

ORIGINAL

Squire, Sanders & Dempsey

L.L.P.

Counsellors at Law

1201 Pennsylvania Avenue, N.W.

P.O. Box 407

Washington, D.C. 20044-0407

EX PARTE OR LATE FILED

Telephone: (202) 626-6600

Cable Squire DC

Telecopier (202) 626-6780

Direct Dial Number
(202) 626-6615

March 30, 2000

Magalie Roman Salas, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

**Re: Permitted Ex Parte Meeting
The Boeing Company
ET Docket Nos. 98-206
RM-9147, RM-9245
FCC File No. SAT-LOA-19990108-00006**

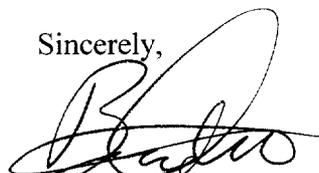
Dear Secretary Salas:

On Thursday, March 30, 2000, representatives of The Boeing Company met with FCC staff to discuss the above referenced proceedings. Present for the FCC were Thomas Tycz, Julius Knapp, Tom Derenge, Julie Garcia, Kim Baum, Bruno Pattan, Mike Marcus, Harry Ng, Jennifer Burton, Michael Pollak, Rodney Small and Jim Burtle. Attending for Boeing were Kristina Erickson, Robert Higgins and Jeffrey Trauberman, along with David A. Nall and Bruce Olcott of Squire, Sanders & Dempsey and Melvin Barmat of Jansky/Barmat Telecommunications.

The meeting was held to discuss Boeing's concern about a proposal by Northpoint Technology Ltd. to operate a point-to-multipoint microwave system in the 12.2-12.7 GHz Band. Boeing indicated that Northpoint's proposed system would cause unacceptable interference into Boeing's nongeostationary fixed satellite service system and could jeopardize the launch of its system. The attached materials were distributed during the meeting and outline the details of the discussion.

Thank you for your attention to this matter. Please contact me if you have any questions.

Sincerely,



Bruce A. Olcott

No. of Copies rec'd 071
List ABCDE

Cc: Thomas Tycz, Julius Knapp, Tom Derenge, Julie Garcia, Kim Baum, Bruno Pattan, Mike Marcus, Harry Ng, Jennifer Burton, Michael Pollak, Rodney Small and Jim Burtle

The Boeing Company
presentation to the
FCC Office of Engineering & Technology
March 30, 2000

- Northpoint's system will cause unacceptable interference into Boeing's NGSO FSS network by creating exclusion zones where Boeing customers will be unable to receive service.
 - Band segmentation is not a viable solution to the Northpoint interference problems.
 - NGSO FSS systems need access to the entire 11.7-12.7 GHz band in order to facilitate NGSO/NGSO spectrum sharing.
- Boeing would support a plan to license all eight of the first-round NGSO FSS applicants and permit them to develop techniques that equitably share the burden of co-frequency operations as each satellite system is launched.
 - Such an approach creates significant risk, however, for systems that launch expeditiously and may later need to accommodate other first-round applicants and, outside the U.S., NGSO FSS systems licensed by other countries.
 - For example, since co-frequency spectrum sharing between four or more NGSO FSS networks may be difficult, a significant possibility exists that NGSO FSS operators will eventually need to segment the band into two NGSO FSS spectrum sharing groups.
- Boeing may be willing to launch its NGSO FSS system and accept the risk to its business plans that the 11.7-12.7 GHz band may later be divided into two NGSO FSS spectrum sharing segments of 500 MHz.
- It is extremely unlikely, however, that Boeing could accept the financial risk of launching its system if a possibility exists that Boeing may be forced to operate in less than 500 MHz of space-to-Earth service link spectrum in the United States.
- Therefore, Boeing believes that authorizing Northpoint's service is incompatible with any plan to license all or even most of the NGSO FSS applicants.
- If the Commission must authorize Northpoint, the Commission should concurrently:
 - adopt rules that restrict the interference that Northpoint transmitters will produce into NGSO FSS receives,
 - limit Northpoint to its true spectrum requirements by requiring Northpoint to clearly articulate the services that it plans to provide and
 - adopt financial qualification rules for NGSO FSS applicants to reduce the number of NGSO FSS systems to an acceptable number.

Boeing Ku-Band NGSO

Objective

To provide multimedia broadband capability to the world's most challenging requirements:

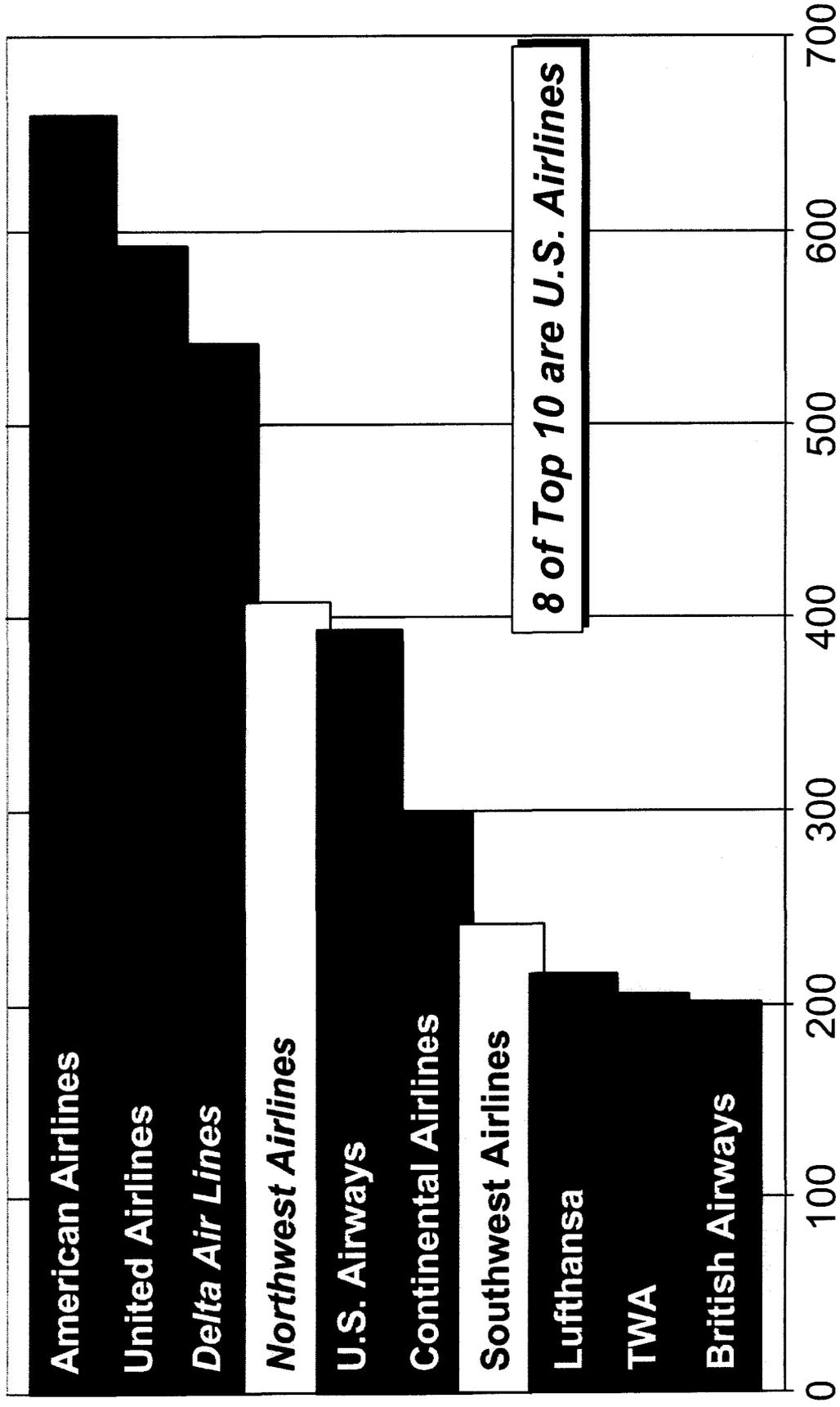
- High Capacity Throughput
- High Speed Communications
- Fixed and Mobile User Network Integration
- Global Coverage



Target Markets

- Aviation - Fixed and mobile sites
- U.S. Government - Fixed and mobile sites
- Civil Government - including disaster recovery
- Major Remote Construction
- Energy Exploration
- Other Large Business Networks requiring asset tracking

Worldwide Airlines Ranked by Airplane Inventory

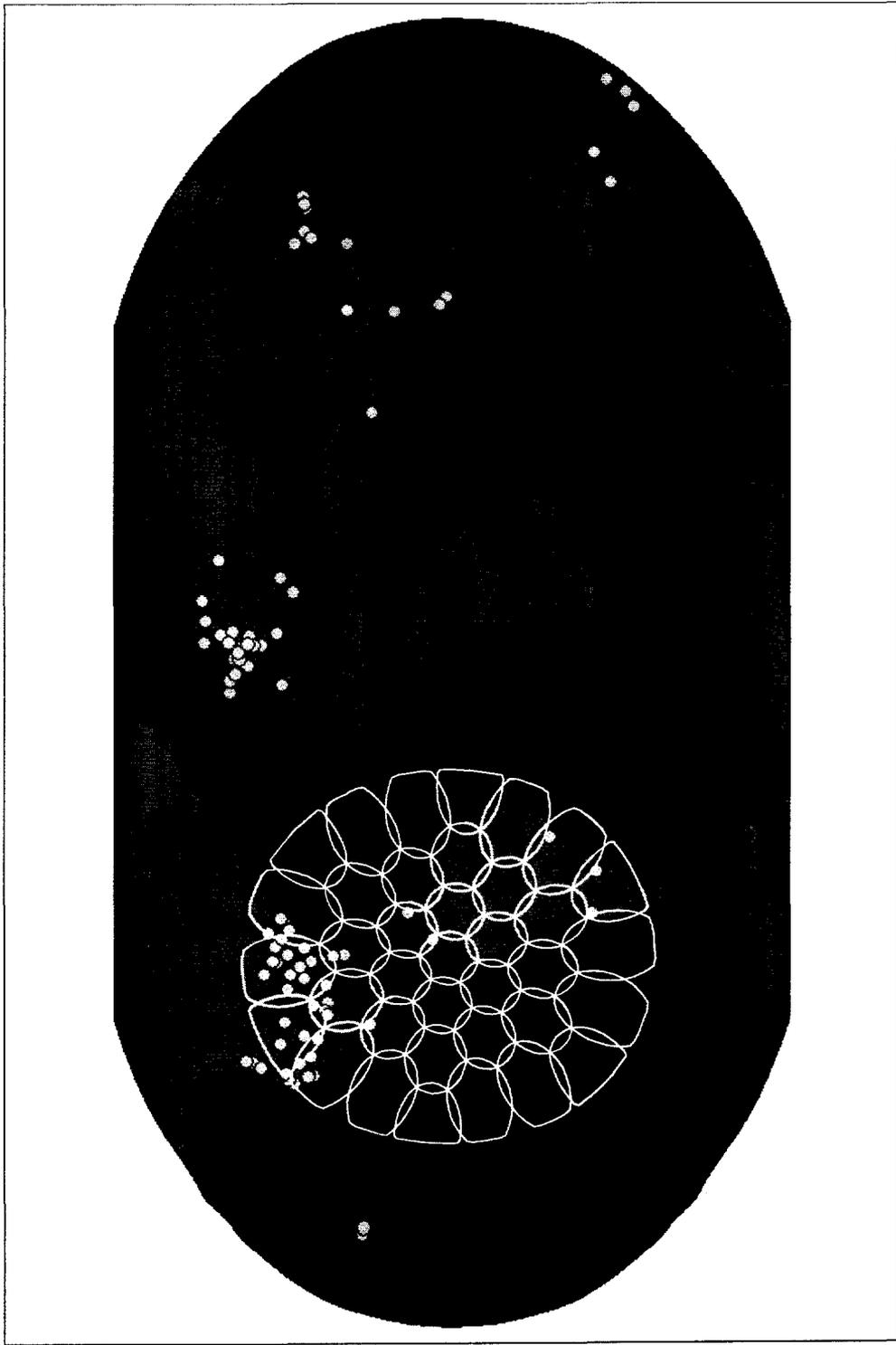


Number of Airplanes



BOEING PROPRIETARY

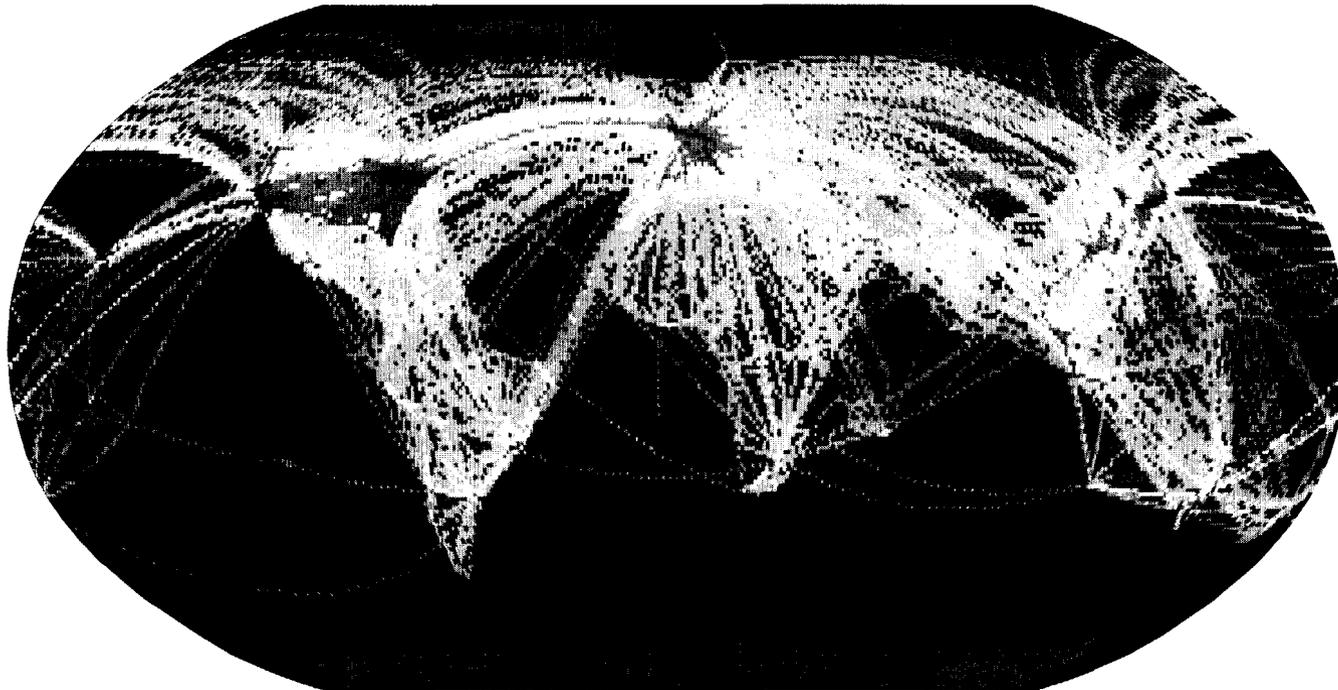
Global Distribution Of Major Airline Hubs



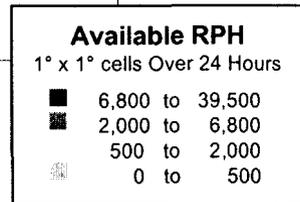
 **BOEING**

24-Hour Commercial Airplane Traffic

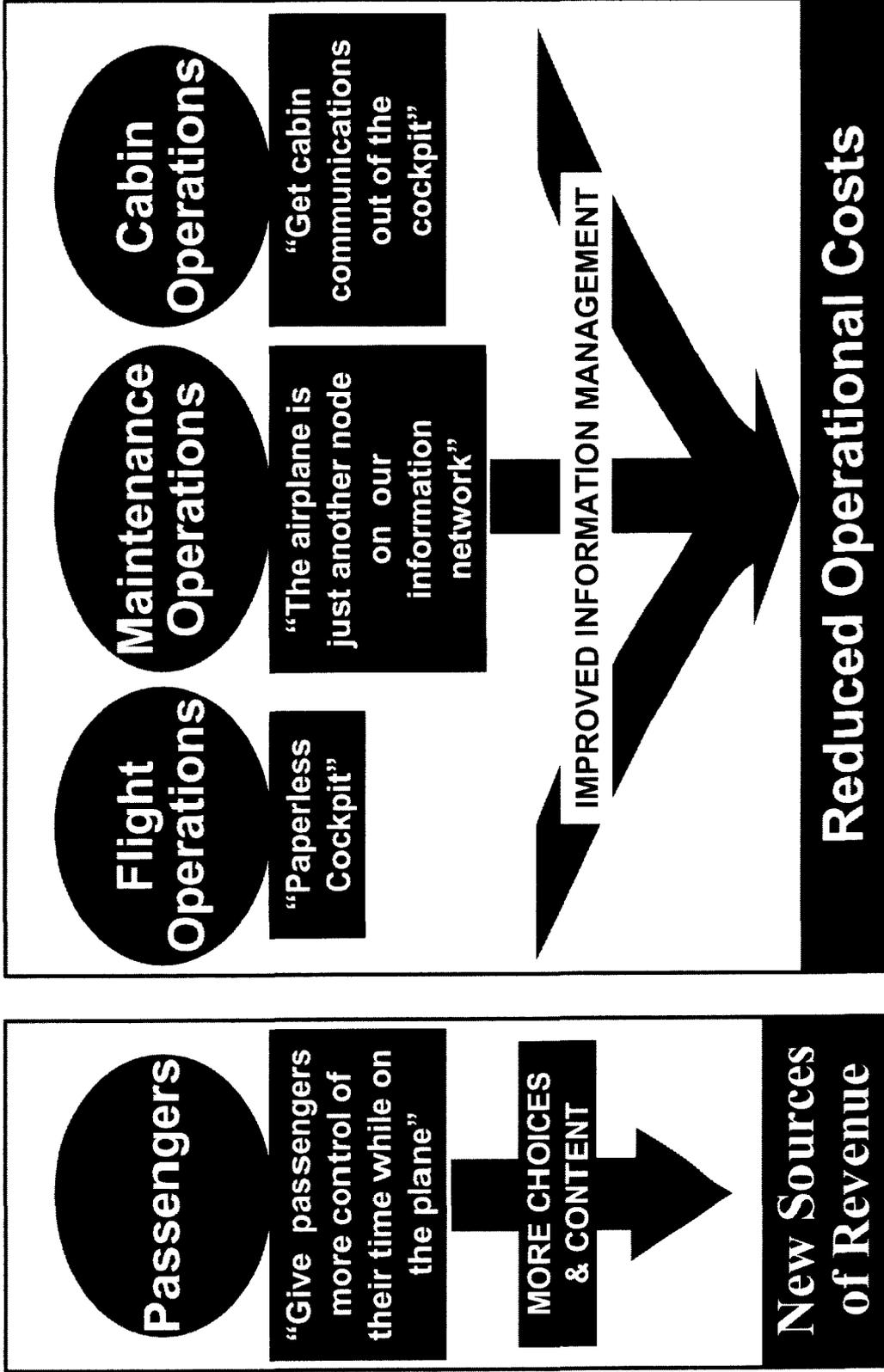
5.5 Billion Passenger Hours Per Year



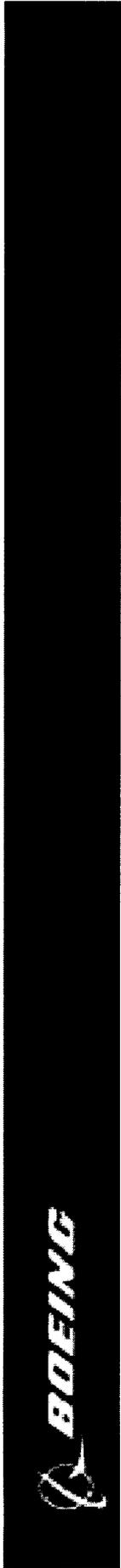
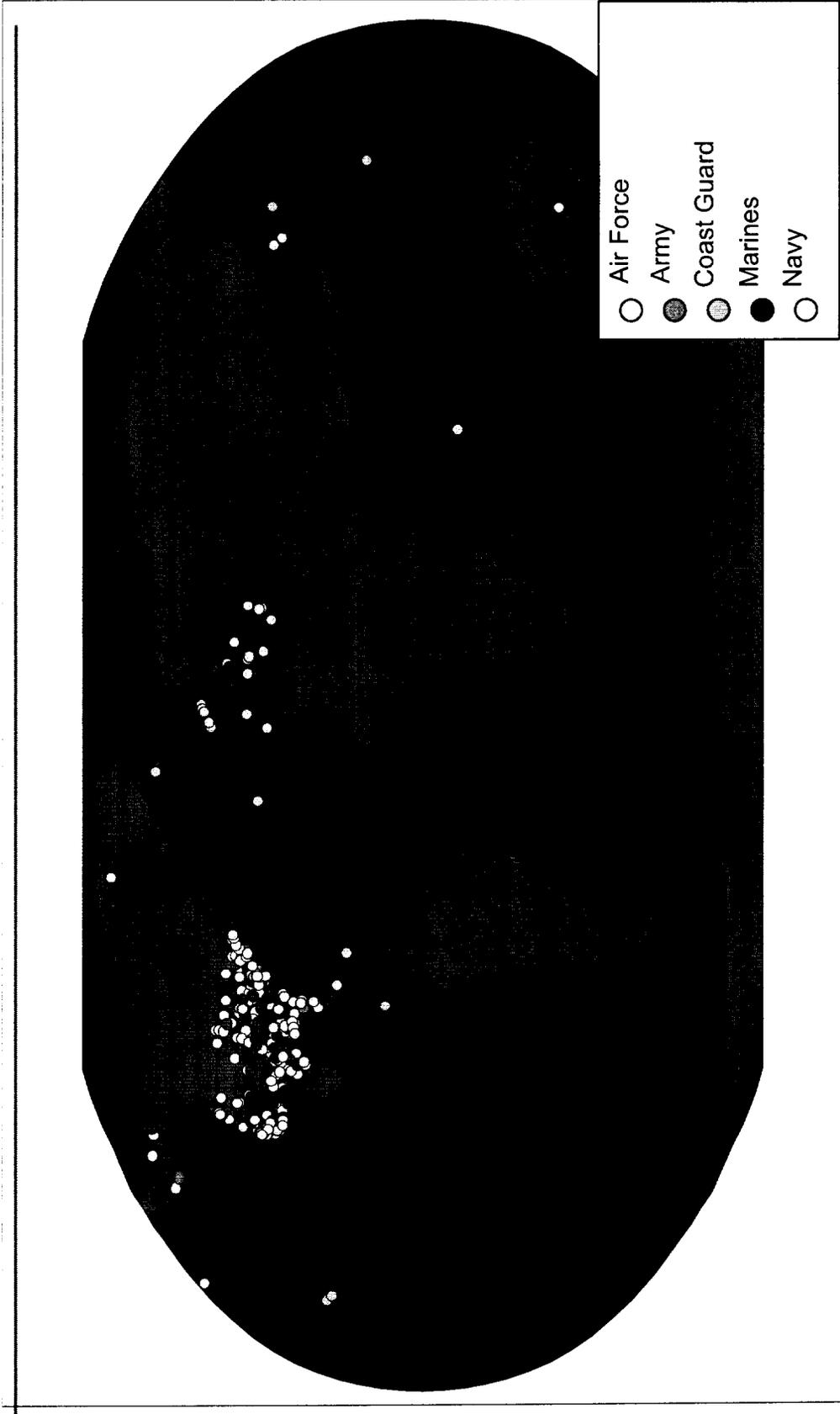
60% of Traffic is in the U.S.



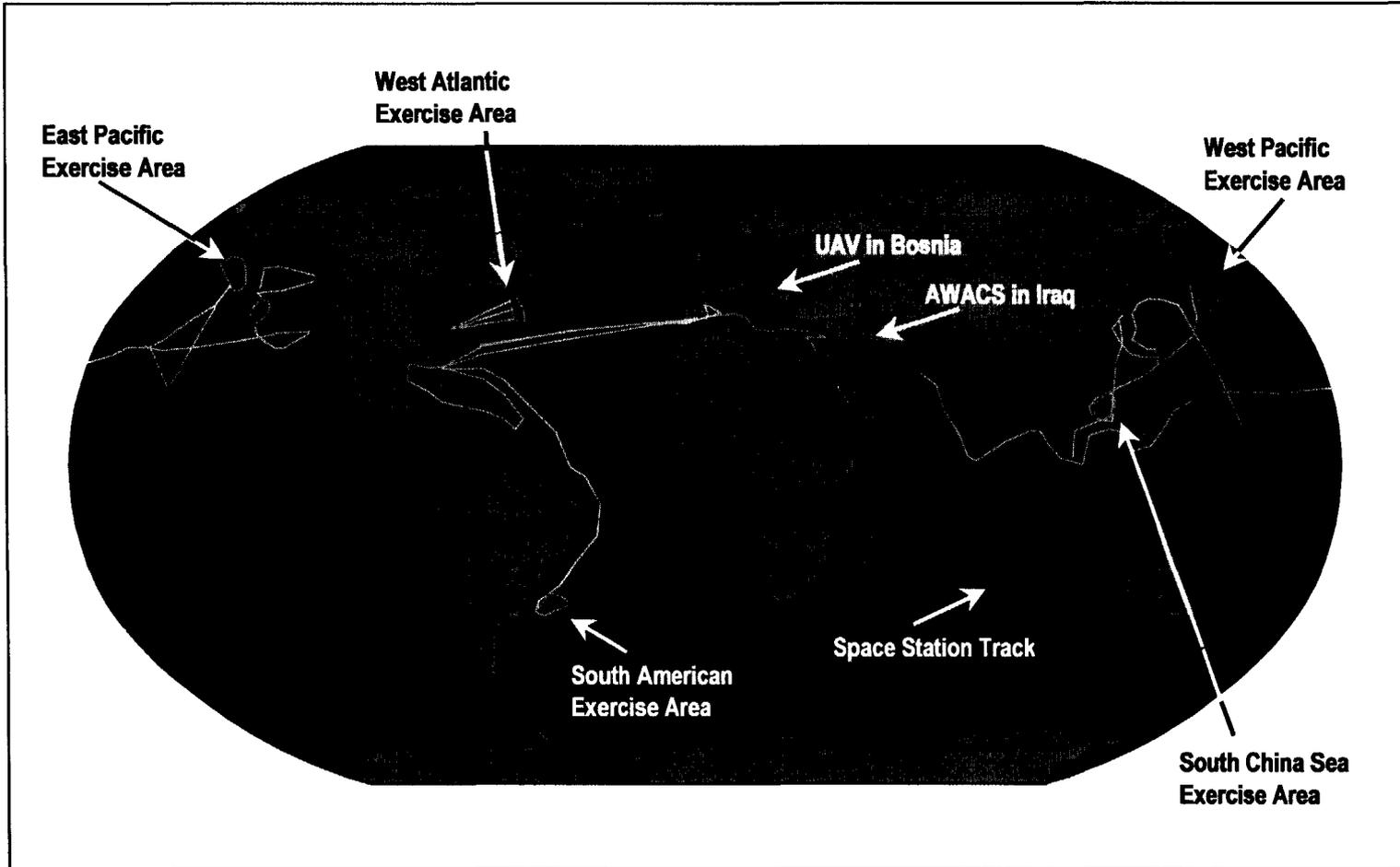
Airline Communication Needs and Benefits



Locations of Unclassified Fixed USG Facilities



Typical US Government Mobile Traffic Operational Area



Boeing Ku-Band NGSO

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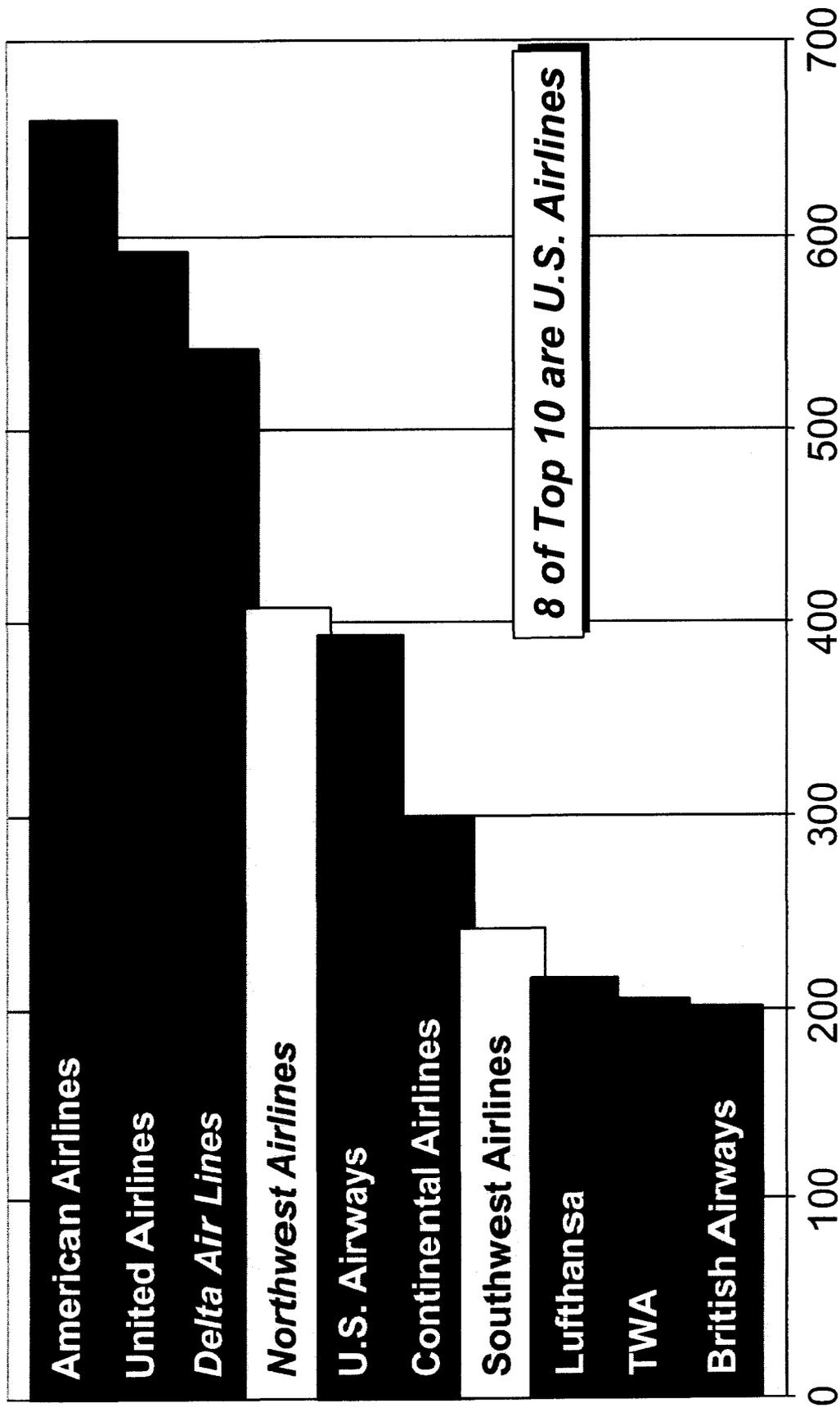
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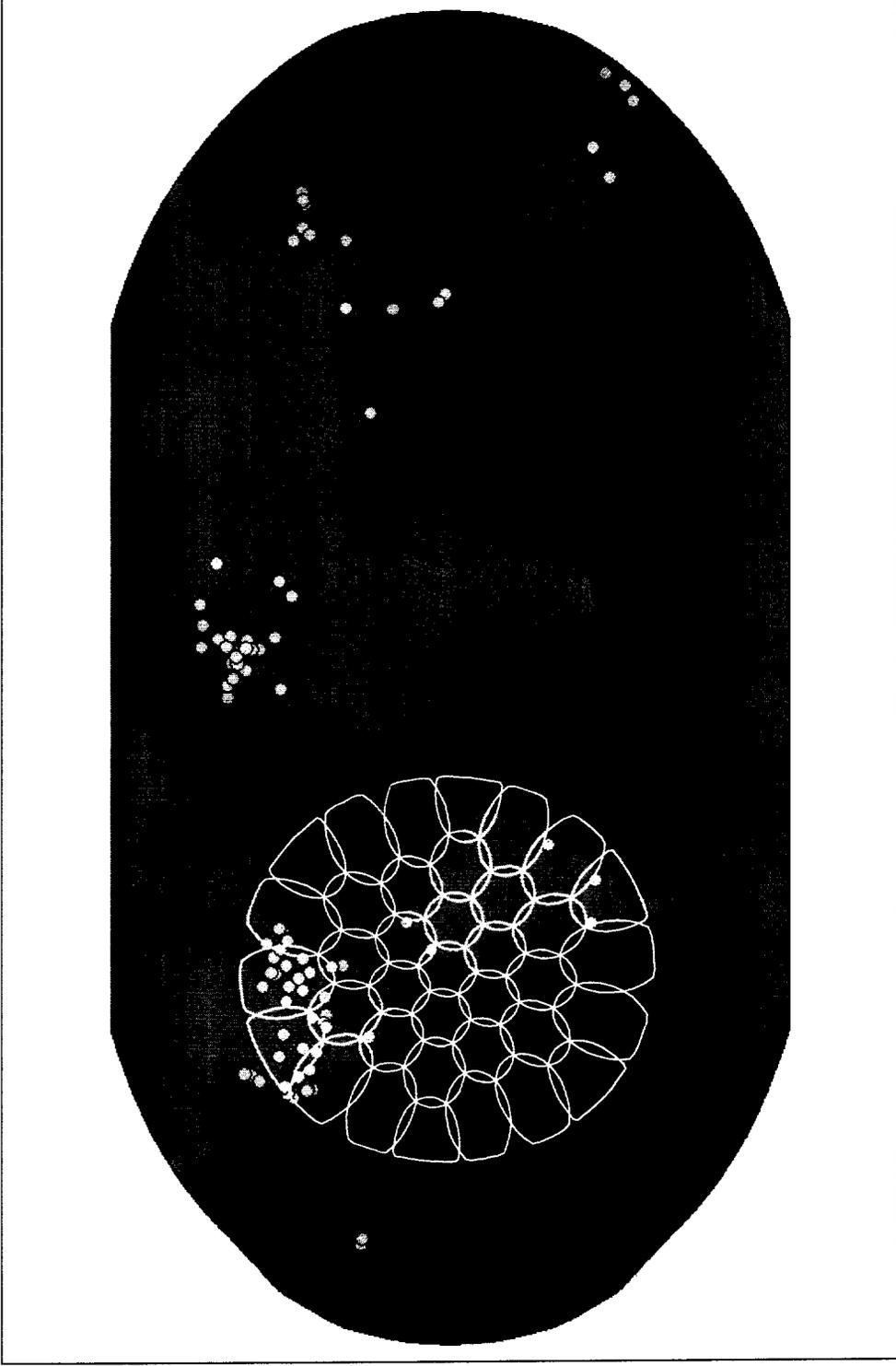
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Number of Airplanes

BOEING PROPRIETARY

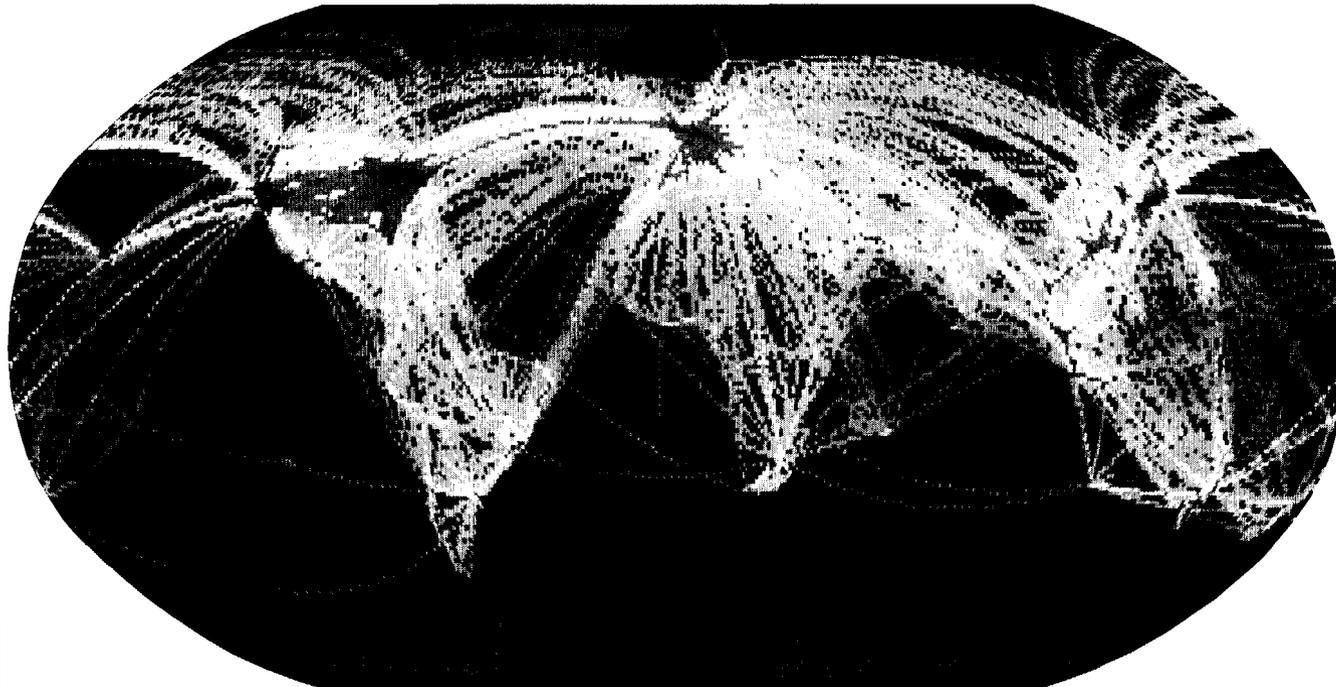
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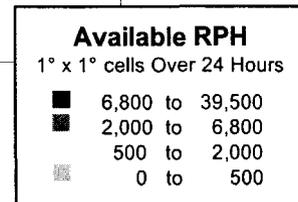
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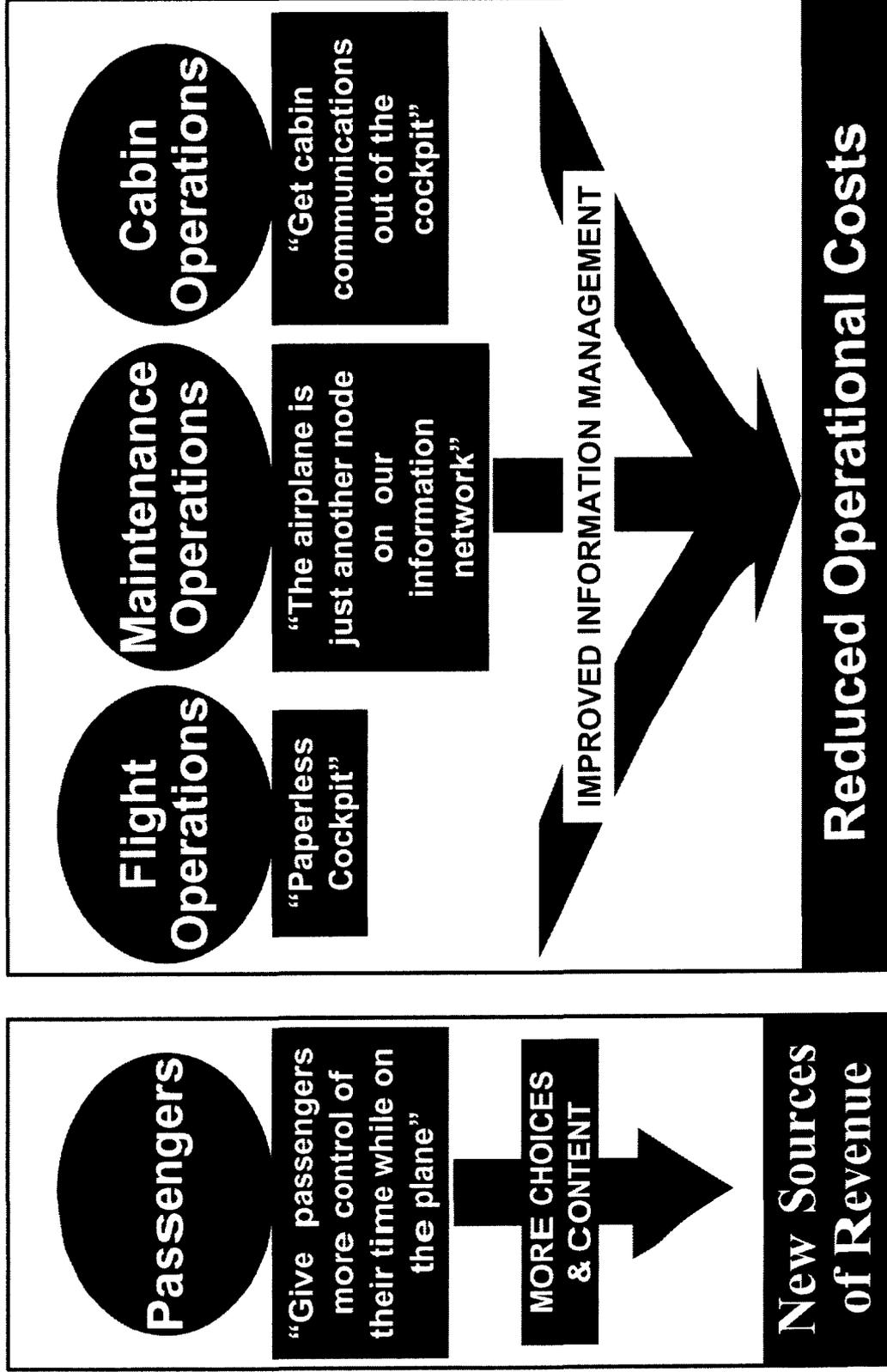
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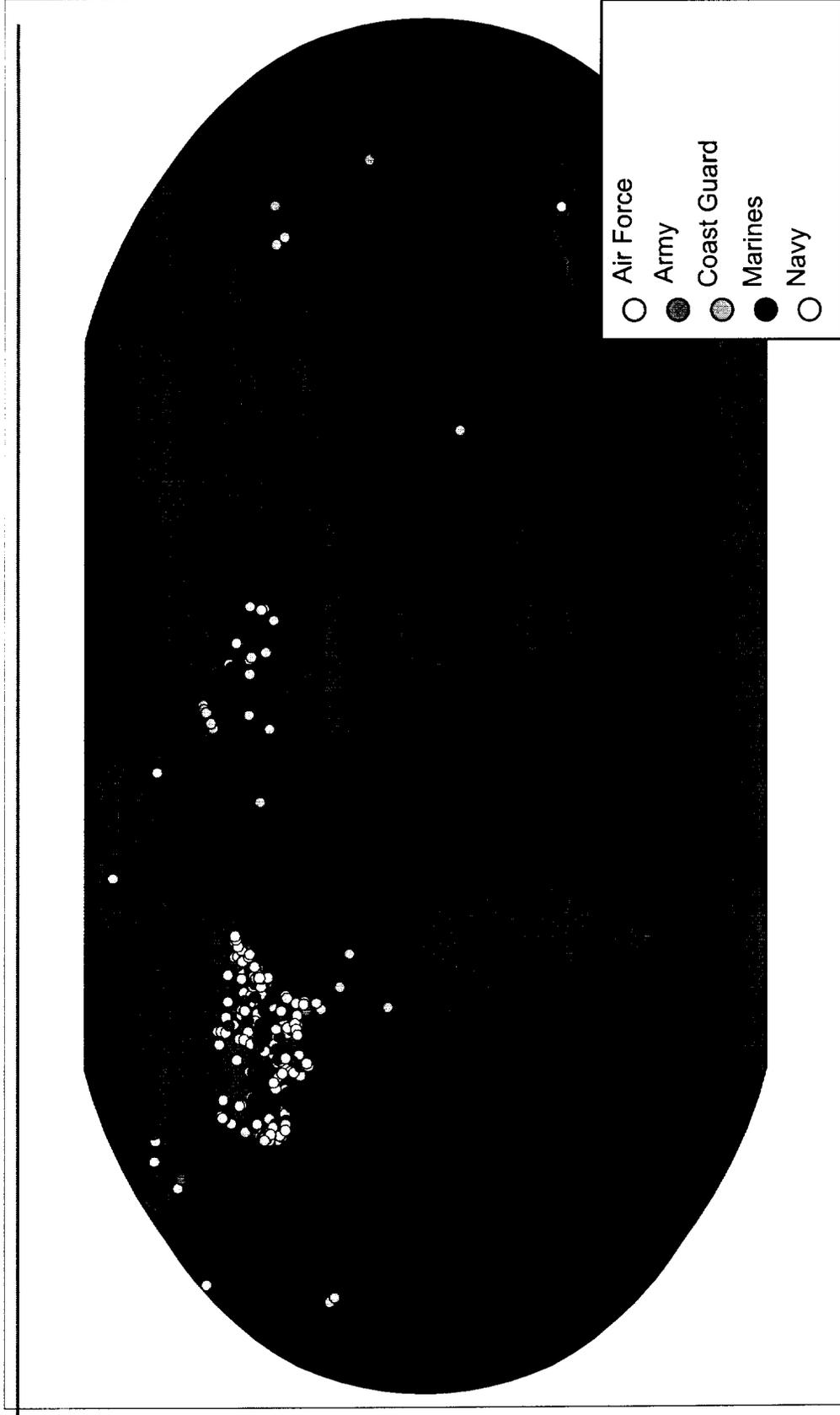
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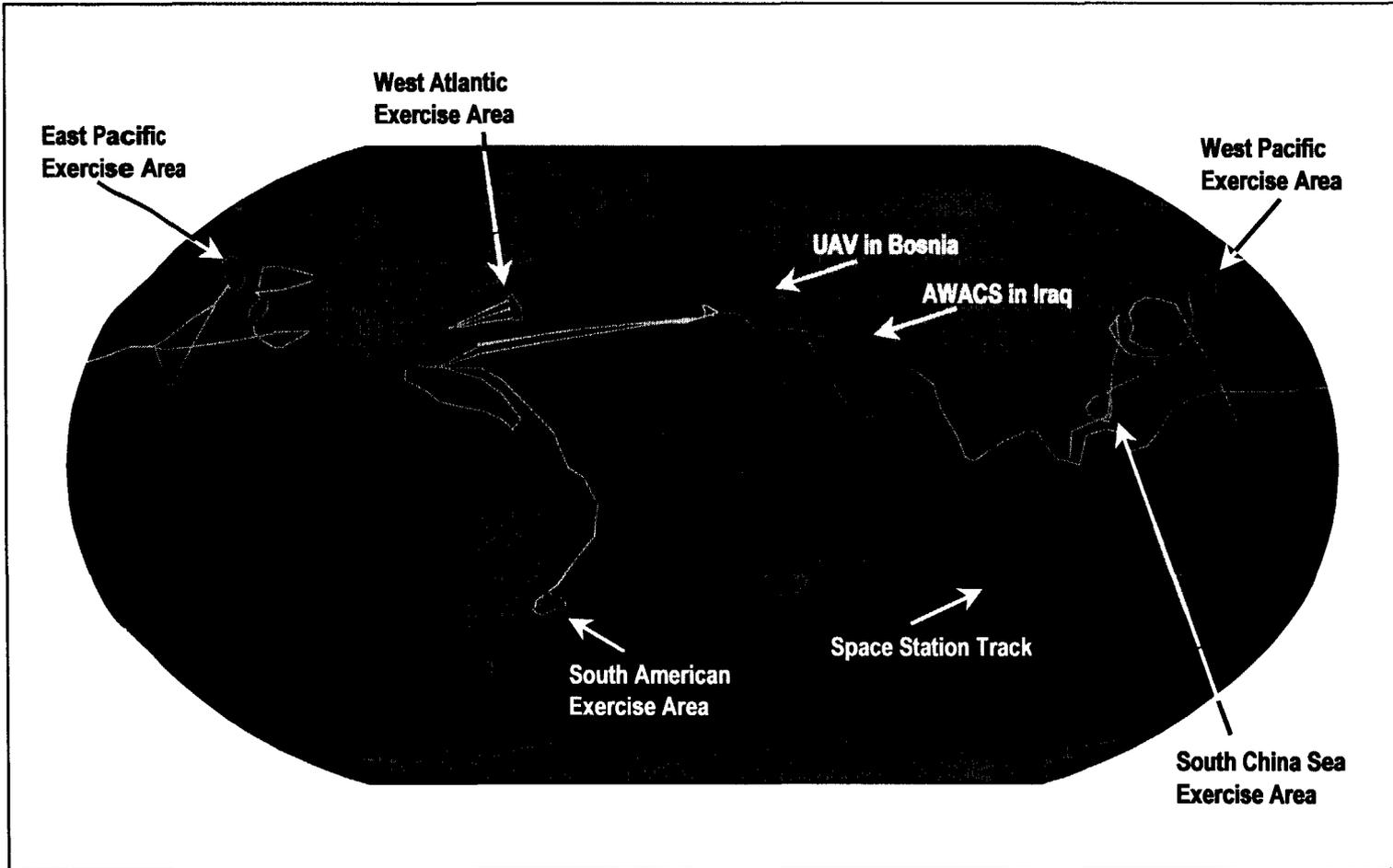
Airline Communication Needs and Benefits



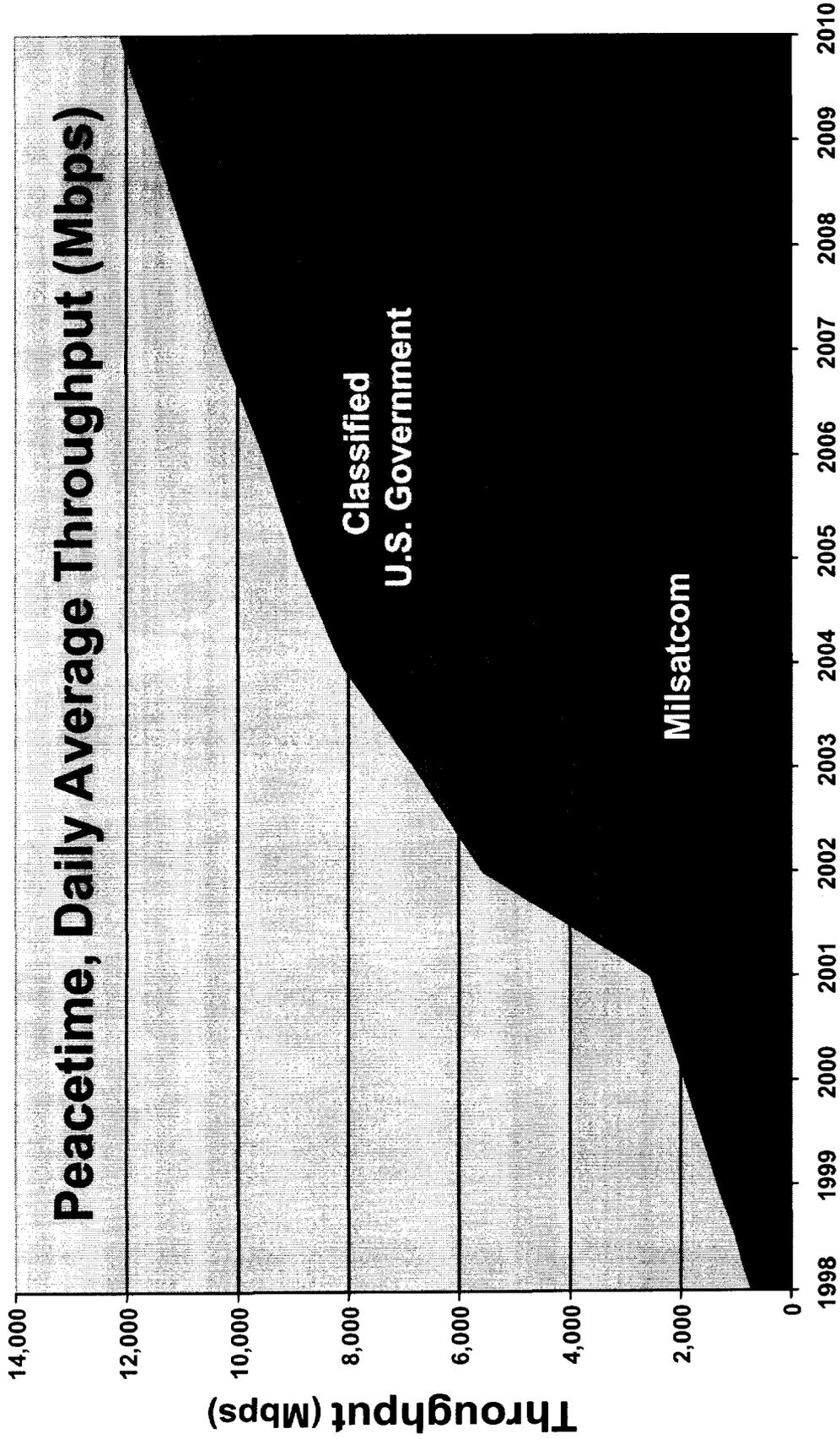
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Typical US Government Mobile Traffic Operational Area



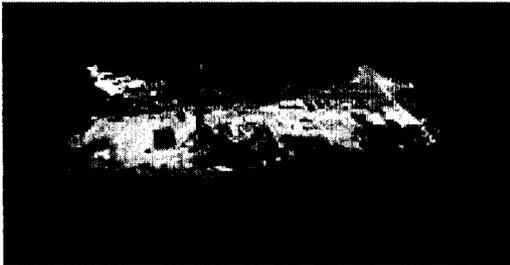
DoD Broadband Information Delivery



Energy Exploration

Target Market

- Petroleum companies with numerous remote drilling rigs



Communications Needs

- Duplex communication
- Relatively few primary control locations (Texas, London, a site in Asia) per company
- Numerous (7,000 to 20,000) drill rig secondary locations per company
- Ability to take readings from each drill rig and send directions every 15 minutes

Customer Profile

- Companies are large and can afford high-end telecom systems
- Petroleum companies are actively drilling in completely undeveloped regions in the developing world
- Most drill rigs have completed drilling in 3 to 8 months

Global Broadband Advantages

- Ease of deployment in remote locations
- Can be easily relocated after well is drilled
- Meets global needs of petroleum companies
- Drill rigs are located in low traffic regions

Major Remote Construction

Target Market

- Large international infrastructure construction companies



Communications Needs

- Integrated telecom systems that can rapidly established anywhere regardless of existing telecom infrastructure
- The ability to work interactively from numerous locations on very large files
- Duplex video broadcast
- Standard telecom services (voice,etc.)

Customer Profile

- Large corporations
- Very large projects (frequently larger than US\$1 billion)
- Projects primarily in developing countries with undeveloped telecom infrastructure
- Project duration averages 3 years

Global Broadband Advantages

- Speed of deployment
- Can be easily relocated during project construction or between various projects
- Offers greater system reliability than local infrastructure
- Offers much larger bandwidth than many local telecom systems

Civil Government

Target Market

- Numerous national, state, provincial, municipal governments



Communications Needs

- A wide variety of image, voice, and other telecom infrastructure bypass technologies for normal daily use as well as during emergency situations
- Future potential uses of broadband service have not been defined through customer contacts to date

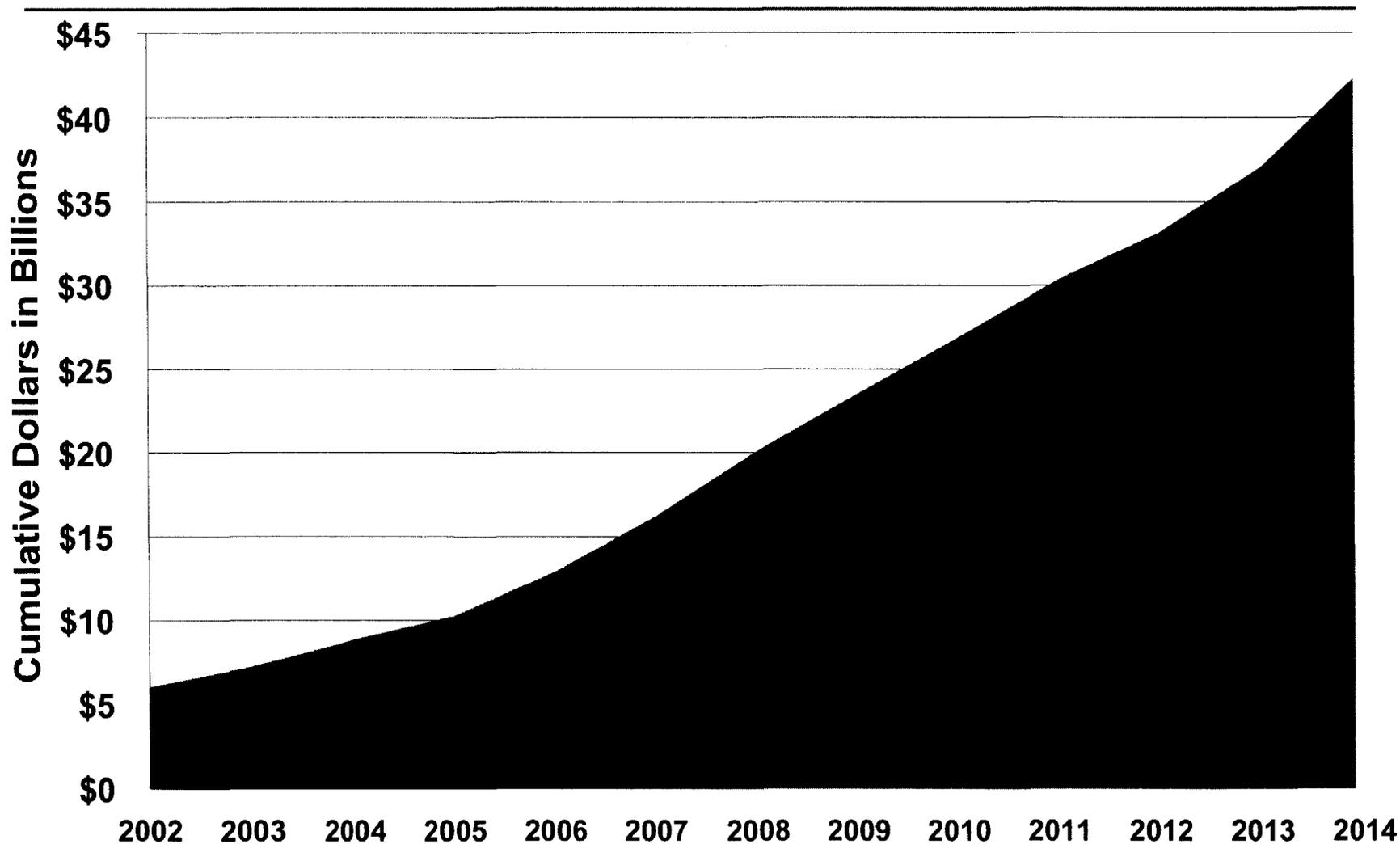
Customer Profile

- Governments generally are late adopters
- Require fixed charges for service to accommodate budgeting processes
- May be infrequent users of the service (low frequency of significant natural disasters)

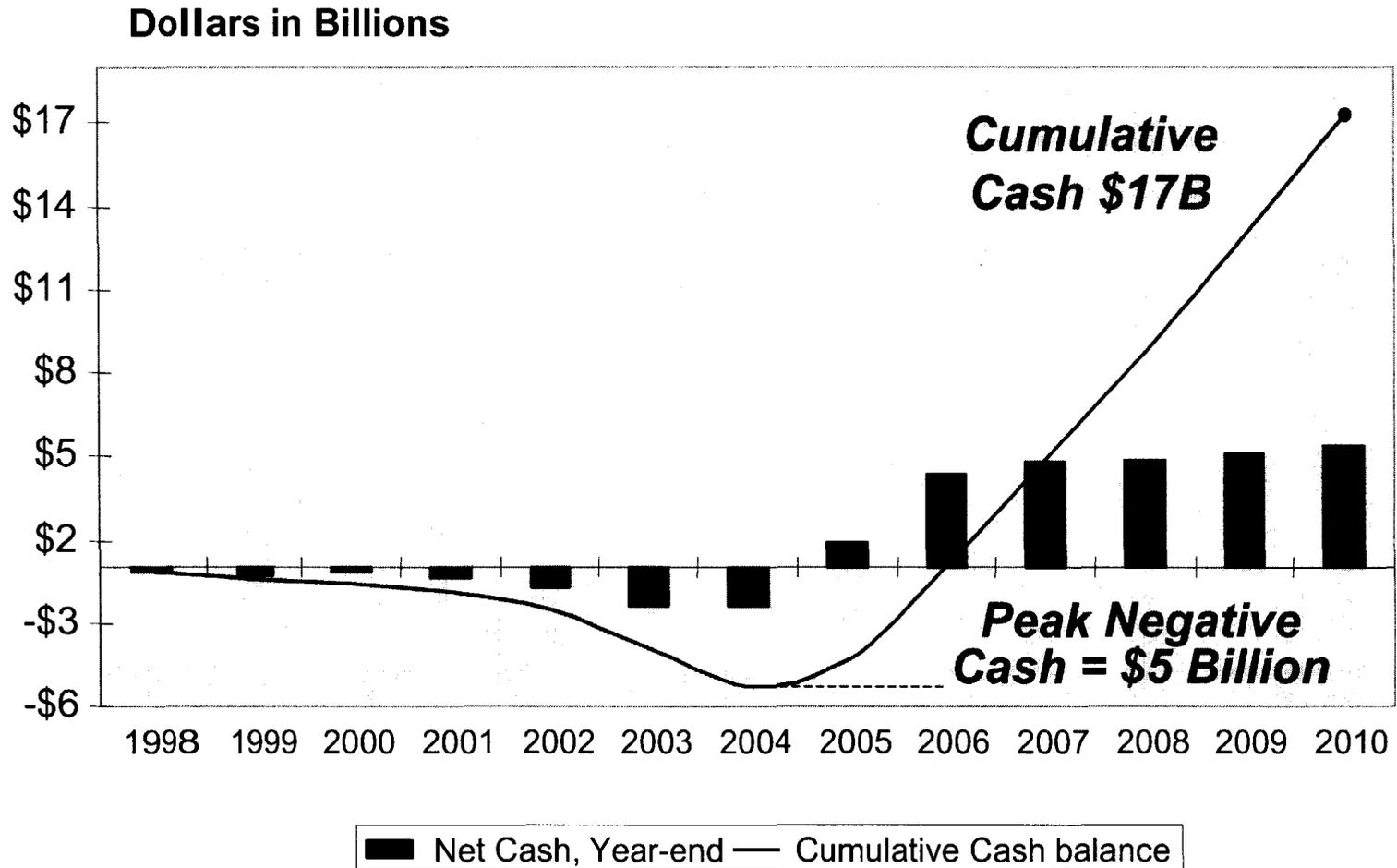
Global Broadband Advantages

- Speed of deployment
- Can be easily relocated after emergency situations
- Bypass to existing infrastructure essential during disaster recovery
- Bandwidth on demand would reduce costs of leasing access to transponders (examples include FEMA, etc.)

Boeing Ku-Band Market Forecast



Global Business Case



Summary

- Integrating fixed and mobile networks for major information users differentiates from other multimedia broadband service providers
- Business case depends on major U.S. market penetration
- Significant capital risk for implementation - over \$5 billion negative cash required

Boeing Ku-band NGSO System Description

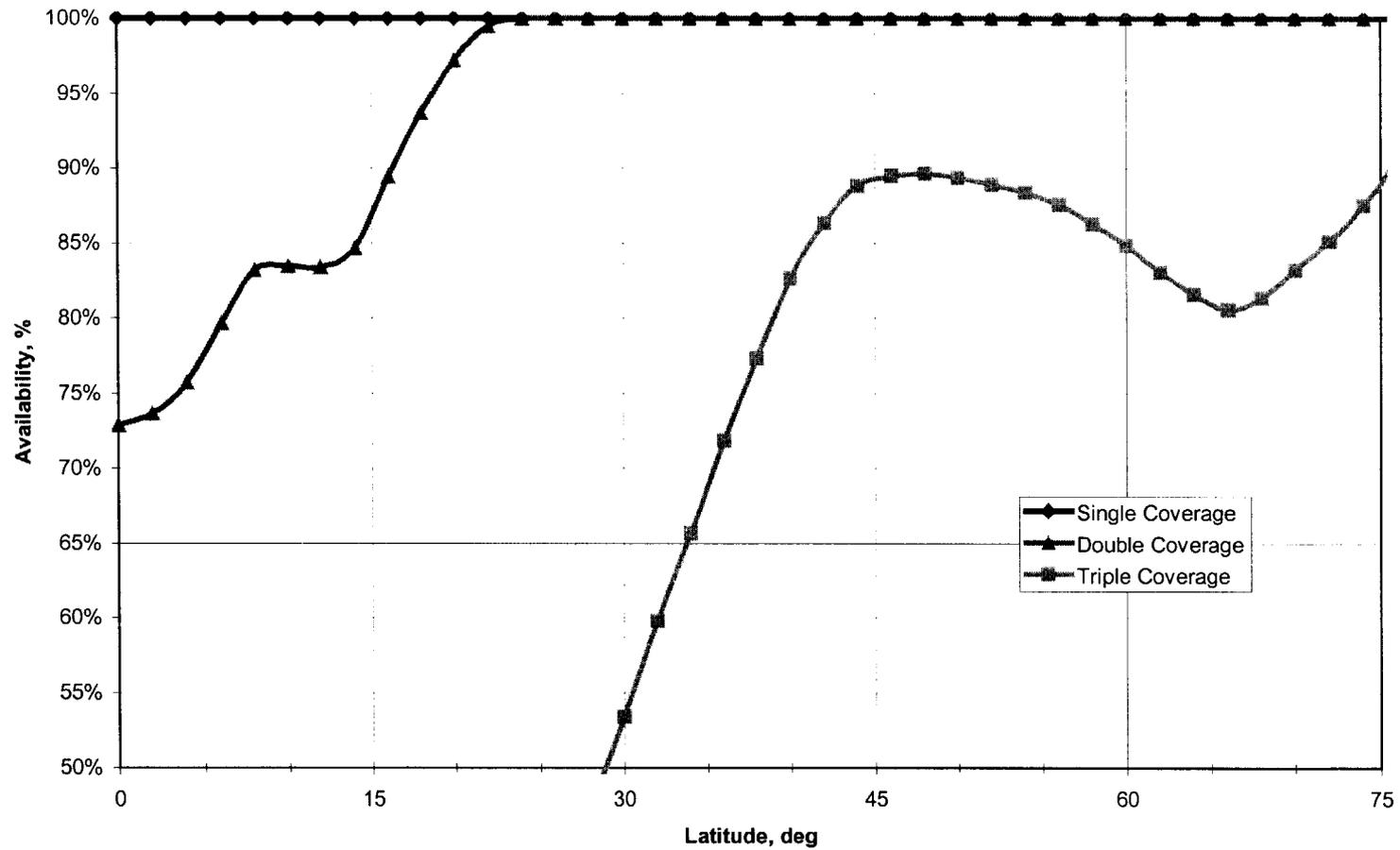
- Satellite Constellation
- Coverage
- Services
- Frequency Plan

Satellite Constellation

- 20 satellites
 - 4 planes of 5 satellites
- 20182 km altitude circular orbit
- 57 degree inclination
- Coverage to 30 degree elevation angle

Coverage

Availability of Satellites as a Function of Latitude



Services

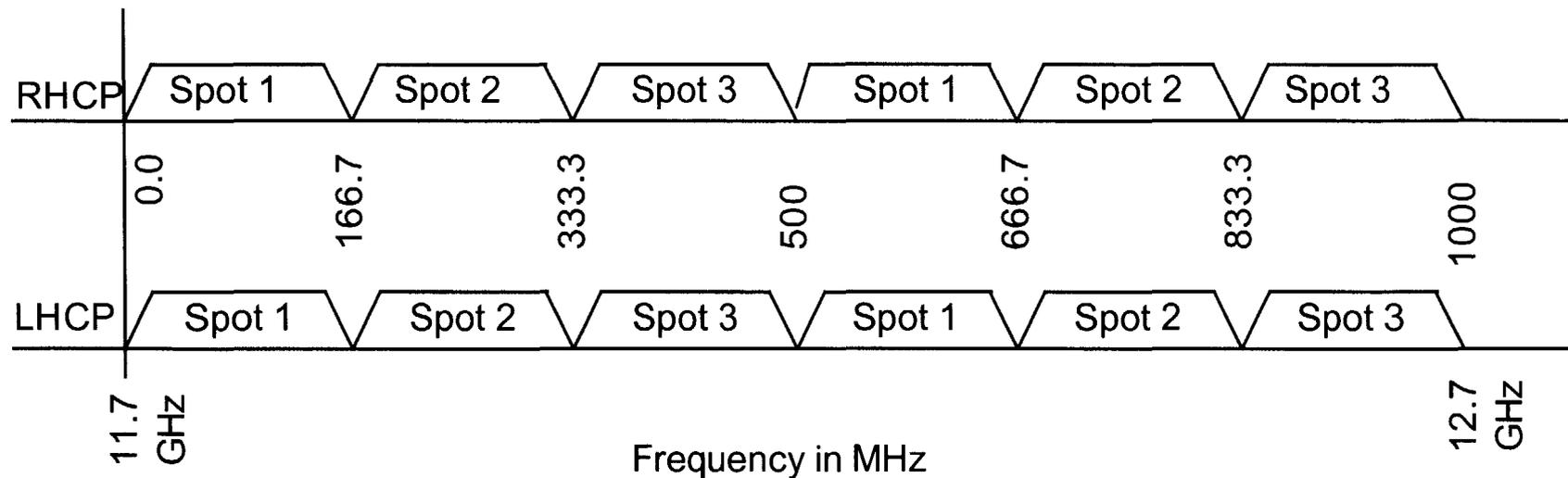
- Integrated Data Service (IDS)
 - Bi-directional general communications
 - Point-to-point and point-to-multipoint
 - Integrated voice, video, and data
- Backhaul Data Service (BDS)
 - High rate return link, scheduled service
 - Point-to-point
 - 5 beams per satellite

Antenna Coverage Pattern

- IDS
 - 37 spot beams, satellite fixed pattern
 - Nadir spot beam, 1702 km diameter
- BDS
 - 5 steerable spot beams
 - Nadir spot, 490 km diameter

IDS Downlink Frequency Plan

- 10.7 to 11.7 GHz - Feeder downlink
- 11.7 to 12.7 GHz - Service downlink
 - Three cell frequency reuse

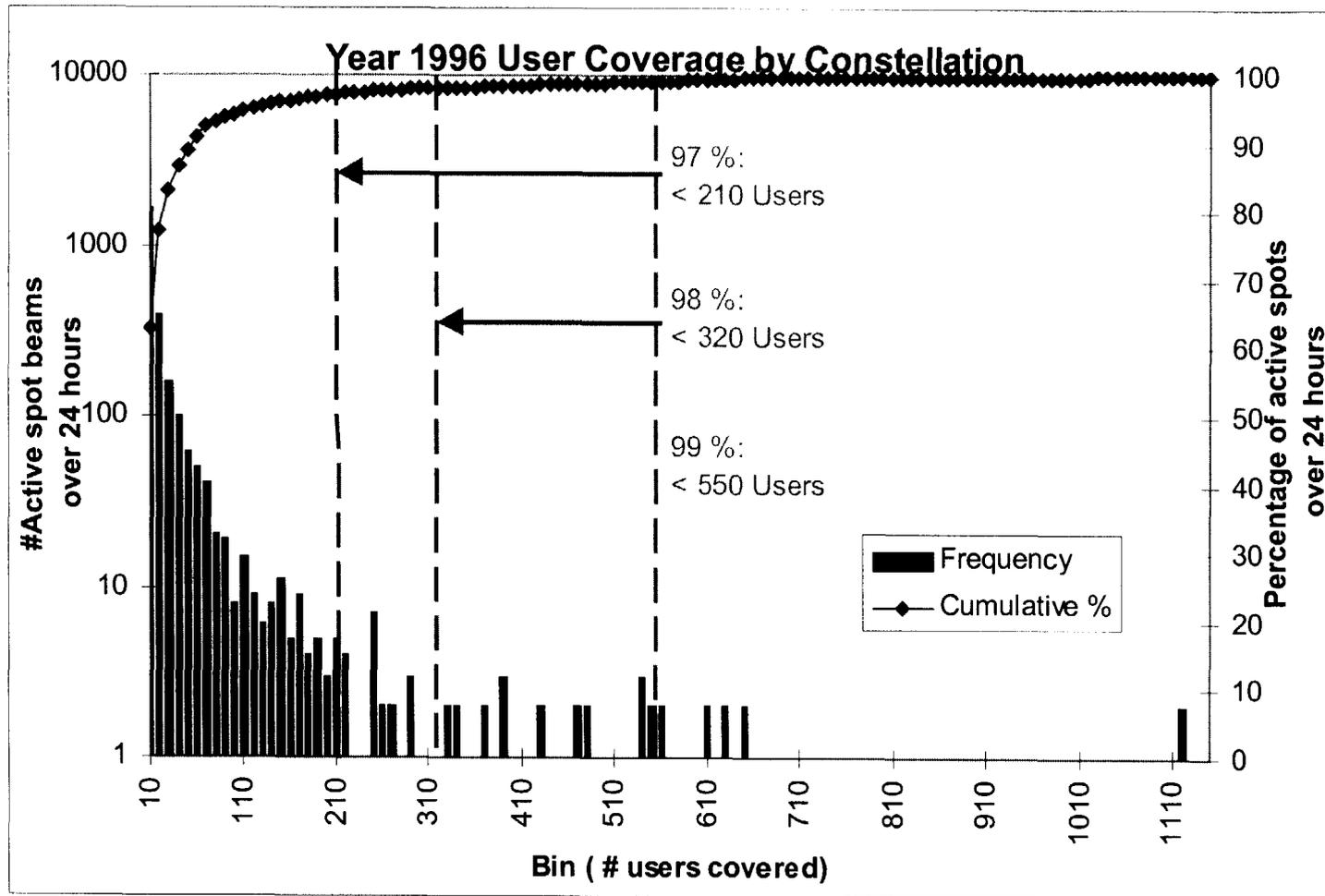


IDS Downlink

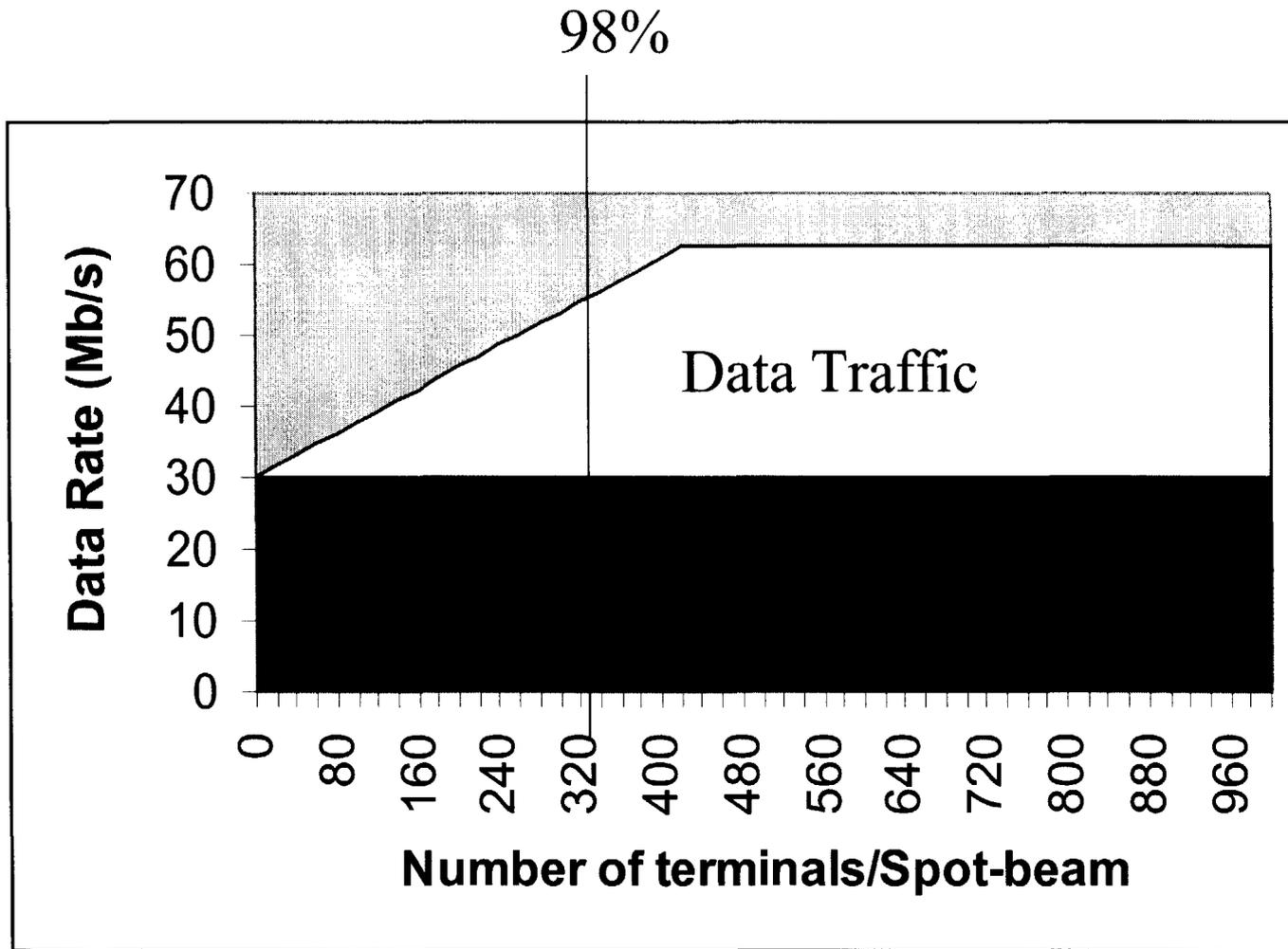
Data Rates

- Synchronous CDMA downlink
- 5.2 Mb/s per channel
- 3 channels per polarization, dual polarization
- 2 frequency channels per beam (3-cell reuse)
 - 62.4 Mb/s per beam
- 6 frequency channels per beam (100% reuse)
 - 187.2 Mb/s per beam

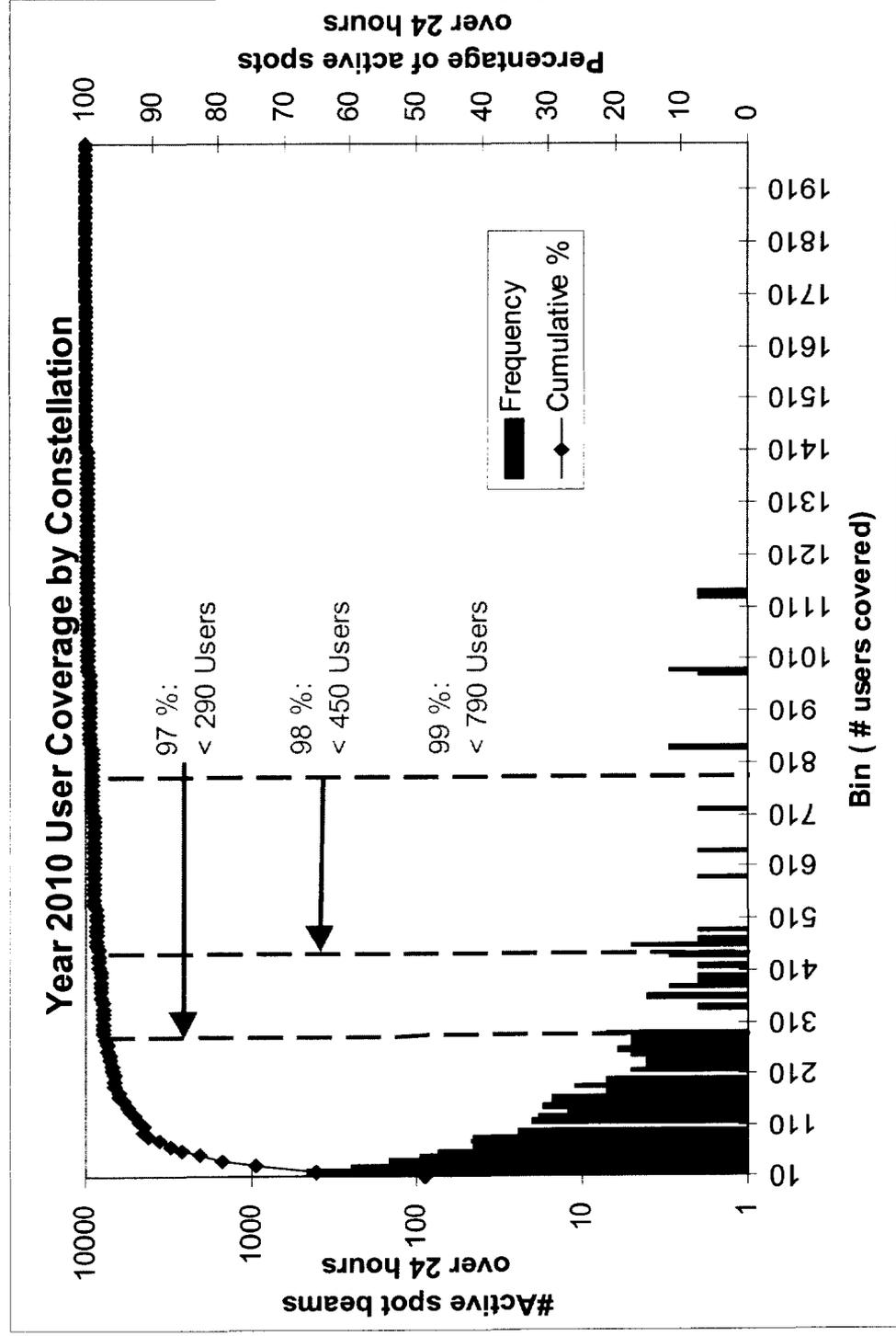
Traffic Model, 1996



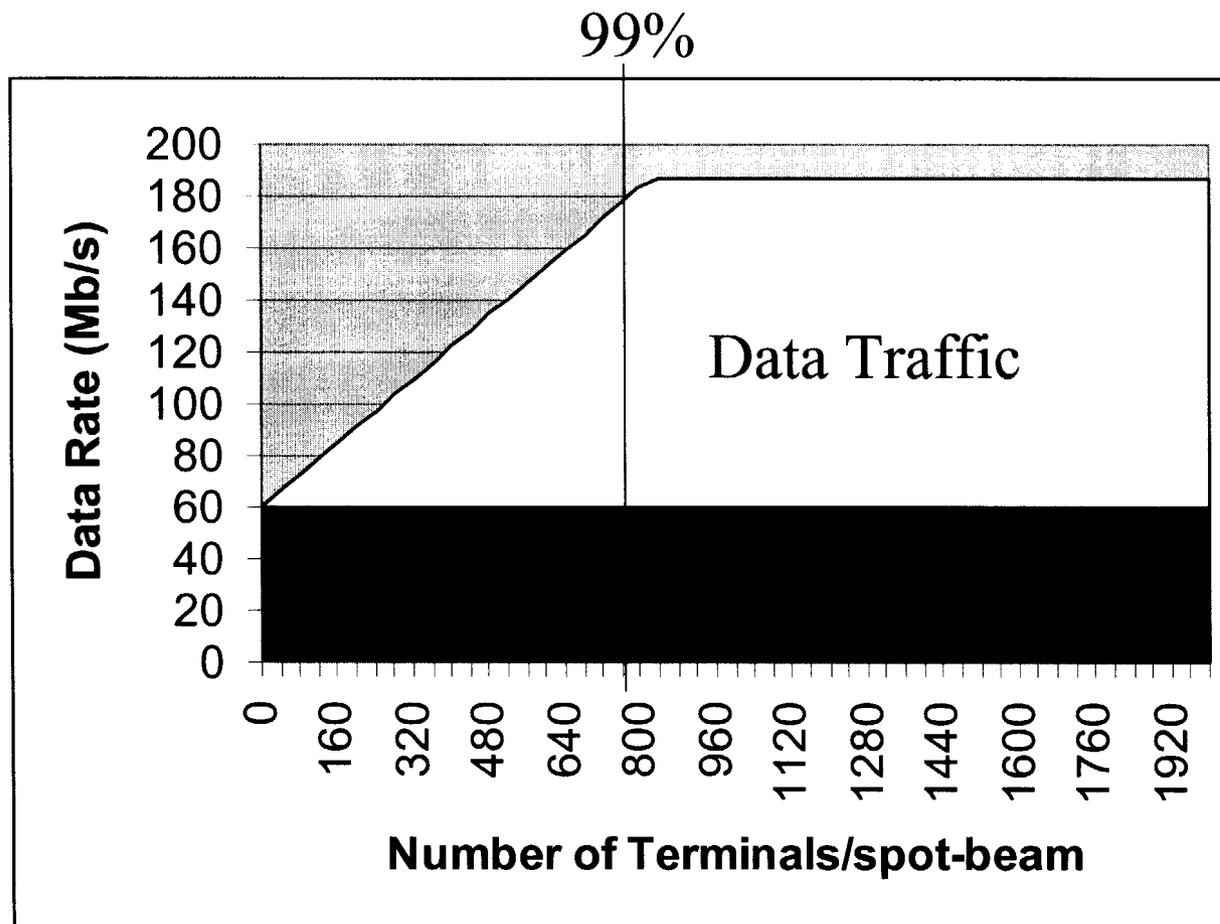
Data Services, Current



Traffic Model, 2010

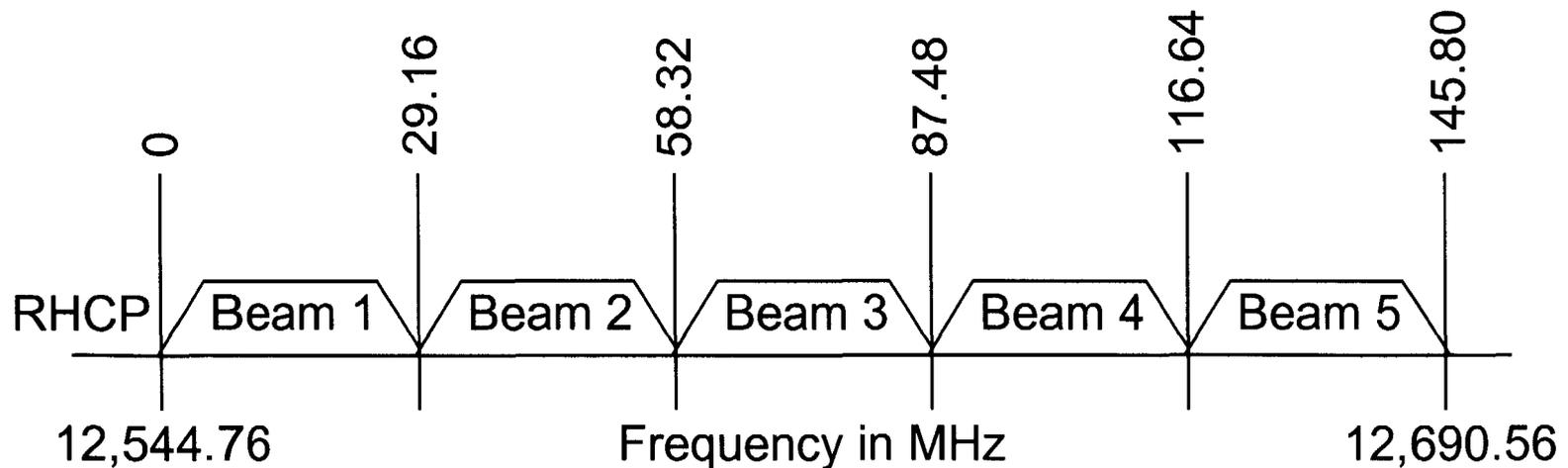


Data Services, 2010



BDS Downlink Frequency Plan

- 10.7 to 11.7 GHz - Feeder downlink
- 11.7 to 12.7 GHz - Service downlink
 - 5 steerable beams
 - Frequency assignment is notional



BDS Downlink Data Rates

- 5 independent steerable beams
- Beams track specific targets
- 24.5 Mb/s per beam

NGSO Sharing, Spectrum Impacts

- Eight Ku-band NGSO systems filed in the U.S.
- Three to four at most can share spectrum using satellite diversity
- This would require two sub-bands for NGSO of 500 MHz each
- Further division of spectrum to accommodate Northpoint could make NGSO systems non-viable

Northpoint Justification

- There is no technical justification for Northpoint to operate in the 12.2 to 12.7 GHz band.
- There is no economic justification for Northpoint to operate in the 12.2 to 12.7 GHz band.

Reuse of User Terminal for Northpoint

- Cannot reuse DBS set-top box.
 - Consumer needs Northpoint unique set-top box because of conditional access equipment.
- Can reuse antenna and LNB if operating in 12.2 to 12.7 GHz band
- Can reuse antenna if operating in other band
 - Requires only new LNB to operate in other band
- No justification for Northpoint operation in DBS band from user terminal viewpoint

Other Frequency Bands

- For example, the FCC authorized LMDS at
 - 27.5 to 28.35 GHz
 - 29.1 to 29.25 GHz
 - 31.0 to 31.3 GHz
- No technical justification for Northpoint not being moved to already allocated spectrum