inmarsat
The mobile satellite company™

Accessing **real-time** connectivity, from **the ground up**

Inmarsat explains how advances in mobile satellite communications can transform mining operations whatever the terrain, and whatever the location

Introduction

As the world becomes increasingly industrialized, demand for mined products continues to grow. Mining companies face many challenges including the cost, complexity and difficulty of prospecting and extraction and companies seeking to develop new sites must overcome the many technical and logistical problems presented by local geography and climate. None of these challenges are more pressing than the need for reliable 'day 1' communications.

To ensure mining operations remain competitive, many organizations seek ways to exploit new deposits which are often found in regions where the climate and terrain are hostile, and where the communications infrastructure is unreliable at best, or non-existent at worst. Identifying and extracting new deposits often involves high costs so technical solutions that can deliver greater efficiencies and help drive costs down are paramount. And, as with other extraction industries, every moment of downtime is lost time that equates to lost profit.

Satellite communications continue to meet the demands for data connectivity and collaboration within the energy sector, particularly throughout the mining lifecycle, in areas where fixed line and GSM telecoms are unavailable.

Mining lifecycle

Throughout the mining lifecycle – from exploration to development and operation to closure - each stage presents specific requirements that satellite communications are uniquely positioned to provide. The breadth of solutions and applications available from Inmarsat provides benefits to the geological engineers, geologists and industry consultants all working together to review geological data and bring success to mining development and operations.

Mineral exploration teams covering long distances often need to stay in regular touch with their base camp. Without portable communications gear from Inmarsat, a mobile team would typically have to travel back to a site that has a VSAT installation or, in some cases, drive to the nearest town with a broadband connection. A large number of partners also need to keep in contact with each other to work safely and efficiently. From geophysical survey companies and helicopter operators who locate ore deposits, to drilling and construction companies who help develop the mines, constant communications across the team is a requirement for safe and cost effective operations.

In many related industries, mobile satellite services have long been an established part of the communications mix for personnel operating in areas that are remote from fixed-line and wireless networks. For mining operations, spanning real-time transmission of test data all the way through to asset monitoring, CCTV security solutions, environmental monitoring and crew welfare connectivity, all stages of the mining lifecyle can be fully supported by Inmarsat's satellite-based voice and data solutions.

Rapid deployment

The complete absence of infra-structure at new sites means setting up from scratch, with only limited support, this requires meticulous planning and a high degree of onsite co-ordination. Difficulties with terrain, climate and communications can often lead to delays and over-runs, putting pressure on budgets and schedules, but today's mobile satellite equipment and services can make communicating from a remote site comparable to that of a modern office.

Being first on the scene, and requiring no specialist training, mobile satellite services from Inmarsat are ideally suited to exploration sites; particularly when there is the greatest need for establishing communications, quickly and effortlessly with colleagues at head-office half a world away.

Mobile satellite communications technology – providing not only phone services but broadband data connectivity – now fits into a backpack and weighs less than two kilos. Inmarsat's BGAN (Broadband Global Area Network) is robust, highly

affordable and operates from almost anywhere in the world. It can be set up in minutes by exploration teams with little or no experience of communications equipment, providing a guaranteed broadband data capability.

Compact and lightweight, BGAN is an all-in-one voice and high-speed IP data solution that anyone can carry with them and use wherever they go. It provides immediate mobile field force connectivity during field and site exploration and throughout the mining lifecycle. Terminals can be configured as mobile offices at basecamps, with connectivity support for most standard office applications. The small form-factor terminals allow site engineers and geologists to send pictures to HQ for analysis; project managers to send reports and chase suppliers; environmental monitoring and running remote diagnostics. In addition, BGAN can interface with third-party hardware and software and is part of a tailored solution for the energy sector. The combination of rapidly-established, real-time communications, portability and office applications ensures test results are reported immediately for reducing 'find time' and helping aid decision making and contingency response, all of which can contribute towards reduced capital and operating costs.

BGAN is only the beginning

Highly versatile, the BGAN platform can be extended to support operations as a mine develops. BGAN Link provides broadband services that can send and receive large amounts of real-time critical data from a fixed location. Designed specifically for those working in remote areas for sustained periods of time, and who require high volumes of standard IP data, the system can transmit field data in a low cost, low powered and low maintenance system to rival VSAT (which can often take a week or two to set up by technical specialists). BGAN Link combines the power and convenience of the BGAN platform with a fixed rate 'all-you-can eat' data package at an affordable price.

As exploration teams typically cover great distances, the need to communicate constantly with the basecamp, sending status updates and test data from every drill-site, becomes paramount. With all the various teams needing fast data transfer for transmitting imagery, maps and plots, an assured method of broadband data connectivity is needed, and one that is genuinely portable as they are likely to be continually on the move.

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Designed for fixed locations and/or for operations where infrequent movement of the terminal is the norm. Very high data allowances make this the ideal solution for customers needing to transmit a large amount of data and with a requirement for predictable monthly charges.

Inmarsat's push-to-talk (PTT) provides a rugged PTT capability for voice dispatch and communications. A vehicular-based BGAN is used with a roof-mounted antenna, base station and hand-held microphone in the cabin. Inmarsat's cost-effective, IP-based, voice and data PTT communication system can readily replace VHF/UHF-based trunk radio systems. It routes voice and data traffic, providing communication between base camp, remote drill sites, crew vehicles, HQ and any site in the world – all at the touch of a button.

Protecting staff and equipment

HS&E is increasingly becoming a critical priority within the energy sector, with insurance premiums typically reflecting this. In some cases, the operation's management are rigidly measured by the number of HS&E incidents, so complying with the strict regulations by ensuring base camps and remote sites have guaranteed voice and data links is paramount.

When only voice is needed, especially for field workers moving quickly from site to site, or where a back-up system to BGAN is needed, Inmarsat's global, low-cost, handheld satellite phone offers high quality voice as well as support for SMS text messaging, Twitter and email. Designed for rugged use in remote locations, IsatPhone Pro features a GSM-style interface with a high-visibility colour screen and keypad that allows for easy dialling. Providing up to 8 hours talk time and up to 100 hours on standby, the hand-held has the market's longest battery life, and is also among the most robust available being dust, splash and shock-resistant.

Remote Management

To track and monitor fixed or mobile assets, satellite-based machine to machine (M2M) applications are also supported by the Inmarsat network, with a range of integrated M2M services that give operators increased visibility of their business operations.

In today's connected or 'digital' field operations, energy companies want and expect to be able to manage their sites in real-time, to enable faster decision-making, increased efficiencies, reduced cost, and enhanced security of staff. By providing a full image of assets across an entire operational area should an incident occur, for example a security threat or mechanical failure, experts can rapidly assess the situation from their own office or deploy an onsite team to investigate, boosting productivity by reducing downtime. Satisfying a key HS£E requirement, the benefits of M2M can also extend to journey management for maintaining the highest standard of crew welfare.

Low data use (<50KB)
Vehicle or vessel (asset) tracking, oil and pipeline cathodic protection and tower light monitoring.

Medium data use (50KB – 50MB)
Oil and gas pipeline monitoring, medium polling rate oil and gas production monitoring, water management systems and ATM points of sale.

High data use (>50MB)
Security networks using low-grade video or high polling rate, oil and gas production monitoring requiring real-time data.

Power

Cost

Ultimate one-stop-shop

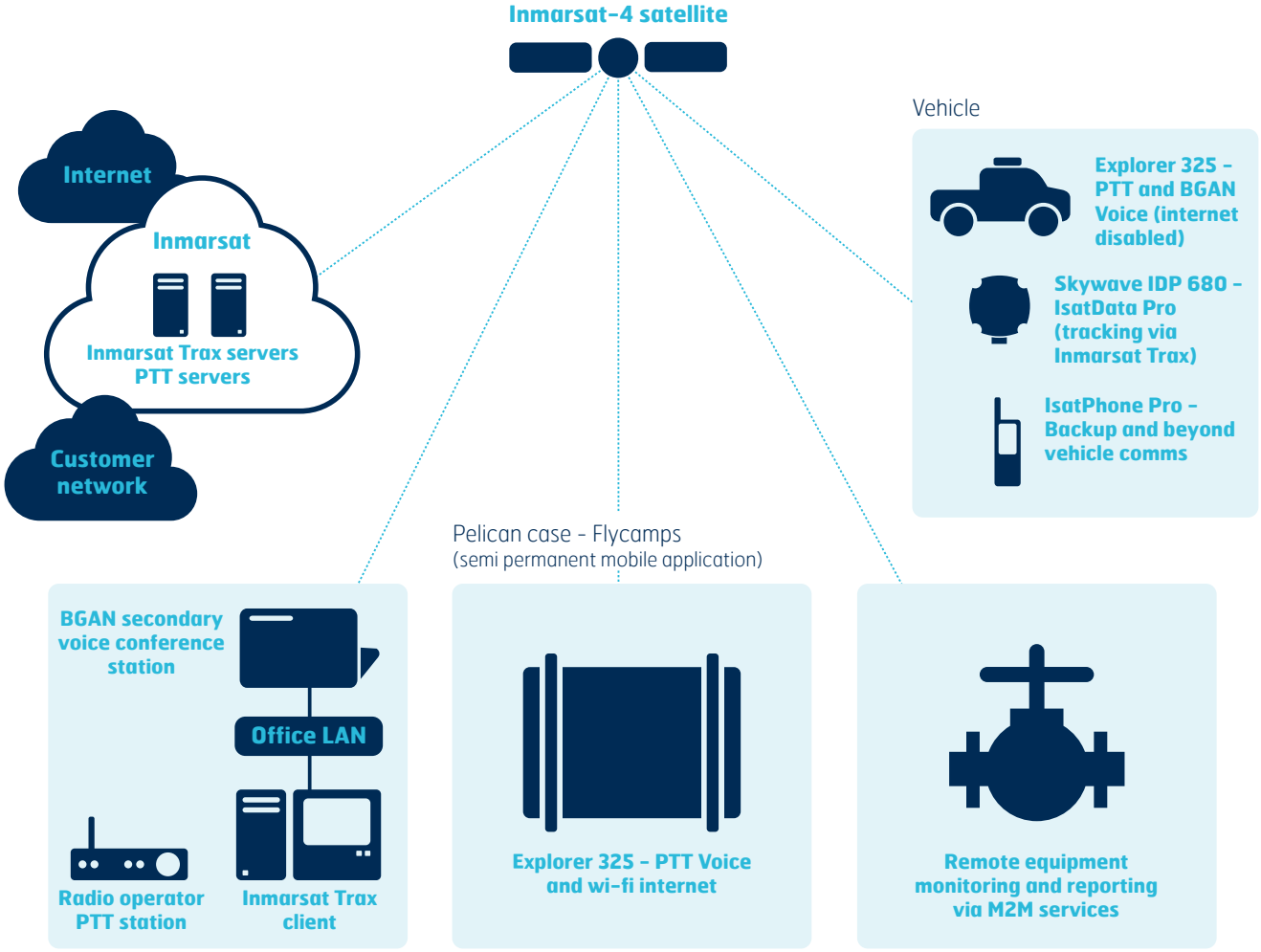
Managing operations in remote locations poses many challenges – ensuring crew safety, maximising onsite efficiency and maintaining reliable communications to name just a few. Complementing the connectivity portfolio, Inmarsat provides professional consultancy services to ensure the best-fit, end-to-end communication solutions.

With expertise across a broad selection of technologies and applications, and the most extensive portfolio of remote communication solutions, the Engineering & Integration Services (EIS) team can design and implement a custom solution to meet the critical communication needs of each project.

Support is provided across multiple technologies including structured cabling, public address and general alarm, video surveillance, intrusion detection, site security, telephony, satellite, wireless, and local and wide area networks. Services include:

- Design and build-up
- Installation, set-up, and testing of all equipment on-site
- Integration of on-site IT and business systems
- Provisioning and training

In addition to traditional Engineering, Procurement, & Construction (EPC) services, Inmarsat specialises in providing temporary facilities with communications and security packages. Remote surveillance units provide 24/7 monitoring from any location in the world, with voice, data or video surveillance, and intrusion detection, transported across Inmarsat's network to the administrative centre.



Looking after the environment and communities

At the end of any mine's lifecycle, the decommissioning and the process of reclamation and restoration of the land begins. In this final stage, the decommissioning team can rely on a portable terminal again so that bulky and expensive equipment, such as VSAT, can be removed well ahead of full closure, helping maximise resources while keeping costs down. The portability and quick set-up of mobile satellite systems can be especially valuable at this stage, as teams move frequently to operate from different parts of the site, or may need to travel to and from outlying areas.

When mines are eventually exhausted or become uneconomical, M2M can provide a reliable communications link for remote sensors and cameras, helping with the important task of measuring and monitoring environmental data. The automated telemetry service can also extend to helping enhance a company's CSR standing by contributing to the wellbeing of the communities around the mines long after operations have ceased.

Local presence, global leadership

Utilizing Inmarsat's mobile voice and data capabilities in the field have been proven time and again to help improve critical decision-making, increase productivity, and reduce time to operation. The full portfolio of products and services from Inmarsat, each a powerful tool in their own right, is powered by a constellation of advanced L-band satellites, the largest and most sophisticated commercial communication satellites ever built, and which support the global delivery of Inmarsat's advanced network services.

As one of the most trusted brands in the industry, Inmarsat is a leader in the field of mobile satellite services, providing reliable, global services for the energy sector and beyond. Inmarsat's mobile services portfolio solves all remote HDR (High Data Rate) and LDR (Low Data Rate) communication needs as field sites are set up, as workers arrive on site, when mining operations are established and through to site closure.

Many organisations in the energy sector have come to recognise that satellite communications have evolved, and that Inmarsat is leading the way with a range of mobile broadband technologies. And with a full range of communications services that can be easily and cost-effectively deployed, especially in discovered but completely undeveloped sites, nothing else is required.

How to buy

Inmarsat works with partners around the globe that resell our voice, data and IP communications solutions. Contact us today to find the right solution for you.

Email: sales@ocens.com

Web: iwww.ocens.com/Mining

ocens.com/mining