

CONNECTING THE UnCoNNeCTed

DEFINITION

Small cells for:

- RURAL** Areas outside of towns and cities
- REMOTE** Far from existing coverage and mobile infrastructure
- MOVING** On-board coverage moving with users
- TEMPORARY** Rapidly deployable short-term coverage
- DEDICATED** Limited to specific service or user group

THE MARKET

- rural communities • remote industrial •
- public safety • disaster recovery/humanitarian •
- special event • military • transportation •

THE OFFER

ENHANCED, EXTENDED SERVICES TO MOBILE USERS IN ALL RURAL AND REMOTE ENVIRONMENTS

PRIMARY DRIVERS FOR OPERATORS


- ✓ Captive markets with good brand and differentiation opportunities
- ✓ Includes high-value, lucrative application areas
- ✓ Opportunities to generate significant social and economic value
- ✓ Opportunities to leverage existing investments in small cells elsewhere
- ✓ Associated operational benefits of network resilience and responding to network outages
- ✓ Growing expectations of mobile in all customer groups
- ✓ Small cells fit the common requirements of rural and remote users well and address traditional operator concerns

BUSINESS CASE

- 1 **RURAL** Affordable mobile broadband coverage to an **extra 650 million rural users** worldwide with an estimated **operator benefit of \$163 billion**
- 2 **REMOTE INDUSTRIAL** High ARPU, captive audience, long-term contracts, multi-billion dollar potential.
- 3 **PUBLIC SAFETY** New long-term high-value contracts. **4,000,000** LTE public safety subscribers forecast by 2020
- 4 **TRANSPORTATION** Huge end user numbers – nearly **3 billion** air passengers and millions more on rail, road and sea
- 5 **SPECIAL EVENTS/MILITARY** Potentially **lucrative** long-term contracts, better product differentiation, brand awareness
- 6 **DISASTER RECOVERY/HUMANITARIAN** CSR, awareness of mobile potential, brand awareness

CASE STUDIES

Vodafone UK Rural Open Sure Signal trial



REQUIREMENT Bringing coverage to some of the two per cent of places in the UK that cannot get a mobile signal.

APPROACH Carefully sited small, low-powered 3G mobile base stations that work with a local broadband connection to create a 3G signal and provide up to 500 meters of 3G coverage to any Vodafone UK customer within range.

KEY RESULTS Initial test in 200 population village offered boost for businesses, call volume growth. Launch of a national program giving 100 rural communities across the UK the opportunity to have mobile access. Thirty trials already underway.

Cost-effective connectivity for the developing world



REQUIREMENT Access to mobile communications for 1000 remote communities worldwide.

APPROACH Low-cost, low-power small cell solution.

KEY RESULTS Communications for the first time for thousands leading to new jobs, new businesses, improved access to information, quicker and easier assembly of local inhabitants. Potential return on investment for operators in less than 24 months.

Small cells meet satcoms in Latin America



REQUIREMENT Quality mobile broadband for Latin America's rural and hard-to-serve areas.

APPROACH Small cells and satellite backhaul.

KEY RESULTS Mobile operators can easily extend service. Scalable system to meet growing demand.

Oil rig communications



REQUIREMENTS Offshore oil-rig-to-oil-rig communications in harsh conditions.

APPROACH Combined offering of 700MHz and 3.65GHz WiMAX solutions and HiperMAX base stations.

KEY RESULTS Reliable, robust communications provision, enhanced productivity and cost savings.

Mining communications



REQUIREMENTS Remote operation of underground equipment.

APPROACH ViaNET and ViaNET 4G with integrated wireless backhaul.

KEY RESULTS Safe, reliable communications, enhanced productivity and cost savings.

Coverage for emergency services and first responders



REQUIREMENTS Robust, secure, reliable, dedicated multi-user communications for emergency services.

APPROACH Mission-critical communications system on emergency vehicles using GSM picocells and satellite broadband for backhaul.

KEY RESULTS Successful emergency communications support in a number of UK incidents. Deployment extended beyond UK.

Rapid reinstatement of coverage after a natural disaster



REQUIREMENTS Reliable and secure communications after natural disaster, and support for ongoing humanitarian efforts.

APPROACH Portable small cell network including laptop computer, base stations with amplifiers, satellite terminal, smartphone handsets, battery packs, chargers, mast and antennas.

KEY RESULTS Communications established within 15 to 20 minutes of equipment arriving.

4G takes part in F1



REQUIREMENTS Voice, video and telemetry to in-car systems for motorsport.

APPROACH Customized 4G connectivity solution able to support up to 24 cars simultaneously and deliver broadband speeds exceeding 5Mbps per car at speeds beyond 200mph (320km/h).

KEY RESULTS Solution can be adjusted to operate in a number of frequency bands, offering considerable capacity at extremely high travel speeds. Potential in a wide variety of transportation vehicles.

In-flight cellular communications



REQUIREMENTS In-flight GSM that serves airline passengers effectively and meets air safety requirements.

APPROACH ip.access small cells optimized and ruggedized for strict air travel requirements with optimized satellite backhaul.

KEY RESULTS Popular with passengers. Competitive differentiator for airlines and operators. 3G solution planned.

Connectivity for passengers on sea cruises



REQUIREMENTS Mobile phone services and internet access on board cruise ships.

APPROACH Small cells with optimized satellite backhaul.

KEY RESULTS Passengers enjoy connectivity. Ship owners have an opportunity to offer new revenue-generating services.

KEY DOCUMENTS

- SCF 150 Business Drivers
- SCF 151 Rural and Remote Case Studies
- SCF 153 Rural and Remote Small Cell Network Architectures
- SCF 155 Backhaul for Rural and Remote Small Cells
- SCF 156 Deployment Issues for Rural and Remote Small Cells

