

# TEMS™ CellPlanner Universal

A Universal Approach to Network Planning



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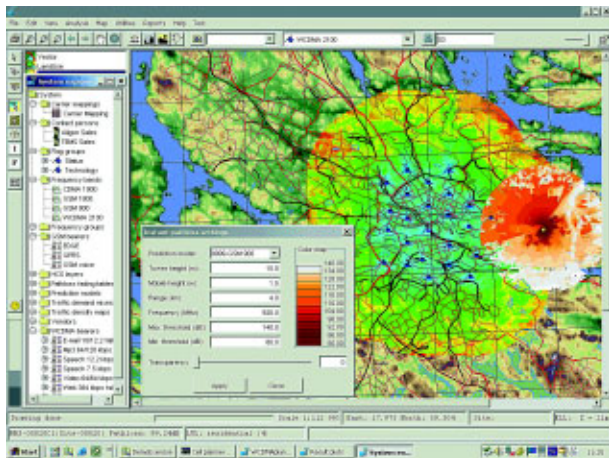
## A Universal Approach to Network Planning

TEMS CellPlanner Universal is an advanced tool for designing and planning 2G, 2.5G, and 3G networks. Designed and developed by Ericsson, TEMS CellPlanner Universal provides superior planning capabilities to save time and money during network deployment.

### Powerful Ericsson tool

TEMS CellPlanner Universal meets the needs of today's complex radio networks. It features open interfaces, a new more flexible architecture, and support for all major technologies. It also utilizes unique, patented algorithms for accuracy and speed. The modular platform makes it easy to customize and add new functionality.

TEMS CellPlanner Universal provides a flexible system configuration and an efficient working environment. Operators can choose stand-alone configuration for quick and easy planning in the field; no database installation is required. Choosing network configuration allows multiple users, as part of a team, to share network data and simultaneously plan a common network. This team approach is regulated by a unique system of security features for safe and secure handling of data.



*Colorful, detailed presentation views display network planning data in a way that is easy to understand and use.*

### Additional benefits

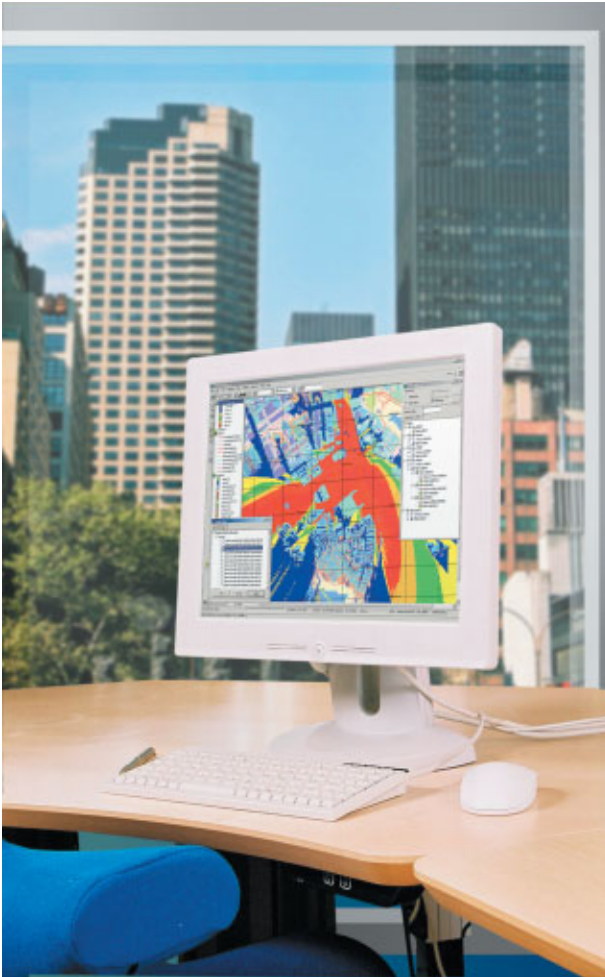
- Accurate network planning
- Multi-vendor/multi-technology compatibility
- Market's first true co-planning tool
- Seamless integration of multiple networks
- Optimized usage of co-existing networks
- Network data exchange with other TEMS tools
- Quick start-up
- Easy administration
- Modular platform
- Extensive import/export functionality for flexibility
- Easy-to-use presentation views
- Early implementation of new network features

### Key features

- All technologies co-exist in the same session
- First commercial analysis tool for both WCDMA and CDMA
- Strong GSM/GPRS and EDGE support
- Includes new AFP and BSIC planner from Ericsson TEMS
- Quality prediction indication
- Best-in-class prediction models
- Generic import interface
- Integration with Ericsson's RANOS, RNM, and OSS systems
- Improved neighbor analysis
- Scripting support
- Advanced GIS engine

### 2G and 3G co-planning

TEMS CellPlanner Universal facilitates detailed co-planning of 2G and 3G networks. It is the only tool specifically created to plan both new networks and expansions to existing networks. From site and antenna systems re-use to a detailed neighbor planning module, TEMS CellPlanner Universal provides all necessary tools to perform an accurate design for both generations of cellular networks. The co-planning functionality allows the user to share network data between the two systems and to provide detailed planning for inter-system handover planning and analysis. Planning can be conducted between 2G and 3G modules as well as between 2G and 3G networks.



*TEMS CellPlanner Universal fulfills all of a network operator's planning needs.*

### **WCDMA support**

TEMS CellPlanner Universal features an advanced and accurate WCDMA analysis engine. The WCDMA Quick Analysis feature calculates and stores load information on a per-cell basis. In addition, the Monte Carlo Simulator provides flexible allocation of convergence criteria. The Pilot Power Balancing function allows the user to assess and avoid pilot pollution. This can be done on a per-cell basis or on the network level, balancing the coverage of the pilot signal with regard to traffic channel coverage. Soft handover can be displayed in graphical plots as well as in sector-by-sector statistical reports.

The user can also display and print many different plots including received signal code power (RSCP) for the pilot channels in the coverage area, facilitating network deployment and initial tuning of the WCDMA system. The improved RANOS interface now supports very large RANOS files. In addition, TEMS CellPlanner Universal calculates the number of channel elements required in each cell in order to support a specified traffic demand.

### **GSM/GPRS/EDGE support**

The GSM Module in TEMS CellPlanner Universal supports the complex RF environment of today's and tomorrow's networks. Using the new advanced RF bearer concept, it is possible to analyze complex traffic cases simultaneously, both for single and multiple technologies and frequency bands. TEMS CellPlanner Universal also includes complete interfaces for interchanging RF data with the network, making the interaction between the planning tool and the switch a quick and easy task. The GSM module also includes an AFP component for automatic frequency planning. In addition, the new BSIC planer uses channel allocation, neighbors, and interference to optimize the BSIC plan.

Together this becomes the TEMS CellPlanner Universal also has a large set of interfaces and import/export formats to support easy exchange of data, making it the most complete solution on the market.

### **CDMA support**

TEMS CellPlanner Universal supports CDMA2000 and 1xEV-DO, including the 450 MHz and 2100 MHz frequency bands. To simulate CDMA network load, TEMS CellPlanner Universal supports both iterative (Monte Carlo Analysis) and non-iterative analysis. The 3G Call Model Editor enables the user to define any type of mobile voice or data call behavior by defining such parameters as session duration, data packet size, and required FER%. The 3G Subscriber Editor gives the user the flexibility to define various end-user terminal configurations ranging from desired data rates to fallback data rates and Radio Configurations supported. Other key features include support for CDMA RAN functionality, automated PN-offset planning, multiple carrier planning, neighbor planning, soft handoff

analysis, and support for the MDM format for model tuning. Specific EV-DO features include a specially designed EV-DO algorithm and a full set of new plots. Using the EV-DO features, operators can analyze the data rate and throughput.

### **Quality Performance Indicator**

The Quality Performance Indicator is a unique part of TEMS CellPlanner Universal. It helps predict the impact of changes in the network in terms of Quality of Service. The Quality Performance Indicator uses a C/I matrix together with a number of vital system and network parameters to predict the effects of changes including new frequency plans, allocation schema, or changes to parameter settings or traffic demand levels.

### **Propagation modeling**

TEMS CellPlanner Universal supports several propagation models. It uses the 9999 model, which is Ericsson's implementation of the Okumura-Hata model with empirical corrections. It also uses the half-screen model to generate path loss above the rooftops, and the Recursive Microcell Model for calculating the propagation between the buildings. The Urban Model is an advanced 3D propagation model that has been designed for determining wave propagation in an urban environment. The Walfisch-Ikegami RF Model is a semi-deterministic model of the wave propagation process that takes place in urban environments outside the high-rise urban core. In addition, the traditional Okumura-Hata RF model for macro-cell environment is also supported.

### **Interoperability**

TEMS CellPlanner Universal has complete interfaces to network infrastructure, including Ericsson's RANOS for WCDMA, RNM for CDMA, and OSS for GSM and TDMA systems, enabling radio network planners and network engineers to share configuration data easily and effectively. TEMS CellPlanner Universal allows the RF engineers to plan for upcoming network enhancements, months before the new features are available in the network itself. It is also compatible with other tools in Ericsson's TEMS portfolio, making TEMS CellPlanner Universal the most complete network optimization tool available.

### **Import/Export functionality**

Several import/export formats are supported for maximum flexibility. Operators can export calculation results to MapInfo®, or use a generic export format to export information as text. Imported data can be edited and changed using Microsoft® Excel.

### **AFP**

The newly-designed AFP uses several advanced algorithms that minimizes the 'cost' over the set of all possible frequency plans, where the cost represents the total amount of interference or interfered traffic within the network. The AFP supports usage of frequency separations on site/cell/neighbor level. All settings are per filter, which gives the user the possibility to define planning scenarios with great flexibility.

### **Measurement integration**

With puncturing it is possible to re-use collected measurement data. This measurement integration feature replaces predicted signal strength with measured signal strength values in all areas where a measurement has been made. This gives the user the ability to use both predicted and measured signal strength to improve the accuracy of path loss predictions.

### **Geographical information system**

TEMS CellPlanner Universal includes the highly advanced Geographical Information System (GIS) engine EriMap. It is an Ericsson-developed GIS engine especially designed for RF planning purposes. It is capable of displaying multiple layers of information with differing transparency of multi-resolution and projection data. The optional Map Data Package assures that the geographical information being used is as accurate as possible.

For more information about TEMS CellPlanner Universal or other tools in the TEMS portfolio, visit us on the Web at: [www.ericsson.com/tems](http://www.ericsson.com/tems)