



imagine...

# THE "POWER" OF BROADBAND COMMUNICATIONS

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**DoD Maintenance Symposium**  
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# Why Broadband?


“So, an early question that must be posed regarding any weapon system is whether it is on the “net.” If not, it is not contributing, not benefiting and not part of the information age.”

Vice Adm. (ret.) Arthur K. Cebrowski

**For Maintenance...Imagine the  
Possibilities of  
The Power of Broadband!**



# Connexion by Boeing Vision



**People working together  
to revolutionize  
the way we  
work  
communicate  
entertain ourselves  
and relax  
while mobile**

**Mobile Information Services Provider**



# Connexion by Boeing<sup>SM</sup>

## A Commercial Service Offering of The Boeing Company

*Real-time, two-way, high-speed data services*

*Broadband Internet/Intranet access*

*Networked Air, Ground & Space infrastructure*

*Open architecture to enable integration with legacy and future content sources*

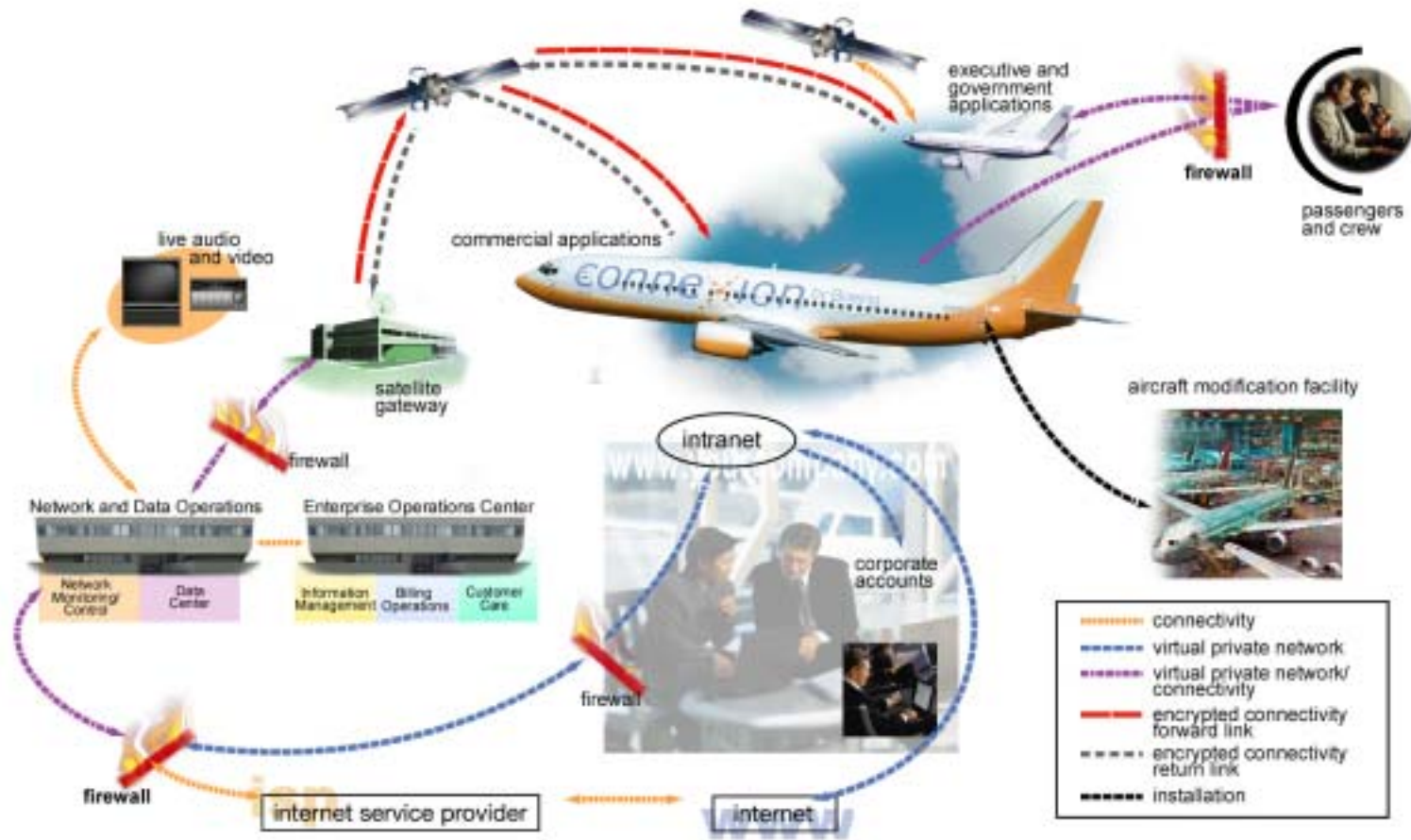
*Commercial standards, and COTS (Commercial-Off-The-Shelf) technologies*

*Bandwidth management and control*



# Connexion by Boeing<sup>sm</sup>

## Integrating Technologies



- ◆ Satellite Communications
- ◆ Airborne Electronics
- ◆ Cabin Distribution Systems

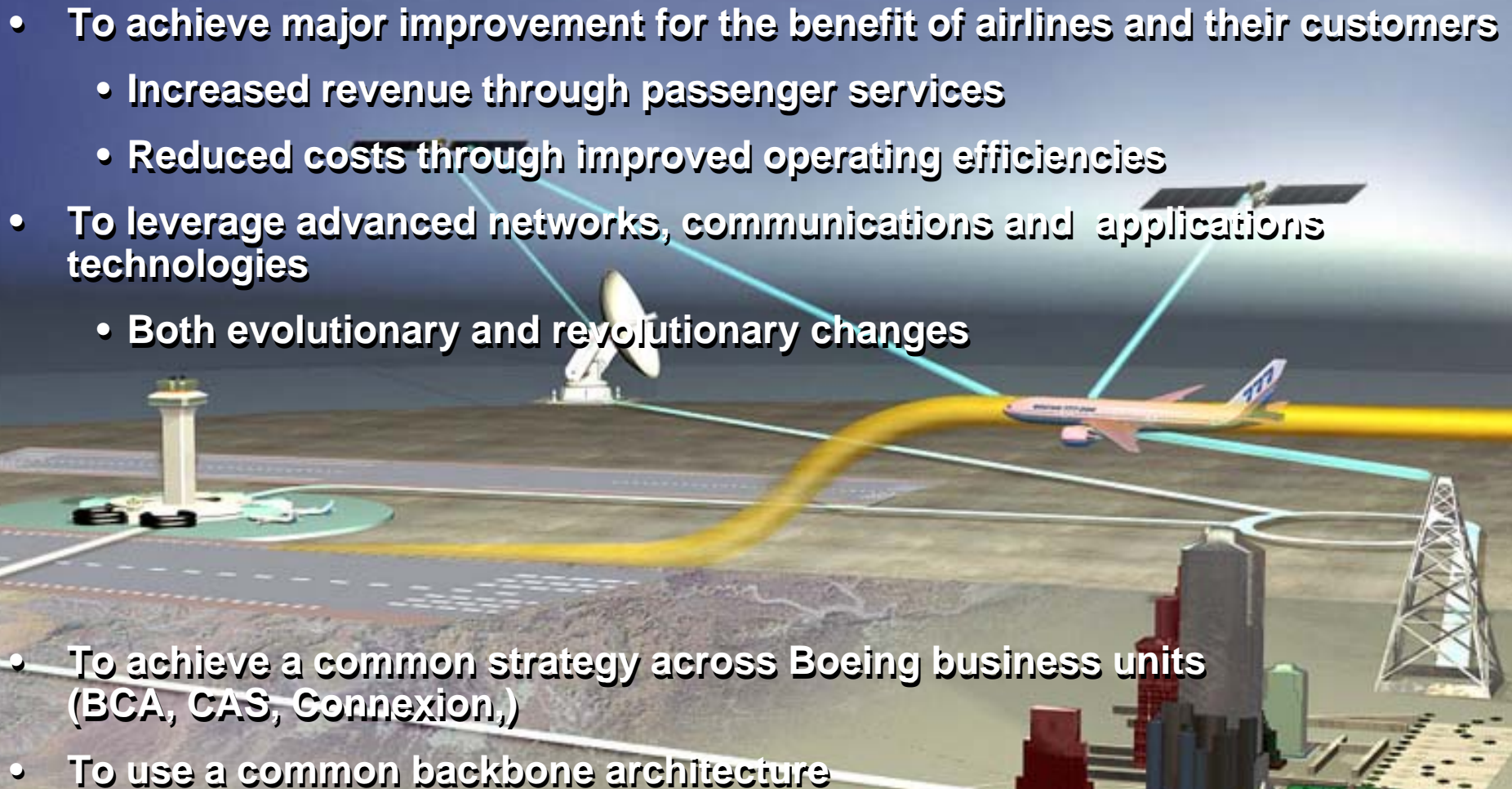
- ◆ Network Management Services
- ◆ Portal Development
- ◆ Bandwidth Management



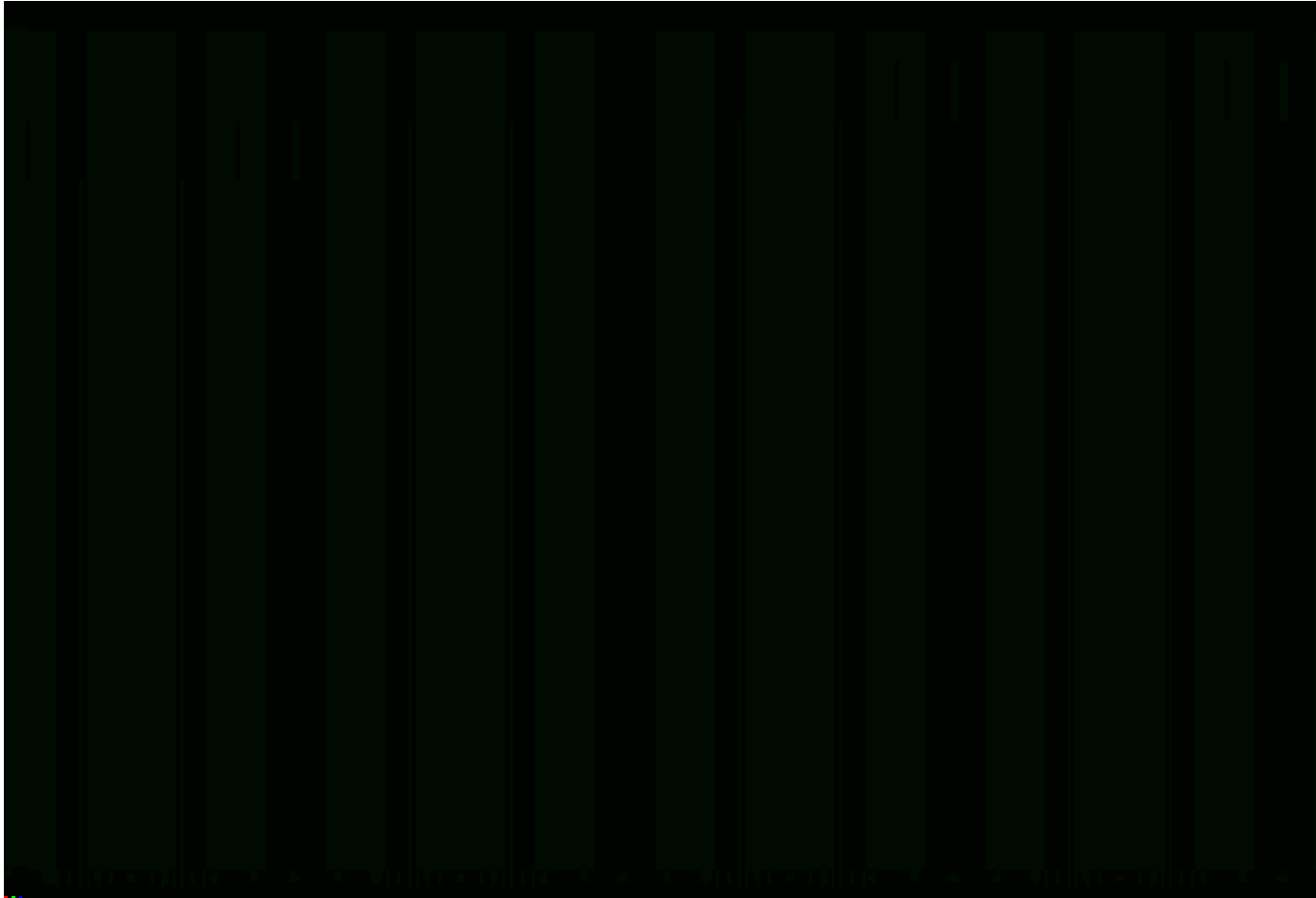
# Connexion Working Together



# Boeing Commercial Airplanes e-Enabled Airplane Strategy

- To achieve major improvement for the benefit of airlines and their customers
    - Increased revenue through passenger services
    - Reduced costs through improved operating efficiencies
  - To leverage advanced networks, communications and applications technologies
    - Both evolutionary and revolutionary changes
  - To achieve a common strategy across Boeing business units (BCA, CAS, Connexion,)
  - To use a common backbone architecture
- 
- A 3D illustration of an airplane flying over a city and airport, connected to various ground stations and satellites by glowing lines, representing an e-enabled network. The airplane is shown in flight, with a yellow and blue livery. It is connected to a ground station on the left, a satellite in the sky, and another ground station on the right. The background shows a cityscape with buildings and a runway.

# e-Enabling the Airlines...and more?



# Initial Proposed e-Enabling Applications Set \*

Airline Type

Long-haul international carrier  
Hub and spoke short haul carrier



Flight Crew	e-Documents and Navigation Charts	■	■
	Electronic Log Books	■	■
	Performance Calculator	■	■
	Real-Time Weather Display	⊗	■
	Taxi Situational Awareness	■	■
Airline Operations	AOC Message Off-load	■	■
	Cabin Item Inventory/Catering	■	■
	Crew Schedules/Rerouting	■	⊗
	Fuel Remaining/Tracking	■	■
	Enhanced Video Surveillance	■	■
Cabin Crew	Connecting Gate/Reroute Guidance	■	⊗
	Credit Card Processing/Sales in Cabin	■	■
	Duty Free Sales w/ Ground Distrib.	⊗	■
	Enhanced CRM	■	■
	Telemedicine	■	■
Maintenance	AHM - Engines data/trending	■	■
	AHM - Systems data/trending	■	■
	Cabin/ Maintenance Item Tracking	■	■
	Electronic Software Delivery	■	■
	FOQA Data Collection	■	■

■ EFB

■ CoreNet  
or EFB



# DoD Needs for Real-time Information

<b>Warfighting Functions</b>	<b>Information Capabilities Needed</b>
<p><i>Mobile Command and Control Collaborative Planning Cooperative Engagement Battle Management</i></p>	<ul style="list-style-type: none"> <li>• C2 Networks and Video Teleconferencing</li> <li>• Interactive Common Operating Picture</li> <li>• Interactive Data Networks &amp; Distributed Databases (NIPERNET, SIPERNET, CTAPS, GCCS, etc.)</li> <li>• Trunked Common User Voice and Data Networks</li> </ul>
<p><i>Intelligence, Surveillance, and Reconnaissance</i></p>	<ul style="list-style-type: none"> <li>• Sensor and Intelligence Data (collection, processing/prod. &amp; dissemination)</li> <li>• Imagery and Related Products</li> <li>• Video Applications</li> </ul>
<p><i>Geospatial and Environmental Data</i></p>	<ul style="list-style-type: none"> <li>• Terrain Visualization and AOR and Site Updates</li> <li>• Maps, Charts, Geodesy</li> <li>• Weather and Oceanographic Reports</li> <li>• Navigation, Position Locating and Reporting</li> </ul>
<p><i>Precision Strike</i></p>	<ul style="list-style-type: none"> <li>• OTH/BLOS Weapons/Sensors Control and Feedback</li> <li>• Mission Data and Target/Threat Updates</li> <li>• Enroute Communications</li> <li>• Cooperative Engagement; Combat Identification</li> <li>• Automatic Weapon/Target Pairing; ATR; Missile Defense</li> </ul>
<p><i>Theater and Strategic Warning and Surveillance</i></p>	<ul style="list-style-type: none"> <li>• Missile Warning</li> <li>• Reconnaissance; Acquisition; Targeting</li> </ul>
<p><i>Training and Planning</i></p>	<ul style="list-style-type: none"> <li>• War-game Simulation; Course of Action Analysis; Mission Rehearsal</li> <li>• Decision Support Tools</li> </ul>
<p><i>Combat Support – Logistics &amp; Maintenance, Personnel, Finance, Transportation, Strategic &amp; Tactical Lift, Contracting, etc.</i></p>	<ul style="list-style-type: none"> <li>• “Reachback” of Deployed Forces to the “Split”/Sustaining Base</li> <li>• Telemedicine, <u>Telemaintenance</u>, Teletraining</li> <li>• Distributed Databases and Networks, (e.g., Global Combat Support System)</li> <li>• Movement Tracking System; Global Transportation Network (GTN)</li> <li>• Morale, Welfare, and Recreation Activities</li> </ul>

# Current Government Customers



- ◆ C-40B Installations (B737-700 BBJ)
  - ❖ 2 Delivered to date, 2 more on contract
- ◆ C-32 (B757-200) Communication Upgrades
  - ❖ 2 Delivered to date, balance on contract
- ◆ E-6 TACAMO (B707-300) ADWS Broadband Satcom Link Initial Simplex Service
  - ❖ Receive only in service today, (Connexion being evaluated for SLCS upgrade)
- ◆ E-4B (B747-200) Communications Upgrade
  - ❖ 1<sup>st</sup> A/C on contract, balance in POM cycle
- ◆ USAF “Paul Revere” Testbed Aircraft
  - ❖ A/C being readied for JEFX-04



# Broadband Services

- ◆ **Baseline**
  - ❖ **Internet Access**
    - ◆ Supports web browsing, e-mail, TCP/IP based applications
  - ❖ **Intranet Access (GFE Connectivity)**
    - ◆ Supports SIPRNET/NIPRNET etc. Access via GFE encryptors
  - ❖ **Basic VTC service, at additional charge (TBD)**
- ◆ **Optional**
  - ❖ **Re-broadcast Connexion Television (blue water coverage) optional Simultaneous with data service**
    - ◆ Requires dedicated forward link bandwidth
    - ◆ Potential future service offering, pending customer interest
  - ❖ **Voice-over-IP**
    - ◆ Requires customer furnished PBX infrastructure for access



# “Power of Broadband” Value Proposition

- ◆ Real-time connectivity to the worldwide web (WWW)
  - ❖ Transitional operations in support to Net-Centric Operations (NCO)
  - ❖ Supports connectivity to “global information grid” objective\
- ◆ Additional network capacity to reduce the strain on existing over-subscribed, Inmarsat & MILSATCOM communications channels
  - ❖ Surge capacity as well as dedicated or reserved capacity options
  - ❖ Direct networked data access for improved operations
  - ❖ More efficient logistics and maintenance support via real-time connectivity
- ◆ “Turn-key” solution to provide broadband data services
- ◆ Open architecture allows for rapid adaptation
  - ❖ Commercial standards, protocols, & applications
  - ❖ COTS (Commercial-Off-The-Shelf) technology



# The Power of Broadband Provides...

- ◆ Superior Situational Awareness
- ◆ Superior Decision Making
- ◆ Superior Execution

**... Resulting in Superior Support to Our Forces  
Around the World**



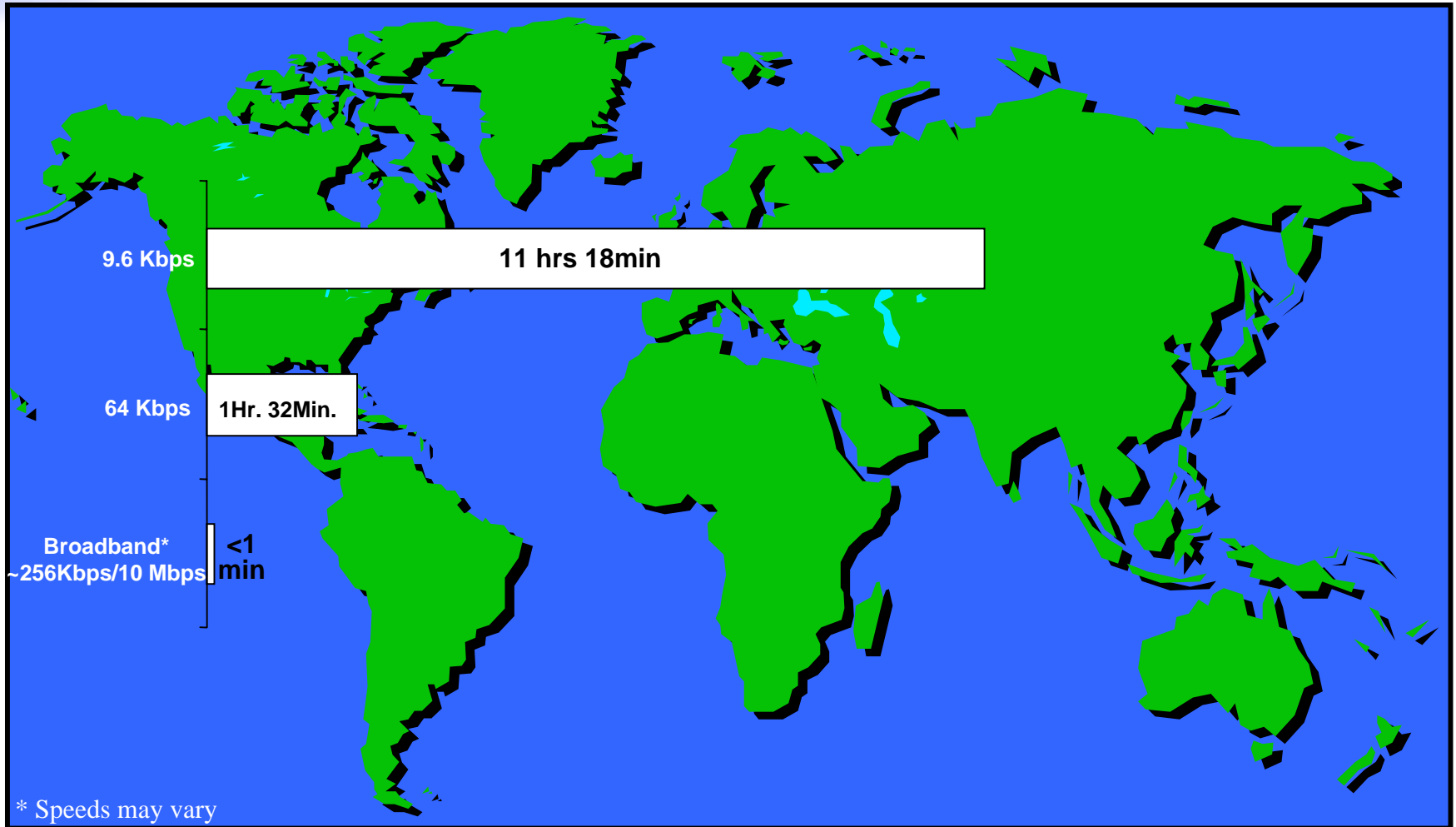
**THANK YOU!**

**Scott Carson, President  
Connexion by Boeing**



# “The Power of Broadband”

Time Required to Download a 43MB File at Various Connectivity Speeds



**Executing large file transfers is impractical without broadband**

# Services & Applications

## Offered or Supported

- **Basic Internet Applications – e-mail, web browsing, messaging, etc.**
- **VoIP Telephony – Connection to shipboard PBX, corded and cordless handsets.**
- **Wireless (802.11a/b/g) and wired shipboard LANs.**
- **Video Teleconferencing (VTC)\***
- **Television\***
- **Virtual Private Networking (VPN)**
- **Secure government networks access (GFE)**
- **Special multicast and broadcast services (fleet-wide information dissemination)\*.**

**\*Extra fees may apply.**





# The Seven Habits of a Highly Effective Information System

- ◆ If the boss doesn't use it, don't buy it! ✓
- ◆ Tactical & non-tactical applications must be integrated ✓
  - ◆ IP based applications can be integrated to meet user requirements ?
- ◆ We must stay common with industry ✓
  - ◆ Connexion must, as well
- ◆ All applications must be driven to a single PC ✓
  - ◆ Connexion supports IP compatible applications to PC, PDA, wireless, etc.
- ◆ We must use COTS wherever feasible ✓
  - ◆ Connexion is COTS and must support COTS to operate
- ◆ Sea to shore transitions must be seamless ✓
  - ◆ Shore (fiber) Internet access to Sea (satcom) Internet access
- ◆ No Stovepipes! ✓
  - ◆ Connexion must remain open to allow all customers to use service

