



Innovations in Integrated Satellite Systems

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Traditional Satellite Systems are Limited

Limited coverage



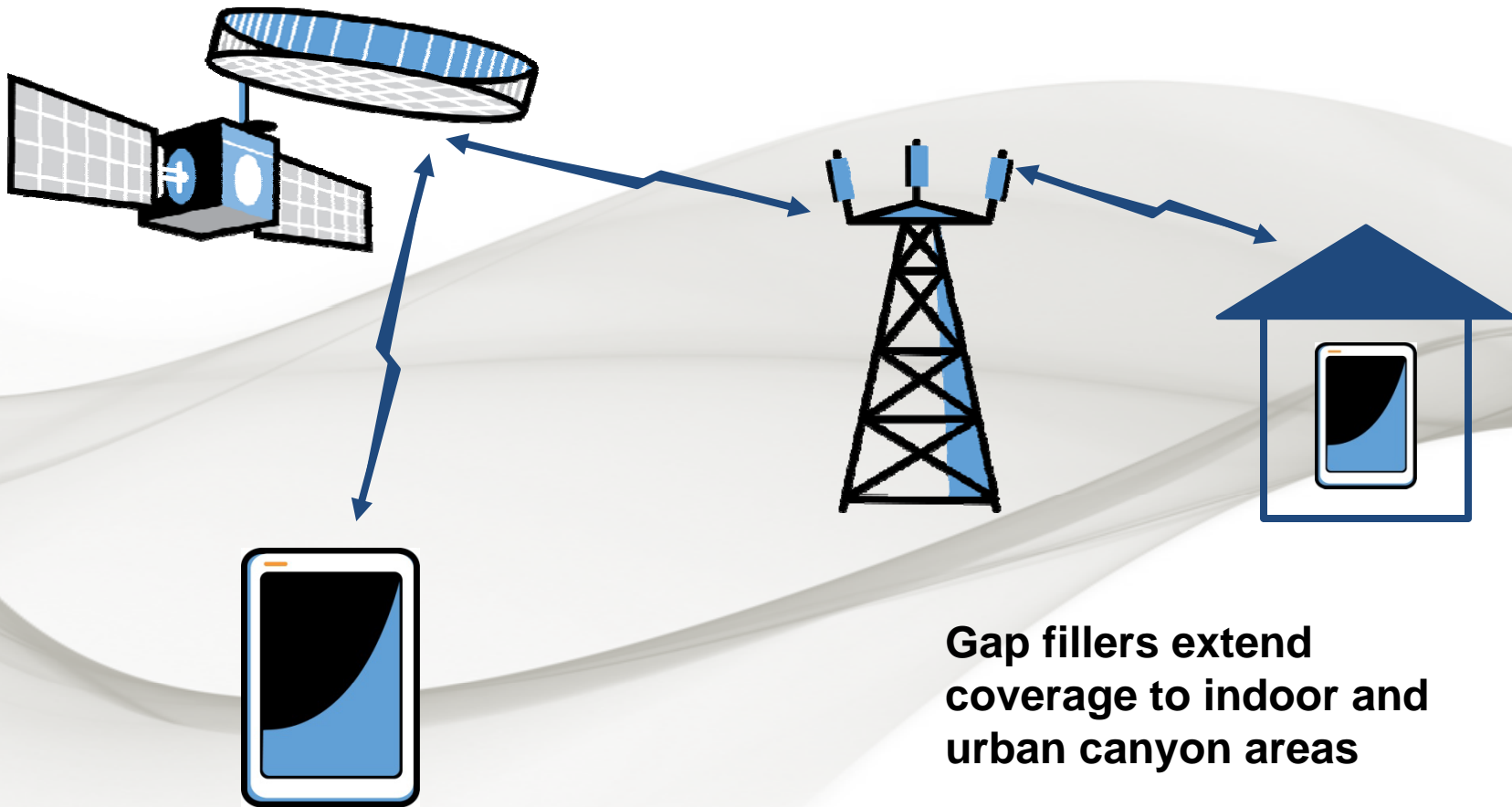
Limited mobility



Key Technological Developments and Innovations

- Spot beams and frequency reuse – Increased capacity
- High-power TWTAs and other equipment – Smaller receivers
- New modulation techniques – Better frequency coordination
- Complementary ground component – Extended reach and greater throughput

Integrated Satellite System Delivers Mobility and Coverage



**High-power system
enables portable,
personal receivers**

**Gap fillers extend
coverage to indoor and
urban canyon areas**

New Technology Leads to New Applications (and New Businesses)

Sirius | XM Radio

- Constellation of satellites, approximately 800 ground-based repeaters
- United States and Canada
- Satellite radio, navigation, weather, data, and emergency alerts
- Receivers for auto, home, aviation, maritime, and personal use
- Nearly 20 million subscribers and 40 million listeners
- Expected 2010 revenue of US\$2.75 billion

Up-and-Coming Businesses

LIGHTSQUARED 

solaris 
mobile

Terre  Star

 DEVAS

Integrated Systems Are the Future of Satellites

- Numerous deployments in various countries around the world to date
- Innovations and technology continue to improve
- Favorable regulatory climate (significant public interest benefit)
- New applications being imagined by entrepreneurs and designed by engineers