The Aerospace Corporation

Website: www.aero.org

Jennifer Lombardi
lombardi@aero.org

Ric Cowan
cowan@aero.org

Office of Technical and Scientific Computing
The Aerospace Corporation

- Created by Congress in 1960
- Nonprofit corporation
- Purpose is purely technical
- Operates a federally funded research and development center for the U.S. Air Force
- Applies engineering and scientific expertise to advance the performance of national-security space systems
- Headquarters in El Segundo, California
The Aerospace Corporation
Operating Locations

Number of employees at each location indicated

TOTAL POPULATION: 3464
Evolution of Network Security at Aerospace

- In early years there was no connection to the outside world
- Introduction of the ARPAnet/Internet in the early 80s
  - 1988 Robert Morrison internet worm event
- This caused the establishment of IT security group
  - establishment of egg shell security
  - evolving into security in depth
Protection vs Collaboration

- For 47 years we’ve never automatically shared data through the firewall
- Collaboration pressures have been building
- Collaboration is sharing among communities
  - data
  - process
  - conversations
Having it Both Ways

• We have been assigned the task of establishing a site that will share with collaborators and only collaborators.

• Sharing should be safe and reliable

• We’re looking for a general solution that can be used for multiple projects
Some of the Issues

• What is safe? - all about information assurance. The practice of managing information-related risks
  • Know where it came from
  • Know that it hasn't been tampered with
  • Know that it is well formed
• Reliable means that one can know a transmission happened
  • Point-to-point no discovery necessary
  • Audit trails
The Project

- This project will be restricted to sharing data over TCP/IP
- Develop a protocol that is safe and reliable
- Develop code to test this protocol
- Preferred target language is Java 1.5 or 1.6
A Possible Approach

- Web services
  - defined by the W3C as "a software system designed to support interoperable machine to machine interaction over a network."

- Examples
  - Atom
  - RSS
  - SOAP
  - REST
  - RMI
Coordination

• Telephone conference calls to a 800 or 866 number
• Mailing list for each team
• Some teams in the past have set up web sites