

The top half of the slide features a satellite view of the Earth from space. The curvature of the planet is visible, showing a blue atmosphere and a mix of green and brown landmasses. The background is a deep blue space with some faint, out-of-focus light spots.

Session 4: Benefits of Satellite Services Delivering to Rural Areas

Satellite networks are a critical component of communications infrastructure. Satellites provide ubiquitous, anytime coverage, cost-effectively to many areas of the globe, which might otherwise go unserved.

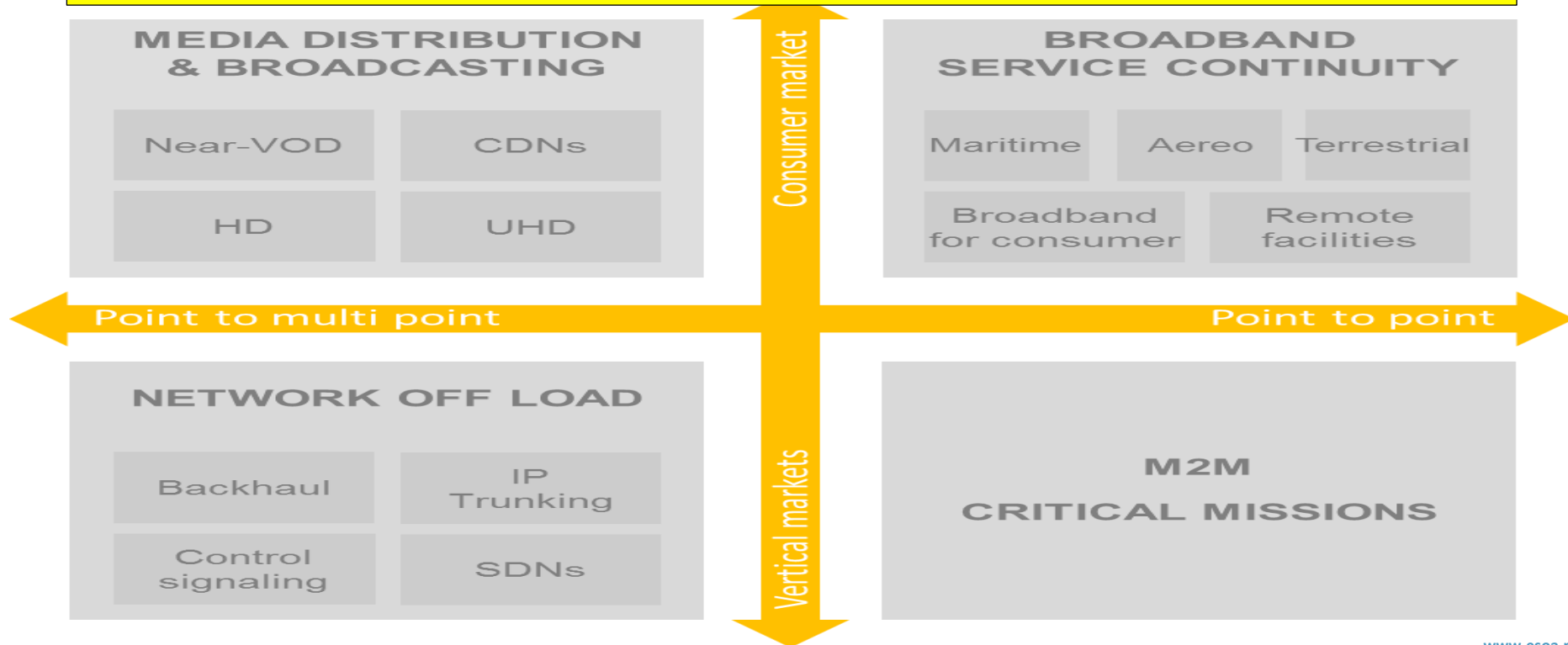
Satellite communications are the only means to provide truly global coverage and mobility.

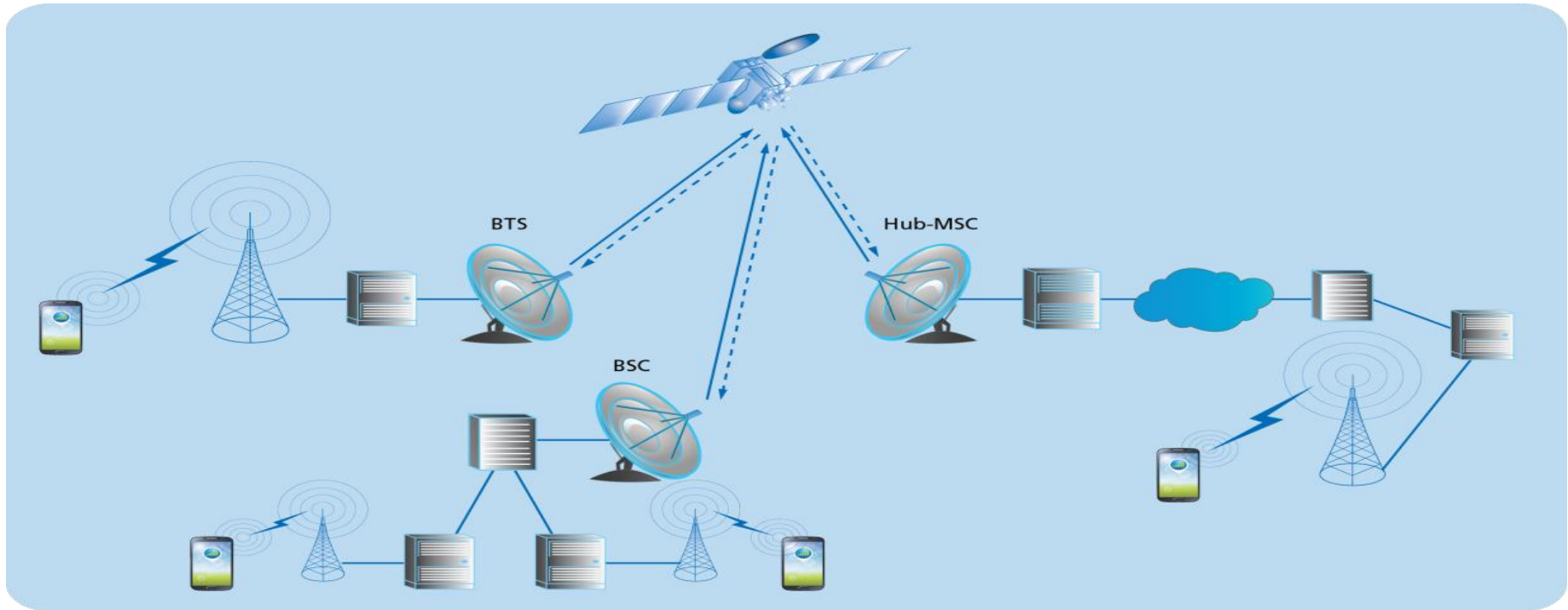
- Providing wide coverage to complement and extend dense terrestrial networks
- Complementing connectivity for mobile nodes (ships, airplanes and trains)
- Offloading a temporarily congested terrestrial network
- Providing backhauling services to fixed or moving base stations
- Providing emergency/disaster communications
- Provide broadcast or multicast one-to-many transmission links
- Satellites can deliver very high data rate services in 'broadcast / multi-cast' mode and uni-cast mode

This is of course even more relevant in view of the fact that future 5G infrastructure is expected to cope with 30-50 Mbit/s for a single video transmission.

Satellite Key Use Cases - 2

Areas where satellites will contribute to augment 5G service capability, whilst optimising the value for money to the end-users and the business models of the telecom operators serving end-users, are :





GEO Ka-band HTS 'backhaul' for 2G/3G/4G base stations support 2G/3G/4G service delivery

Enabling Mobile Telephony

- Multiple remote villages each with <500 inhabitants
- Immediate voice + data connectivity thanks to satellite backhaul



- No GSM coverage + no electricity supply
- Population density too low to attract mobile operators
- Secured satellite installation using solar generator has immediate social impact for local population including doctors, teachers, local entrepreneurs

Voter's voices heard

- 368 electoral offices connected by satellite -
- Votes from >18000 polling offices collected + transmitted to Ouagadougou -



- Thanks to satellite, public TV live broadcasted evolution of election results in near real-time
- IP connectivity + Voice over IP (VoIP) service allowed each site to have voice calls with HQ in Ouagadougou

Reducing Child Mortality

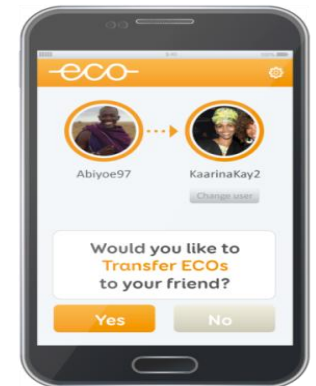
More than 2 million women, families + caregivers across low & middle-income countries treated since 2015



Mobile clinics in remote areas used portable satellite-Wi-Fi hubs to access online health info to improve mother + child health

- Maternal care services + advice
- Collecting data to enable improvements in maternal, newborn + child health

HOW IT WORKS



Commercial Air

- Video streaming available at every seat
- Significant operational savings
- Airlines and passengers expect gate-to-gate service
- Asia is the fastest growing airline market

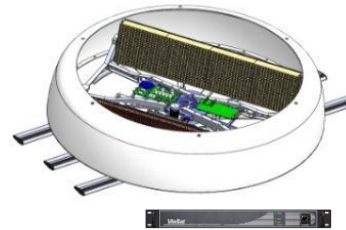


Transportable Terminals

- Man portable high throughput terminals
- Applications:
 - Mobile medicine
 - Disaster relief / Civil Emergency
 - Outside broadcast
 - Festivals, etc

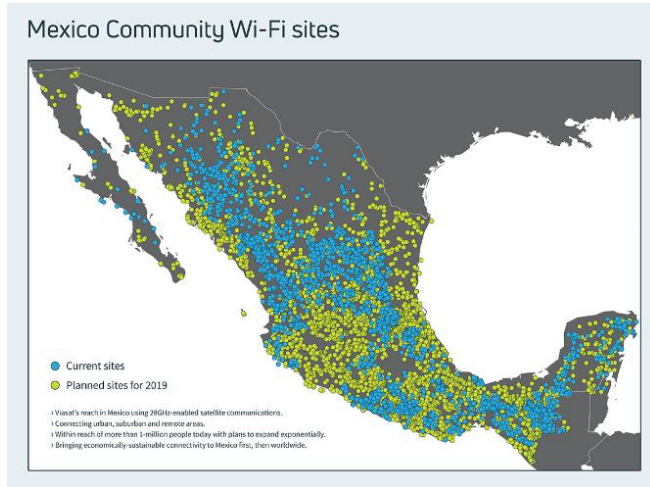


- SOTM Ka-band terminal for land mobile vehicles and suitable for HTS networks
- End market segment
 - Trains, Buses, trucks (infotainment, fleet management, security)
 - Security/governmental
- Operates on vehicles on the move
- Automatic satellite acquisition and tracking
- Automatic transition between terrestrial and satellite networks
- Provides affordable broadband connectivity on commercial platforms



Use Cases

Community Based WiFi Network



- Internet is a basic human right yet 3.5 billion people unconnected globally
- Smart phone ownership now ubiquitous, yet most solutions are too expensive to serve unconnected markets
- Internet connectivity can bring additional services to the unconnected

Urban Cell Tower - \$\$\$

Expensive, but covers thousands of customers who can offset cost



Rural Cell Tower - \$\$\$\$

Expensive and does not cover enough population to recover cost



Community WiFi - \$

Flexible, low cost solution that can serve the uncovered around the world



INTELSAT INPUT

28GHz-Enabled Community Wi-Fi Installation



- The economics of WiFi make it a better option for rural communities
 - Low up-front investment
- Cellular is too expensive to be deployed outside of cities
 - High up-front investment results in negative project ROI
- **Cellular doesn't make economic sense for the rural market**

Satellite Communication networks Offer the following:

- ❑ COVERAGE EFFICIENCY – geographical coverage nationwide
- ❑ ENERGY EFFICIENCY – minimal power requirements, solar powered
- ❑ SPECTRUM RE-USE EFFICIENCY – dynamic allocation, multiple beams
- ❑ BROADCAST and MULTICAST SPECTRUM EFFICIENCY -
- ❑ GREATER FLEXIBILITY - than terrestrial towers
- ❑ LIFETIME INCREASING – with more advance technologies, TOC



Any Questions