

[ TEMS™ PRODUCTS ]

# TEMS™ DISCOVERY

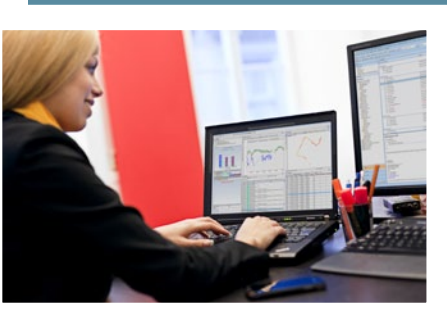
IMPROVE EFFICIENCY WITH THE WORLD'S MOST VERSATILE DATA PROCESSING TOOL



## USER-DEFINED POST-PROCESSING

TEMS™ Discovery is a highly configurable and user-friendly post-processing solution for air interface measurement data. It allows engineers to easily assess wireless performance and quickly pinpoint network problems.

Available in **Replay, Standard and Professional packages**, TEMS Discovery has a user interface and advanced functionality that allow users to perform post-processing in a way that best supports their individual ways of working.



Single logfile analysis with  
TEMS Discovery



**When it comes to troubleshooting wireless network performance issues, testing during an initial network rollout, or demonstrating network quality, the time-consuming manual processing or reprocessing of quality of service (QoS) data can be costly. Mobile network operators must be able to collect and analyze data on the performance of their networks in a quick, easy, and cost-effective manner and from a variety of sources.**

With TEMS Discovery, data has to be processed only once, saving time, effort, and the potential lost revenue associated with network downtime. From this data, TEMS Discovery can generate a variety of predefined, customized summary reports that can be automatically e-mailed to a select group of recipients, who can click on an event in the report and drill down to get the level of detail they need to determine the root cause of a problem, meet a specific customer's need, or prove the quality of next-generation networks and services. What's more, TEMS Discovery supports multiple data sources and organizational needs, thus eliminating the need for (and cost of) multiple reporting tools.

#### **TEMS Discovery Enables Users to:**

- Build customized scripts or choose predefined reports
- Perform complex analysis in a simple way
- Generate reports quickly and easily
- Collaborate across the organization through easy data sharing
- Analyze data from all major technologies, including LTE

#### **Integrated Multi-Technology Platform**

TEMS Discovery supports cdma2000, 1xEV, GSM/GPRS/EDGE, WCDMA, HSDPA/HSUPA/HSPA+, TD-SCDMA, WiMAX, and LTE in a single integrated platform, enabling truly seamless inter-RAT analysis, multi-RAT benchmarking, and easy evolution into any emerging technologies.

**TEMS Discovery enables mobile network operators to collect and analyze data in a quick, easy, and cost-effective manner.**

#### **Support for Your Ways of Working**

From TEMS Discovery, users can interact with all data used for optimizing a wireless network, such as:

- Measurement data
- Network configuration data, including neighbor list data and an unlimited number of parameters
- Antenna pattern data
- Geographical data, such as vector data, terrain elevation data, and aerial images
- Integrated Google Maps™ or Microsoft® Bing™ Maps
- Online GIS data downloading
- Support of drive test data from other Ascom Network Testing products such as TEMS™ Investigation, and TEMS™ Symphony as well as from Anite's Nemo, and JDSU's drive testing product
- Drive test data can be integrated with IP trace (libPcap) and call trace data

#### **Rich Data Display**

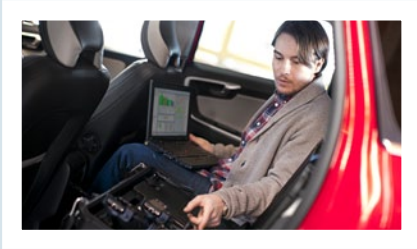
Satellite maps (Google Maps or Microsoft Bing Maps) are fully integrated and synchronized with other presentation windows in TEMS Discovery. Data is presented in map views, summary message views, detailed message views, time charts, table views, metric correlation views, histograms, reports, and drilldown point detail views.

All views in TEMS Discovery are managed with tabs. Layouts can be saved and restored. Different projects can be opened simultaneously. All time-sensitive views can be seamlessly synchronized. Users are able to view multiple dimensions of data at any point of interest with great ease, and automatic data playback is supported. Menu items and toolbars are placed only in the relevant views to maximize effective screen space. Many tasks can be done with a single click.

#### **Full Access to Information Elements**

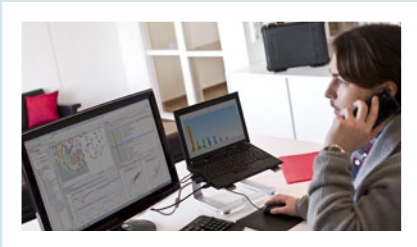
TEMS Discovery supports comprehensive message decoding, giving the user full access to information elements (IEs). Extracting the value of a key IE from over-the-air Layer 3 signaling messages is as simple as clicking the desired IE on the built-in IE explorer. The user can select any group of IEs and display their values on the message summary view, eliminating the need to check message details one-by-one.

## ADVANCED ANALYSIS AND CUSTOMIZATION



### Reliable and Robust Event Detection

Because of the easy access to IEs in the over-the-air signaling messages, TEMS Discovery provides hundreds of highly reliable and robust sets of call-related events, as well as critical RF problem alerts. The events and alerts can also be further categorized and grouped according to certain user-defined attributes. Moreover, all of the events generated by TEMS Investigation or other data collecting tools are also made available for all display and report views.



TEMS Discovery is available in conjunction with TEMS™ Investigation.

### Highly User-Configurable

With TEMS Discovery, the user has the flexibility to configure a wide range of items, from simple view layouts to sophisticated report templates and user-defined key performance indicators (KPIs). One reason for this flexibility is that all IEs in TEMS Discovery are readily available to users.

The Script Builder application allows users to easily define their own events or alerts, or derive custom metrics (such as event counters, time delay, or composite metrics) based on these decoded IEs. The algorithms can then be shared with peers or standardized across the organization.

Users can easily embed their preferences and knowledge of best practices into TEMS Discovery by defining parameters, displays, and templates. The experience of optimization experts, advanced users, and senior engineers can be captured within TEMS Discovery and shared as standard across the organization.



## SHARE PROCESSED DATA

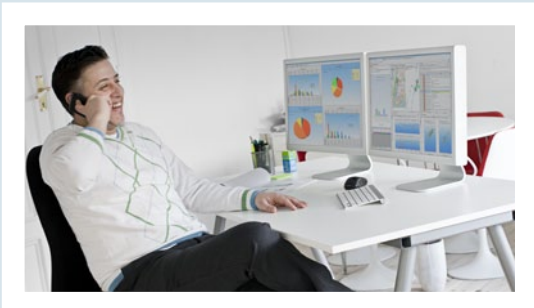
TEMS Discovery allows users to easily define their own events or alerts, or derive custom metrics based on decoded information elements. The algorithms can then be shared with peers or standardized across the organization.

### Powerful Data Filtering and Binning

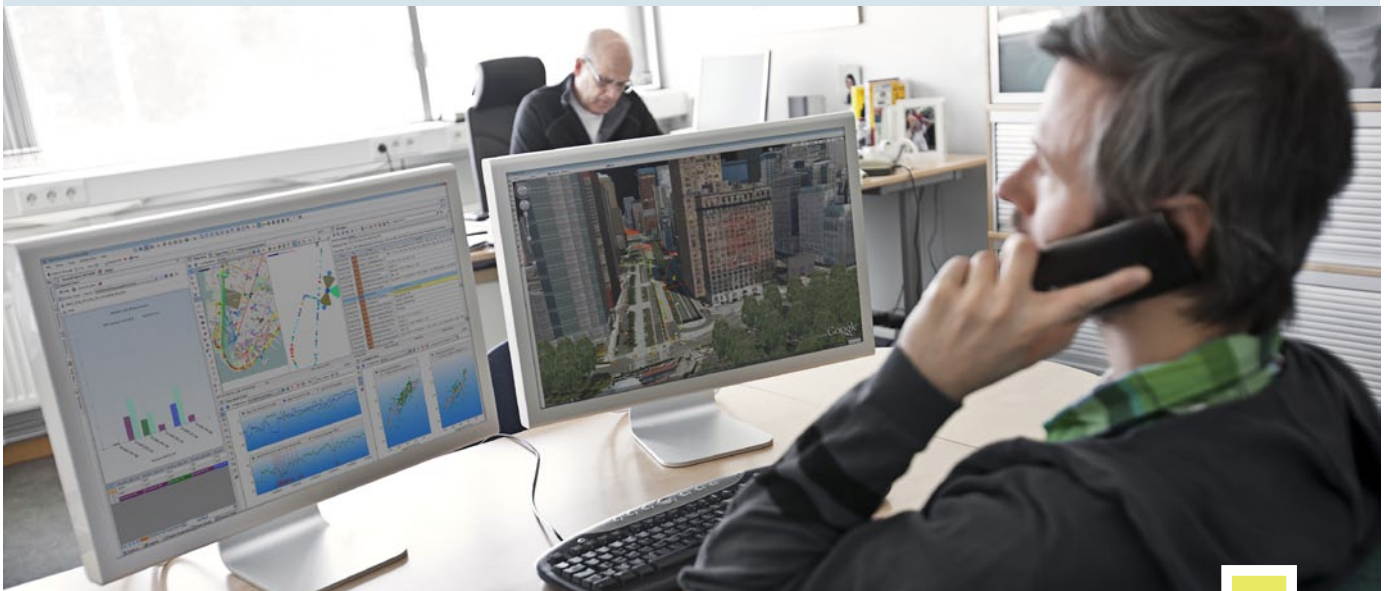
Data can be filtered by criteria including problem sets, geographical location, data collection date, data processing date, network sector groups, and user-defined metric-based conditions. Data binning options include time, linear distance, and grid size. Heterogeneous binning is easy to achieve, even across different regions.

### Flexible Report Generation

TEMS Discovery incorporates a powerful reporting mechanism that allows the user to customize and generate a variety of different Microsoft® Excel-based report templates. Users can easily set up real time monitoring, or schedule automatic processing of measurement data. Results and summary reports can be automatically delivered via e-mail notification to a select groups of recipients.



The processed data can be easily shared by multiple users across the organization, avoiding duplication of work and improving productivity.



## FLEXIBLE AND POWERFUL

TEMS Discovery's drilldown troubleshooting capabilities enable engineers to determine if a problem is related to a bad handover, overshooting cell, poor coverage area, or something else, and then take the necessary steps to quickly fix the problem.

### Unique Troubleshooting Features

TEMS Discovery lets users troubleshoot rapidly with several powerful features:

- Rich troubleshooting and analysis sets
- Rapid filtering by user-defined problem set
- Missing neighbor alerts
- Various critical RF condition alerts
- Graphical audit/editing of neighbors

### Easy Import of Needed Input

Network configuration data, parameters, and neighbor list data can be easily imported into TEMS Discovery. All parameters can be displayed with color codes or labels, and it is possible to group or search by one or multiple parameters. There are also several creative ways to associate a drive test data point to serving sectors and neighbors. Multiple measurement data sources, including scanned data and test mobile data, can be imported and synchronized via a pre-defined format or a user-defined configuration file.

### Sophisticated Data Organization and Management

All processed data is saved in an efficient file structure. Data can be instantly accessed, reorganized (in terms of such attributes as mobile ID and functional labels), and re-combined to create an unlimited number of composite data sets. Data can be easily archived and restored with its structure intact. All data collected during different phases of the network life cycle can be incrementally merged. Meanwhile, each of the raw test files needs to be processed only once.

### Efficient Data Sharing

The processed data can be easily shared by multiple users across the organization, avoiding duplication of work and improving productivity.

### Extensive GIS Support

TEMS Discovery fully integrates Google Maps. In addition, it supports over 100 different GIS file formats for terrain elevation data, raster image data, and vector files. Users can download free high-resolution aerial images and terrain elevation data directly from the U.S. Geological Survey and several GIS servers worldwide through TEMS Discovery.





TEMS Discovery allows users to easily define their own events or alerts, or derive custom metrics based on decoded information elements. Reports can be shared and standardized across the organization.

With support for an industry-leading number of testing/measurement probes, as well as most major wireless technologies, including LTE, TEMS Discovery helps mobile network operators consolidate their reporting and analysis functions into a single solution while reducing total cost of ownership.

### High Speed Data Processing

Through sophisticated memory and file management, TEMS Discovery can quickly process large volumes of data. All processing of data can be automated so that logfiles are processed when uploaded to TEMS Discovery.

### Extensive Output Capability

All metrics can be exported to a variety of output files, including text files, MapInfo Mif/mid files, Google Earth KML files, Adobe PDF files, Microsoft Excel files, and image files (such as GeoTiff, tiff, bmp, gif, png, jpg, and wmf).

### Tackle the Data Analysis Challenge With TEMS Discovery

TEMS Discovery is a post-processing solution for air interface measurement data. With it, data has to be processed only once, saving time, effort, and cost. The solution also automatically processes logfiles from an industry-leading number of testing/measurement probes, and analyzes data from most major technologies, including LTE, thus eliminating the need for multiple reporting tools and reducing total cost of ownership. Last, TEMS Discovery's easy data sharing/report generation capabilities foster healthy collaboration across the organization. *Isn't it time you exploited the benefits of the world's most flexible and innovative post-processing solution?*

### PRODUCT PACKAGES:

TEMS Discovery Replay, the ultimate tool for "replay analyzing" TEMS Pocket logfiles.

TEMS Discovery Standard, the cost-efficient post-processing tool for TEMS Investigation multi-logfile analysis.

TEMS Discovery Professional, the ultimate post-processing tool that can be tailored to fit into and improve your processes by combining logfiles from the major drive-test tool vendors.

#### WHAT'S NEW IN TEMS DISCOVERY 3.0:

- Extended multi-vendor support: JDSU
- Extended benchmarking support
- Improved user interface
- Network diagnostics

TEMS Discovery	Replay	Standard	Professional
Single logfile analysis	X	X	X
Unrivaled GIS data support	X	X	X
Multi-logfile analysis		X	X
Built in reports		X	X
Multi-vendor logfile, IP trace and call trace support			X
Report & Script Builder			X
Automatic data processing			X
Embedded Google Earth™ or Microsoft Bing™ Maps			X