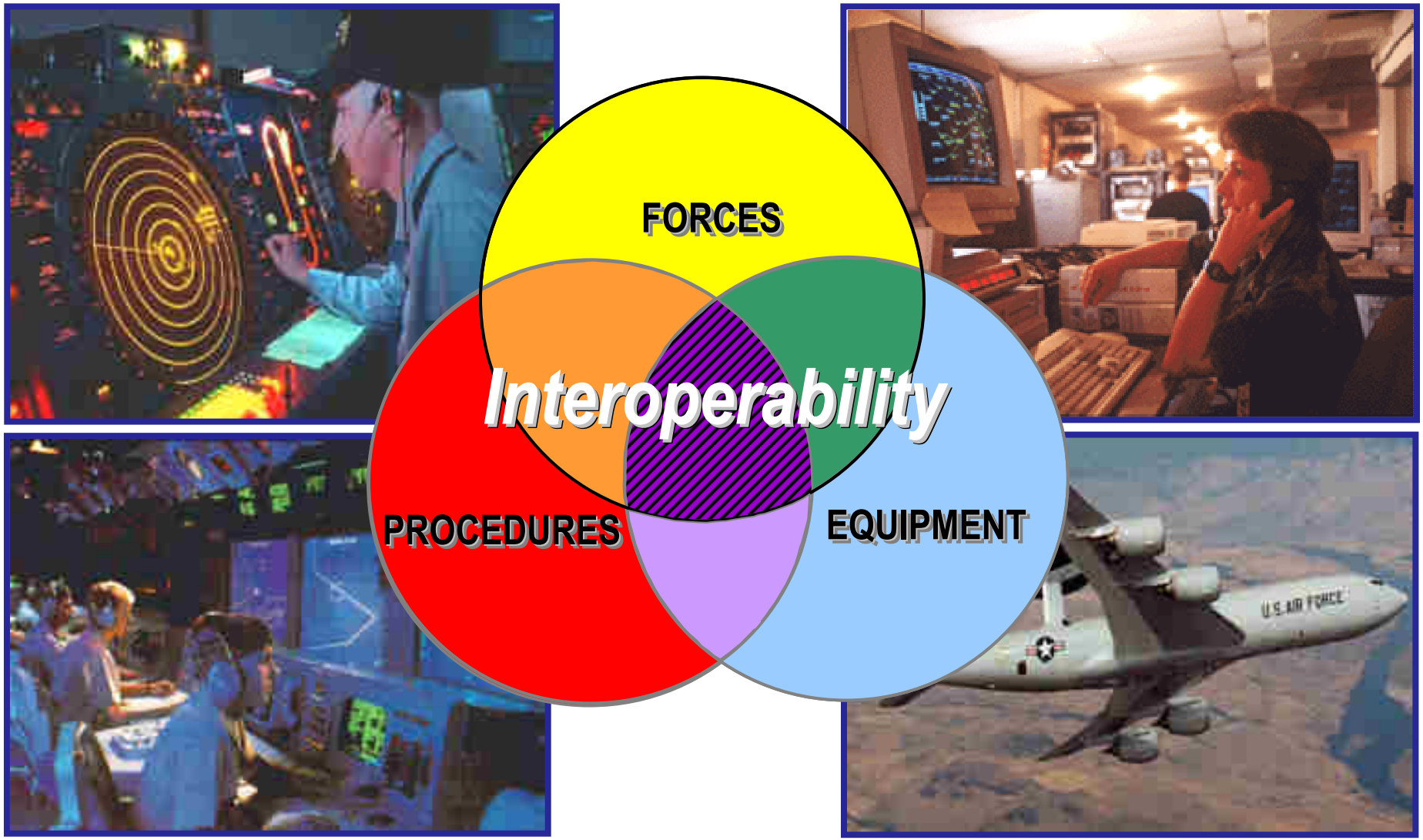
JITC's Interoperability Perspective



DICE Mission / Focus Areas

- **Mission:**
  - **Replicate, in the greatest detail possible, a "typical" Joint Task Force (JTF) communications network for the purpose of conducting joint interoperability certifications and assessments of warfighter systems.**

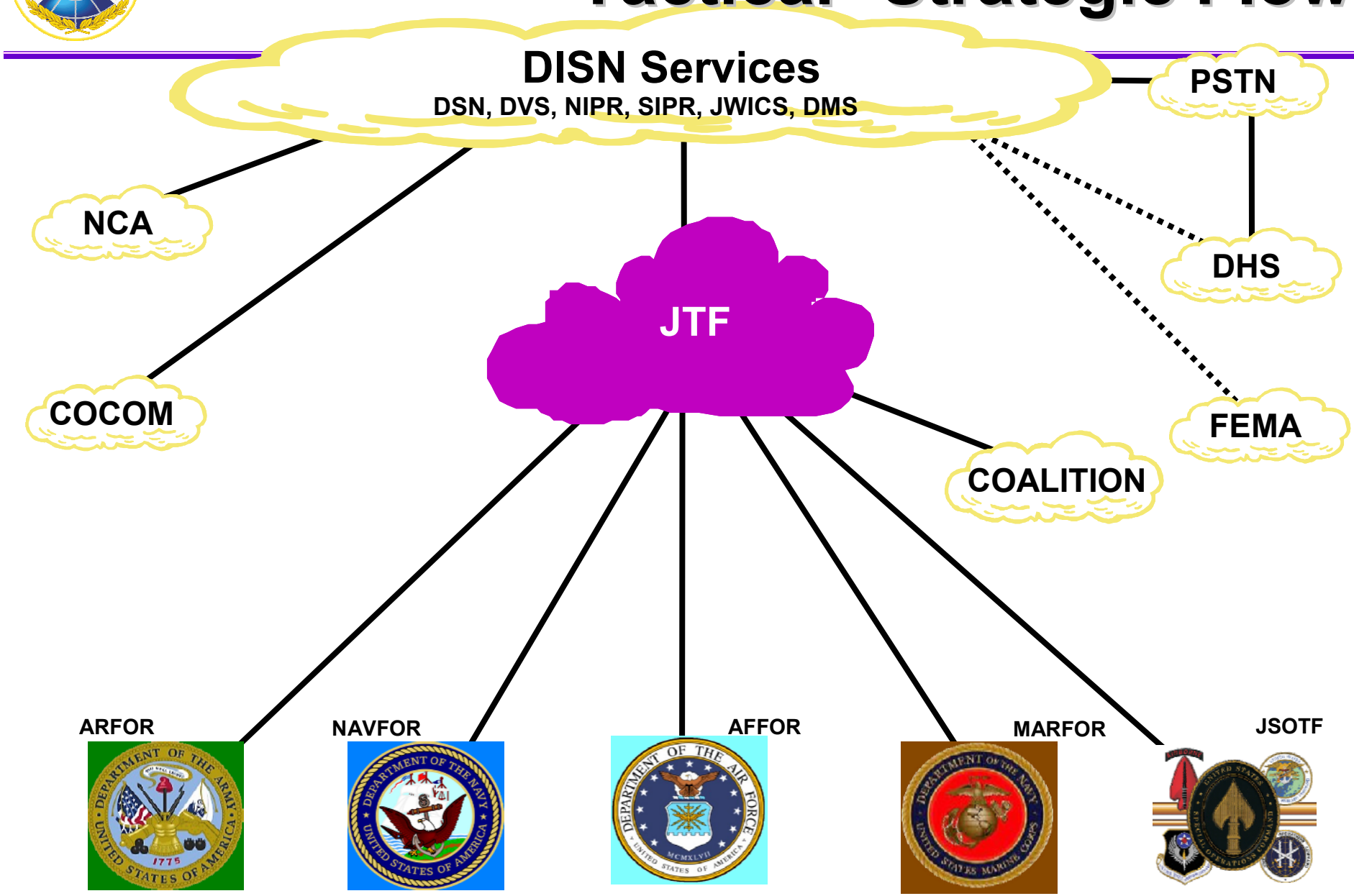
- **Focus Areas:**
  - **Joint interoperability certification / assessment**
  - **Emerging technology demonstrations**
  - **Warfighter training and procedures**
  - **Critical interfaces between Department of Defense (DOD) and Department of Homeland Security (DHS)**

Why participate in DICE?

- Only DOD exercise dedicated solely to interoperability testing in JTF environment
- OPTEMPO of the exercise is controlled by testing requirements
- Significantly lower testing costs due to cost / asset sharing among participants and JITC
- Opportunity to train as we fight--joint environment




Tactical--Strategic Flow



DICE 2005 Observations

- **Technology advancements continue to outpace user training and expertise**
  - **Technology insertions / upgrades are more frequent**
  - **Increase in contractor / specialist involvement with fielding**
- **Ku-band replacing X-band as preferred JTF satellite access method**
- **Definite movement towards converged IP (voice, video, data)**




DICE 2006 Focus

- **Net-Ready Key Performance Parameters (NR-KPP)**
  - **Information Assurance**
  - **Information exchange (i.e., joint interoperability)**
    - **Service systems (legacy & emerging)**
    - **GIG applications**
    - **IPv6**
    - **Collaboration tools**
    - **Wireless technology testing**

- **DHS, Civilian Government, 1st Responders**
  - **DOD-to-DHS interfaces**
  - **DHS-to-state / local authorities**

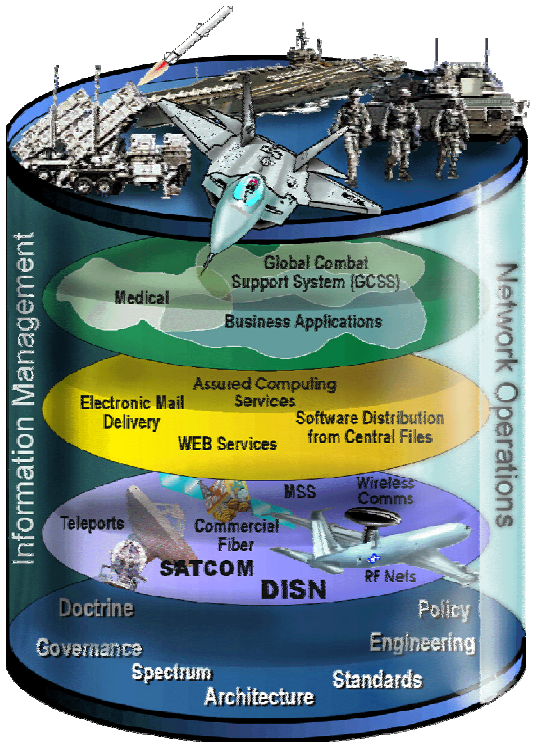
IPv6 and DOD

- **August 2005 ASD, NII Memo**
  - **Global Information Grid (GIG) assets being developed, procured, or acquired shall be IPv6 capable by 2008**
  - **Aggressive participation in pilots, demos, test beds**

- **DOD IPv6 Transition Office established Feb. 2004**
  - **Lead DOD transition to IPv6**
  - **JITC is developing the Generic IPv6 Test Plan**

JITC IPv6 Background

- **Sole interoperability certification authority for DOD**
  - **Integrating IPv6 capability assessments into certification testing process**
- **Testing IPv6 since 2003**
  - **DICE 2003, 2004, 2005**
  - **Moonv6 Phase I & II**
  - **JUICE 2004 / Joint Rapid Architecture Experiment**
  - **Moonv6 / JITC Test Set 2004**



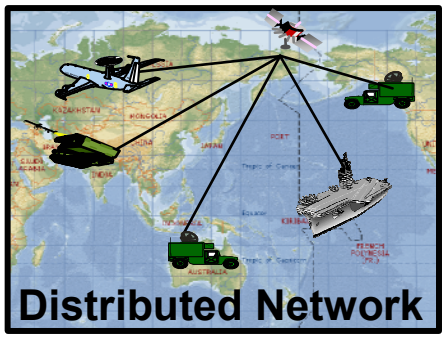
Transition to IPv6 will touch everything

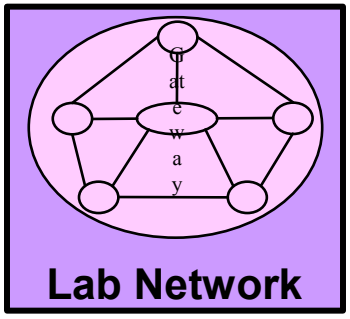
JITC Advanced Internet Protocol Technology Laboratory

- **Advanced Internet Protocol Technology (AIPT) Laboratory**
  - **Established January 2004**
  - **Built on a GIG-like core of equipment**
  - **Equipment from many vendors**
- **Supports DOD IPv6 Transition Office and ASD-NII**
- **Focus areas**
  - **IPv6 capability**
  - **Interoperability**

JITC AIPT Lab Capabilities

- Use Generic IPv6 Test Plan (DRAFT)
  - End-to-End—DREN, Satellite, DISN-LES
    - GIG and JTF-like architectures
    - Strategic and tactical interfaces (realistic but non-operational)
    - Connectivity to multiple DOD sites
  - Lab Testing
    - Multitude of vendors represented in the lab
    - Complex strings-- ARFOR, NAVFOR, MARFOR, AFFOR
    - Custom strings-- dependent on vendor / component need
    - Intrusive / catastrophic testing can be done that is not viable on operational networks

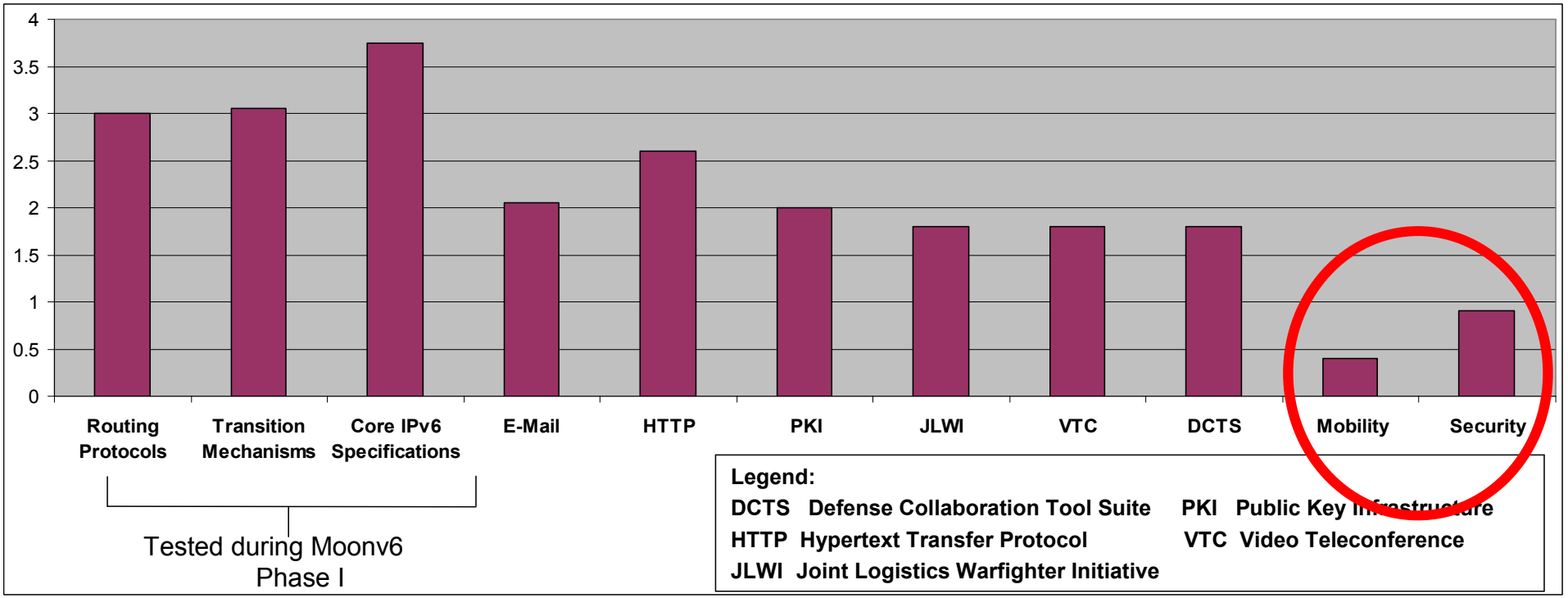




Moonv6 Program

- Cooperative effort between
  - North American IPv6 Task Force (NAV6TF)
  - University of New Hampshire-Interoperability Laboratory (UNH-IOL)
  - DOD
  - JITC
  - Commercial service providers
- Test items are determined by the DOD requirements and commercial service provider requirements
- Distributed test events began in 2003

Overall Moonv6 Summary



Rankings:

0 = No RFC functionality implemented
1 = Minimal RFC functionality implemented
2 = Majority of the RFC functionality implemented
3 = Full RFC functionality, some bugs exist
4 = Full RFC functionality, minimal/no bugs remain




Conclusion

- Distributed testing is more cost effective
- DICE affords opportunity to assess joint interoperability in a typical JTF environment at a reduced cost
  - Mitigates risk
  - Joint communications strategy development and training
- Moonv6 and DICE provide excellent venues to assess IPv6 products through a robust distributed test network
- Must ensure that the battleground is not the interoperability testing ground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