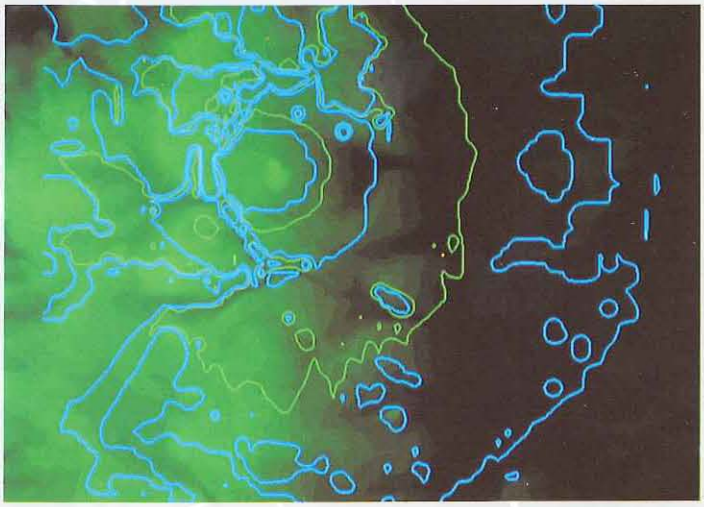
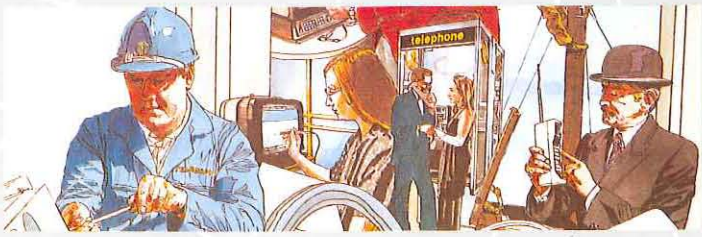
*Laser-Scan Application*

# TELECOMMS ANALYSIS

An effective tool for radio propagation planning.

The *Telecomms Analysis application*, uses propagation algorithms to predict coverage, and compute interference at all frequencies from Low-Band VHF to microwave.






Laser Scan

# TELECOMMS ANALYSIS

Telecommunications is a rapidly expanding technology in all countries of the world. Communication links include microwave transmissions for telephone networks, radio and television broadcast, emergency services, and, more recently, cellular telephone networks.

The key to building successful telecommunication systems is the analysis of terrain and land surface objects to ensure that the signal strength received from a transmitter is sufficient for satisfactory communication. For fixed point to point links, this involves detailed propagation modelling.

At the other extreme, cellular network planning also requires the planner to consider the interference caused by radio frequencies in adjacent cells, particularly at national boundaries and following reorganisation of frequency allocations.

◆ Prediction
◇ Interference
◇ Signal Contour
◇ Contour
◇ User

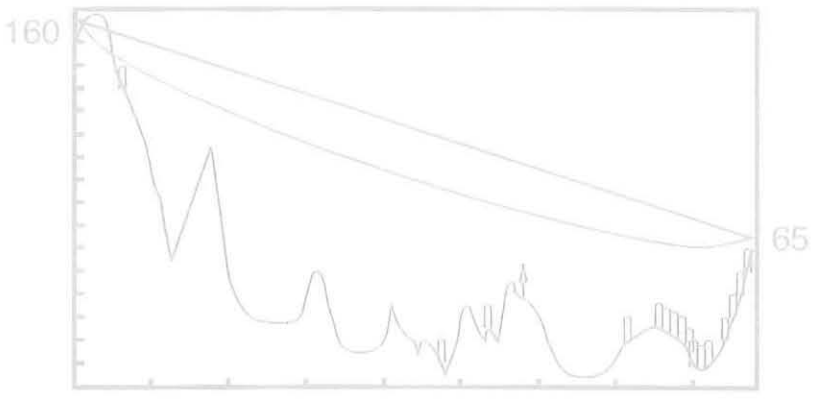
PREDICT
Tx location
Rx location
PARAMETERS
Quick profile
Submit

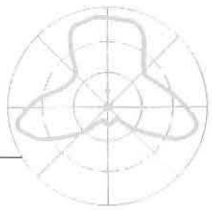
## *Product description*

An accurate prediction tool aimed equally at the end-user, service or equipment provider has been long overdue in the telecomms marketplace. The sheer volume of traffic now using the available frequencies, coupled with the advent of new technologies makes propagation planning a necessity rather than a luxury. This is particularly true of digital modulation operating in interference limited systems. Where installations span national boundaries there is also a need for effective frequency coordination.

Radio propagation planning needs three specific datasets to be effective and accurate – a terrain model, a clutter database and a prediction algorithm. When integrated into a Geographic Information System (GIS), the user has total flexibility in predicting transmitter area coverage or producing point-to-point link profiles. Frequency re-use and interference predictions are also included to give the engineer a comprehensive analytical toolkit.

The *HORIZON Telecomms analysis* package takes the map datasets including a terrain model, and allows the user to perform 'What if' scenarios. Raising or lowering antenna heights, changing the antenna type and varying the transmit power can all be simulated easily. End results can be overlaid on existing map backgrounds and photographs of existing installations can be incorporated.



## *Telecomms analysis features*

**PREDICTION MODE**

- ◆ Wanted signal
- ◇ Interference
- Tx antenna siting
- Rx antenna siting
- K factor

**POLARISATION**

- ◆ Horizontal
- ◇ Vertical
- Tx antenna height
- Rx antenna height
- Ground constants

- Frequency
- Tx antenna type
- Rx antenna type
- Climate

**Longley/Rice Model**

Covers the frequency band of 20MHz to 20GHz and allows for user definition of antenna height, antenna type, polarisation, ground constants, prediction statistics and climatic conditions.

**Multiple datasets**

The system can analyse and display both vector and raster data simultaneously. A Digital Terrain Model (DTM) can be integrated with a colour background map, a satellite image or existing vector data from suppliers such as Ordnance Survey. Numerous converters are available to incorporate existing data from a variety of suppliers.

**Terrain model**

Terrain models of any resolution can be used by the propagation model. The *HORIZON Terrain generation* option may be used to generate models from digital height data.

**Clutter database**

Urban, woodland and water 'clutter' may be included in propagation modelling. This may be derived from existing digital mapping using the utilities provided.

**Antenna database**

Contains a number of antenna types with their associated E and H plane polar diagrams, enabling realistic choices of antenna to be made. This includes corner reflector and down-tilt types. The database can be expanded and enhanced by the user.

**Output**

The system generates coverage maps from one or more transmitters and cross-sectional path profile diagrams between fixed antennas.

**User interface**

The system uses the international de facto standard OSF/Motif X-Window interface.

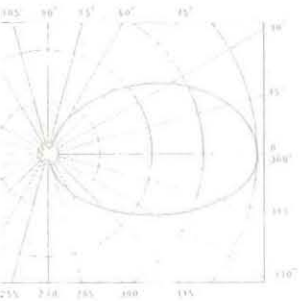
## *The Benefits*

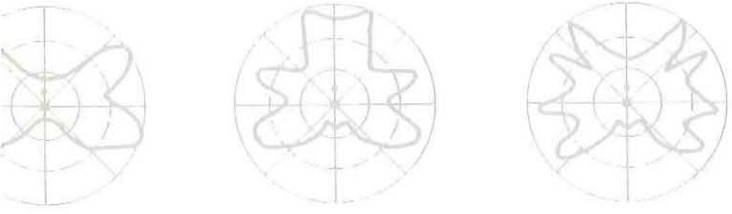
- Accurate estimates of predicted performance are easily produced
- The decision making process is coordinated, based on current marketing, technical engineering and corporate information
- Maximum performance at minimum cost offers a rapid return on investment
- 'What if' scenarios can readily simulate changing circumstances

## *Requirements*

The Telecomms analysis application can be used with *HORIZON Relief* and *View* version 1.2 or higher.

Laser-Scan Geographic Information System (GIS) products are *METROPOLIS* – designed for applications such as property management, land charges, market analysis and emergency planning, and *HORIZON* – for environmental applications including terrain analysis and telecommunications planning. These products integrate vector and raster mapping with a relational database and provide a full range of analytical tools within a state-of-the-art menu interface. Products may be customised to meet the exact needs of different users.



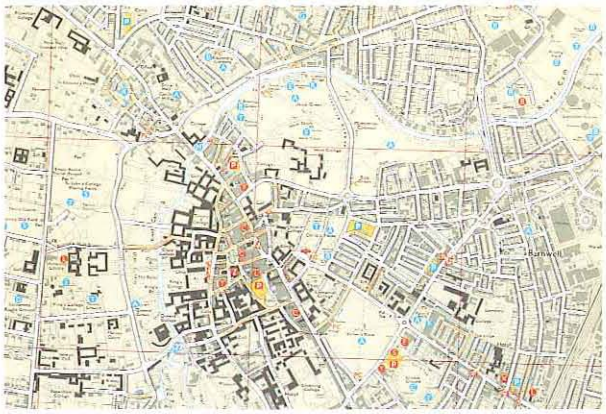


*Laser-Scan - the company*

*Laser-Scan has worked with digital mapping and imaging systems technology for over 20 years, developing and producing data capture products and Geographic Information Systems (GIS), backed up by a comprehensive range of support services.*

*A clear recognition of the varied and specialised nature of applications in this area has led to a development philosophy which aims to provide the right solutions to real problems.*

*The evidence is in our customer base, which ranges from government departments and national agencies, to commercial organisations and service companies spread throughout Europe and the rest of the world.*



**ORDERING INFORMATION**

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