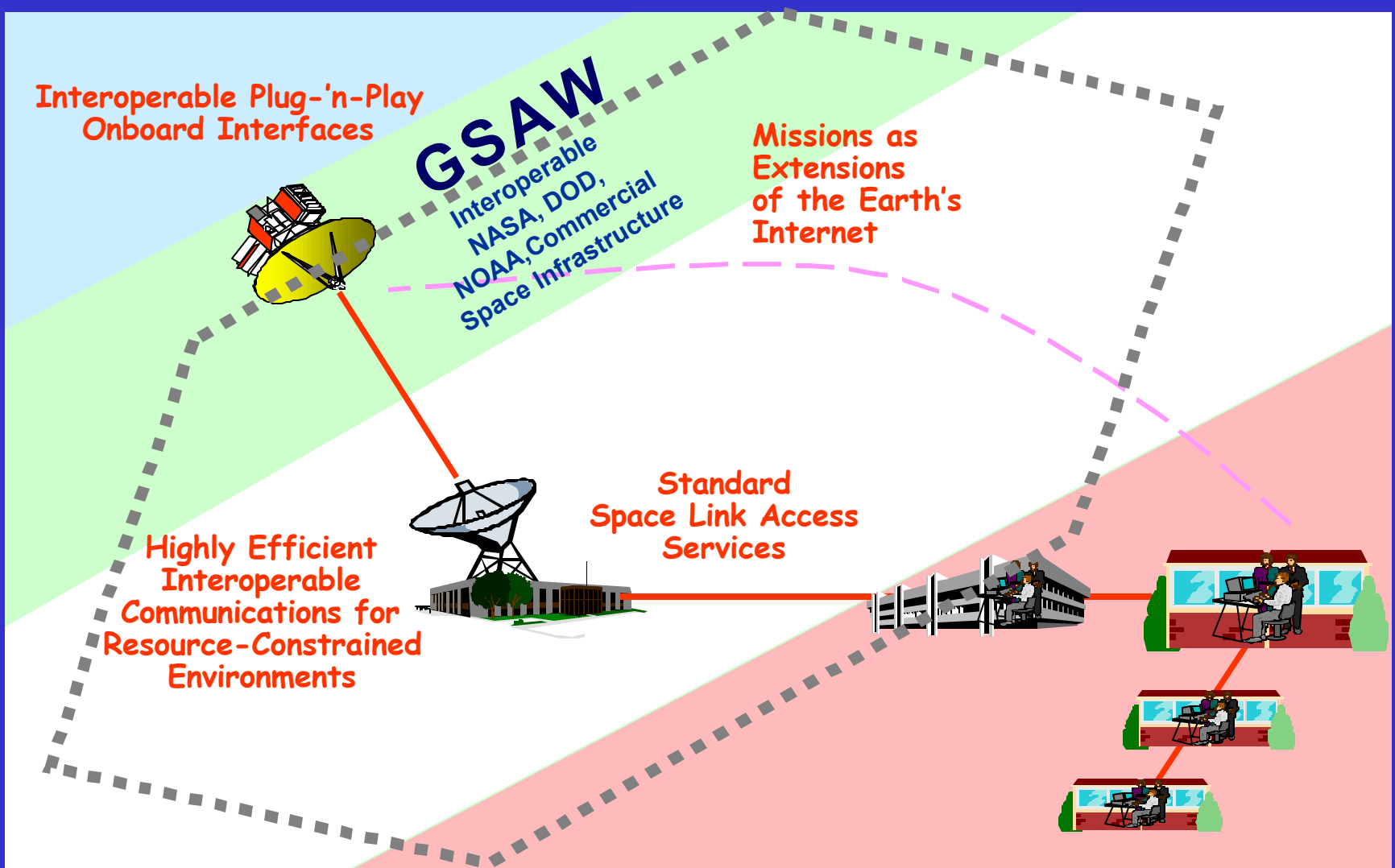


**GSAW2001**  
**Breakout Session 2 Outbrief**

**Standards and interoperability:  
space missions in the Internet era**

**Adrian J. Hooke**  
*Jet Propulsion Laboratory*  
*California Institute of Technology*  
**23 February 2001**

# Standardization Themes



# **GSAW2001**

## **Breakout 2:**

### **“Standards and interoperability: space missions in the Internet era”**

**INTRODUCTION TO SPACE STANDARDIZATION**

**Adrian J. Hooke/NASA-JPL**

**OVERVIEW OF STANDARD SPACECRAFT ARCHITECTURES**

**Joe Smith/NASA-JPL.**

**STANDARD SPACE LINK CAPABILITIES**

**Greg Kazz/NASA-JPL**

**OVERVIEW OF STANDARDS FOR SPACE LINK ACCESS**

**Fred Brosi,  
John Pietras/NASA-GSFC-GST**

**CCSDS SPACE LINK EXTENSION SERVICES:  
CASE STUDY OF THE DERA GROUND IMPLEMENTATION**

**Hugh Kelliher,  
Paula Quintela/ VEGA Group plc**

**OPTIONS FOR INTERNET PROTOCOLS IN SPACE**

**Eric Travis/NASA-GSFC-GST**

**SCPS CAPABILITIES AND SOFTWARE**

**Bob Durst, NASA-JPL-MITRE**

**SPACE FILE DELIVERY PROTOCOLS**

**Scott Burleigh, NASA-JPL**

**SPACE MISSION COMMUNICATIONS SECURITY:  
Overview of the Options**

**Howard Weiss/NASA-Sparta  
Nick Shave/BNSC-Logica**

**DOD RANGE STANDARDIZATION:  
NEEDS AND OPTIONS - THE RTTN**

**Darrell Ernst, MITRE  
Adrian Hooke, JPL**

# Emerging Trends

- **Current point-to-point/stovepipe architectures are rapidly evolving towards highly networked configurations**
- **It is highly desirable to integrate ‘untethered’ vehicles with Internet-based ground operations**
- **“Postal Model” store and forward operations will become increasingly important**
- **It is imperative to achieve increased interoperability and standardization across the national space and range infrastructure**
  - **Military and Civilian Space**
  - **Military and Civilian Ranges**
- **All communities have a common need for a full stack of spectrum and power-efficient standardized communications protocols**



# Growing Consensus

- **ISO/CCSDS has laid the groundwork for standardized space and range interoperability**
  - *But the standards are not static and must evolve*
  - *DOD needs to figure out how to participate in the open international standardization process*
- **CCSDS protocols are being adopted by ever-wider segment of the aerospace community**
  - *Costs will go down if we converge on “a few” common approaches and thus grow our own market to encourage commercial investment*
- **We should build on basic CCSDS capabilities to provide greater levels of standardization**
  - *Stressed wireless networking, in cooperation with the Internet Society*
  - *Distributed application interchange, in cooperation with groups like the OMG*

# Current Standardization Options

