



**The President's National Security
Telecommunications Advisory Committee**

R&D Exchange Integration Breakout Session

**Mr. Shannon Kellogg, ITAA
Mr. Stephen Squires, Hewlett-Packard**

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Current State of Integrating Trustworthiness

- **Current NS/EP telecommunications are limited to voice wireline systems, using analog technologies going to digital**
 - Need to develop NS/EP that interoperates across wireline, wireless, satellite and future innovations
 - Systems can operate independently with full functionality
 - Begin the transition to voice over IP systems of all kinds
 - Network management and standardization will be needed to provide full interoperability among systems and tools
 - Should there be a business version of Government Emergency Telecommunications Service (GETS)?
- **Challenge: drive technology innovation into NS/EP systems and functions**
 - Modeling, simulations, testbeds, pilots and prototype
 - Need to identify how we can integrate technologies related to trust?
 - Integrating voice over multiple kinds of communications channels
 - What is appropriate architecture?
- **Challenge: attract industry and operations elements to provide assets and resources**
 - Need economic incentives for all sectors
- **Challenge: provide for underlying system recovery and restoration from catastrophic failure**
 - Determine if the functions can be performed from backup mode



Promising Technologies To Improve Trustworthiness

- **Potential improvements for existing level of technologies:**
 - End user authentication at the edges
 - Secure the channel, and
 - Reliability of the channels and priority mechanisms
- **New systems will include the full range of IT functionality (internetworking) to enable dynamic collaboration among a wide range of end users and their systems**
 - Advanced collaborations for a wide range of devices
 - Advanced services: modeling and simulation for decision analysis
 - Such systems will be viewed as a highly enhanced secure version of the Internet
- **Promising technologies**
 - Invest in additional technologies to supplement bandwidth
 - IPv6 may enable enhanced security
 - Allocate virtual information resources to dynamically create the IT resources needed for extraordinary requirements for critical NS/EP situations
 - General peer-to-peer systems structures to enable interaction and integration of resources and functions
- **Threat scenario model must be expanded to include new vulnerabilities and threats that are relevant to the new functionalities**



Policy Impediments

- **Need to determine the amount of acceptable risk**
- **Develop measures for quality of service**
- **International and globalization cooperation and collaboration**
- **Reliance on private sector market forces for NS/EP systems**
- **System have to be redesigned to respond flexibly to emerging threats?**



Impediments to Future Integration of R&D on Trustworthiness

- **Major impediment is the weak market for assurance (IA)**
- **NS/EP operations and services units are under short term pressures and lack R&D culture**
- **Lack of programs for applied research in academia, industry and government**
- **As the NS/EP capabilities become more pervasive and embedded in the internetworking, we need to build IT forensic science for assured systems (IA)**



Integration: Input to the OSTP and the NSTAC

- **Future NS/EP systems will be an unprecedented expansion requiring a broad range of solutions**
- **Develop research agenda and strategic approach to implement NS/EP R&D programs across federal government, industry, and academia**
 - **Leverage advances in information technologies**
 - **Leverage standards development in information assurance technologies**



Integration: Agenda for Action

- **Initiate or use existing testbeds to fully stress models on emerging innovative systems**
 - Include wireline, wireless, ground-air
 - Safely test and qualify technologies
- **Develop scaleable approach to achieving trustworthy systems that is capable of being configured for a wide range of end-user configurations and threat models**
- **Leverage technology base**
- **Transition functionalities into the existing Internet technology base as system trustworthiness is attained**