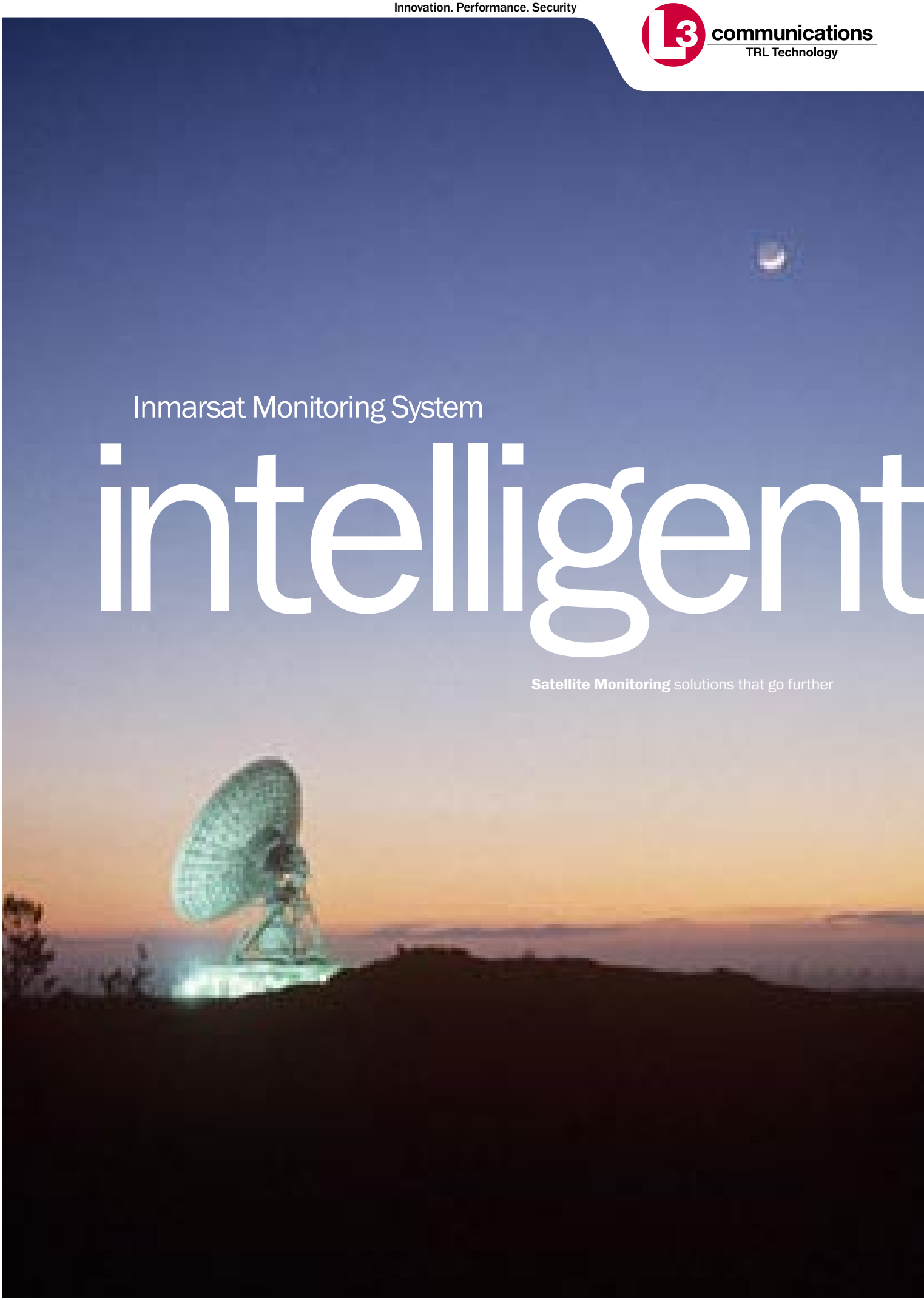
L3 communications
TRL Technology

Inmarsat Monitoring System

intelligent

Satellite Monitoring solutions that go further



The Inmarsat challenge

In today's challenging security environment, governments need to monitor conversations and other communications transmitted across satellite networks. While most satellite communications are perfectly legitimate, the extensive geographical areas they cover makes them a favourite tool for subversive and criminal groups – providing access to the international communications network.

L-3 TRL is recognised as a world-leading supplier of satellite monitoring products and systems. Our solutions allow government agencies to passively monitor communications without network interference, so threats can be tackled early and effectively.

L-3 TRL is part of the leading US defence supplier group L3 Communications. We specialise in market-leading surveillance, force protection and information security solutions, to protect people worldwide from the threat of terrorism.

Originally intended for maritime communications, the Inmarsat system of geostationary satellites has evolved to provide worldwide communications for marine and land-based, fixed and mobile users. While the majority of users are legitimate, Inmarsat's global nature and the convenience of its small mobile terminals means the network is frequently used for terrorist and other illegal purposes.

Inmarsat allows mobile terminal users to connect to the terrestrial network, using any Inmarsat earth station operator, via any Land Earth Station (LES) in a satellite's footprint. (The LES is the main interface between the terminals Mobile Earth Stations or MES, and the terrestrial network). The call can be routed via a LES outside the country of origin, and even if the user is within their country borders, local authorities cannot intercept the call.

This is a common tactic used by those who don't want their call to be intercepted at the local switch – often because they are conducting illegal operations. The L-3 TRL Inmarsat Monitoring System counters this threat with passive, non-intrusive interception.

Mini-M (Handset)

monitor

INSARMAT Coverage Key

1-4 satellite F1 1-4 satellite F2 1-4 satellite F3

Our response
the L-3 TRL Inmarsat Monitoring System

The L-3 TRL Inmarsat Monitoring System (IMS) monitors Inmarsat worldwide voice, fax and data traffic. It recovers both sides of telephone conversations, with the targets completely unaware they are being intercepted. The information can be monitored live and/or recorded for off-line processing.

There are two distinct aspects to intercepting and monitoring calls over the Inmarsat network. The first is where the intercept authorities don't know the unique identification that the mobile terminal uses to identify itself to the Inmarsat network. The second is where the identity of the terminal is known. You can configure the L-3 TRL IMS so the target varies from 'any user of a given Inmarsat service type' to a single terminal (MES) ID.

Monitoring process

The L-3 TRL IMS mimics the LES and the MES, monitoring and processing signals in the same way as the equipment located at both ends of the satellite communications link. It can receive all signals routed between the mobile and fixed terminals, via any LES in the footprint of the satellite being monitored.

The monitoring site does not need to be portable, and can be located anywhere between the mobile and fixed terminals, as long as it's well within the satellite footprint.

Screen Shot

What does a typical strategic Inmarsat Monitoring System provide?

The L-3 TRL IMS comprises the antennas, RF equipment, baseband demodulator equipment and IMS Operating System running on PC terminals.

Demodulator cards in the baseband equipment racks are allocated permanently to the satellite's LES and MES calling channels. System operators can assign any unallocated demodulator cards to receive calls from specific targets that have been entered into the system.

A typical system with 24 channel cards is capable of monitoring up to nine duplex calls. More demodulator cards may be added for additional monitoring – there's no limit to the number of demodulators in a system, the only criteria being budget, space and staff availability.

Extended L-Band monitoring

Inmarsat uses the C-band to communicate with the LES and the L-band to communicate with the satellite phone. The L-3 TRL IMS monitors both the C- and L-Bands, intercepting both sides of the call.

The Inmarsat system subdivides its L-band downlinks into spotbeams. Our IMS can monitor the spotbeam where it is located, and the adjacent beams. L-3 TRL has also developed an L-band outstation, to extend monitoring to spotbeams outside this area. The L-band side of the call can then be paired with the C-band side captured by the strategic system, to provide the complete call.

monitor

How it works

IMS monitors signalling channels during call initiation, then assigns demodulator cards to intercept the communications.

The system can be configured to listen to:

- calls made by any satellite phone
- calls to and from a known target satellite phone
- calls made by satellite phones to particular phone numbers – either land lines or other mobiles
- particular call types i.e. voice, fax, data or high speed data.

Inmarsat is increasingly used for data traffic, using a wide range of formats. The L-3 TRL IMS is supplied with the Magpie data analysis application, which decodes most common protocols.

The L-3 TRL Marlin tactical monitoring system

Marlin is ideal for situations where there is no strategic IMS available or the operational requirement is to capture terminal (MES) information from known suspects. It can be located physically close to the MES, and users can be associated with their terminal equipment.

With very compact antennas and receiving equipment, Marlin offers the portability needed for direct interception of the L-band uplink signal from the MES. It can intercept both the forward and return paths at L-band, whether in line of sight or obscured by buildings, as long as there is sufficient uplink signal strength.

Marlin's full monitoring capability captures call details and content, and stores the information in databases for later analysis or export. The system is effective against these Inmarsat services:

- B-Service
- M-Service
- Mini M-Service
- GAN
- Fleet

The L-3 TRL Marlin system can provide support for strategic IMS operations by capturing terminal Ids, or operate as a standalone system in any location. It's available in a variety of configurations and can be installed in vehicles, aircraft or vessels.

Marlin

Antenna

The next step

This brochure gives you an outline view of the L-3 TRL Inmarsat Monitoring System. For more details and advice on how we can supply and configure an IMS system to your exact needs, please contact us.

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