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# Mentum Planet User Guide

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*Mentum Planet User Guide*

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## INTRODUCTION TO THE MENTUM PLANET USER GUIDE

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In the fast-evolving world of telecommunications, efficient network planning and optimization are critical to delivering high-quality connectivity. **Mentum Planet** stands out as a powerful, comprehensive software solution for wireless network design, covering everything from initial RF planning to detailed performance analysis. This **Mentum Planet User Guide** is designed to walk you through the essential features, tools, and workflows of the platform, helping you maximize its potential. Whether you are a seasoned network engineer or a newcomer to RF planning, this guide will provide clear, actionable steps to navigate the software, set up projects, run simulations, and interpret results. By the end, you will have a solid foundation for using Mentum Planet to create robust, optimized wireless networks.

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## WHAT IS MENTUM PLANET?

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Mentum Planet is an industry-leading software suite for wireless network planning and optimization. It supports multiple technologies, including 4G LTE, 5G NR, WCDMA, GSM, and Wi-Fi,

making it an indispensable tool for telecom operators, equipment vendors, and consultants. The platform offers advanced propagation modeling, geographic data management, traffic analysis, and automated optimization algorithms. This **Mentum Planet User Guide** focuses on the core modules and their practical applications, ensuring you can quickly become proficient.

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## KEY FEATURES OF MENTUM PLANET

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Before diving into the step-by-step instructions, let's explore the features that make Mentum Planet a preferred choice for network planners:

- **Multi-Technology Support** – Plan and optimize networks across 2G, 3G, 4G, 5G, and Wi-Fi in a single unified environment.
- **Advanced Propagation Models** – Choose from models like the standard Okumura-Hata, COST 231, ITU-R P.1546, and ray-tracing for accurate signal predictions.
- **Geospatial Data Integration** – Import digital elevation models (DEM), clutter maps, building footprints, and vector data to create realistic simulation environments.
- **Traffic & Capacity Analysis** – Model user distribution, service demand, and network load to identify potential

bottlenecks and optimize resource allocation.

- **Automated Optimization** – Use built-in algorithms to adjust antenna tilts, azimuths, power levels, and site locations for maximum coverage and capacity.
- **Comprehensive Reporting** – Generate professional PDF, Excel, and image-based reports with key performance indicators (KPIs), coverage maps, and interference plots.

Understanding these capabilities will help you follow the rest of this **Mentum Planet User Guide** with greater context.

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## GETTING STARTED WITH MENTUM PLANET

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# System Requirements and Installation

Before using Mentum Planet, ensure your workstation meets the minimum requirements: a modern multi-core processor (e.g., Intel i7 or equivalent), at least 16 GB of RAM (32 GB recommended for large networks), a dedicated GPU with 2 GB VRAM, and sufficient storage for geographic databases. The installation process is straightforward: run the setup executable, follow the on-screen instructions, and enter your license key. Once installed, launch the application and register your license through the built-in license manager. For detailed installation steps, refer to the official documentation, but this **Mentum Planet User Guide** assumes you have the software ready to use.

# Understanding the User Interface

The Mentum Planet workspace is divided into several key areas:

- **Menu Bar** – Houses all main functions: File, Edit, View, Network, Simulation, Analysis, and Help.
- **Toolbar** – Provides quick access to common actions such as opening projects, zooming, measuring distances, and toggling layer visibility.
- **Project Tree** – Displays all loaded data layers (terrain, clutter, vector, network elements) in a hierarchical structure. You can drag and drop to reorganize.
- **Map Window** – The central area where geographic data and network elements are visualized. You can pan, zoom, and select objects.
- **Status Bar** – Shows current coordinates, selected element properties, and simulation progress.

Familiarising yourself with these components will make every subsequent section of this **Mentum Planet User Guide** easier to follow.

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## CREATING A NEW PROJECT

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To begin a planning task, you must create a project that defines the geographic area, technology, and simulation parameters. Follow these steps:

1. Go to **File > New Project**.
2. Enter a project name and select the desired coordinate system (e.g., Universal Transverse Mercator WGS84).
3. Define the project extent by importing a shapefile or manually entering boundary coordinates.
4. Choose the default radio technology (e.g., 5G NR or LTE).
5. Click **OK** to create the empty project.

After creation, the map window will display your defined area. Now you are ready to import geographic and network data. This **Mentum Planet User Guide** emphasizes starting with a clean project structure to avoid data conflicts later.

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## IMPORTING DATA INTO MENTUM PLANET

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# Terrain and Clutter Data

Accurate coverage predictions depend on high-quality elevation and clutter maps. To import:

- Right-click on the **Terrain** folder in the Project Tree and select **Add Terrain**. Browse to your DEM file (e.g., GeoTIFF or ASCII grid).
- Similarly, add clutter data (land use classification) by right-clicking the **Clutter** folder and choosing **Add Clutter**. Clutter types might include urban, suburban, forest, or water.
- Adjust the resolution and height offset settings as needed. Higher resolution increases accuracy but slows simulation.

# Network Elements

You can import existing site locations and antenna parameters from CSV or shapefiles. Use the **Network > Import Sites** menu. Map columns like latitude, longitude, antenna height, azimuth, tilt, frequency, and power. Alternatively, you can add sites manually by selecting the **Add Site** tool and clicking on the map. For each site, specify the number of sectors and their antenna patterns. This **Mentum Planet User Guide** recommends verifying imported data against a site inventory to avoid errors.

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## SELECTING AND CONFIGURING PROPAGATION MODELS

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Propagation models determine how radio waves attenuate over distance and through obstacles. In Mentum Planet, you can assign different models for different environments:

- Open the **Simulation > Model Manager**.
- Choose a model from the list (e.g., Standard Propagation Model (SPM) for 5G).
- Adjust parameters like frequency, base station height, mobile height, and diffraction loss settings.
- For microcellular or indoor scenarios, consider ray-tracing or the dominant path model.

After configuring the model, click **Apply**. The model will be used for all subsequent coverage and interference simulations. This section of the **Mentum Planet User Guide** highlights the

importance of validating the model with drive-test data for best accuracy.

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## RUNNING SIMULATIONS

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# Coverage Prediction

To predict coverage for a set of sites:

1. Select the sites/sectors you want to simulate in the Project Tree.
2. Go to **Simulation > Coverage**.
3. Choose a resolution (e.g., 10 m or 50 m) and the type of coverage (best server, signal strength, or C/I).
4. Set the threshold (e.g., -100 dBm for LTE).
5. Click **Start**. The simulation runs, and results are added as a new layer in the Project Tree.

# Interference Analysis

Interference simulation helps identify trouble spots where co-channel or adjacent channel signals degrade performance. Use the **Simulation > Interference** option, select the serving and interfering cells, and configure the calculation parameters. The output shows C/I or C/(I+N) maps. This **Mentum Planet User Guide** suggests running interference simulations after initial coverage to refine frequency plans.

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## ANALYZING RESULTS

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Once simulations are complete, you can analyze performance using built-in tools:

- **Statistics** – Right-click a coverage layer and choose **Statistics**. You will see area coverage percentages, median signal levels, and exceedance probabilities.
- **Point Analysis** – Click on any location in the map window to see predicted signal strength from all nearby cells.
- **Profile Tool** – Draw a line between two points to view the signal level along a transect.
- **Bottleneck Identification** – Overlay traffic demand maps to see where capacity is insufficient. Use the **Analysis > Capacity & Coverage** menu to generate heatmaps of high-load areas.

These analytical features transform raw simulation data into actionable insights, a key theme of this **Mentum Planet User Guide**.

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## GENERATING REPORTS

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Mentum Planet offers flexible report generation to share findings with stakeholders. To create a report:

1. Go to **File > Report > New Report**.
2. Select a template (e.g., Coverage Summary, Site Comparison) or build a custom report.
3. Add map images, statistics tables, and charts by dragging them into the report layout.

4. Set the output format (PDF, XLSX, or HTML).
5. Click **Generate**. The report is saved to your specified folder.

Remember to include a legend and scale bar on map images for professional presentation. This **Mentum Planet User Guide** recommends saving reports as PDF for easy sharing.

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## TIPS AND BEST PRACTICES

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- **Organize Your Data** – Keep terrain, clutter, and vector data in separate folders within the Project Tree. Use clear names to avoid confusion.

## TROUBLESHOOTING COMMON ISSUES

**Use Multiple Scenarios** – Create different scenarios for current, future, and alternative network configurations. You can copy an entire project and modify parameters without

affecting the original.

- **Calibrate Propagation Models** – Always compare simulation results with field measurements. Mentum Planet has a calibration tool that adjusts model coefficients to better match drive-test data.
- **Leverage Automation** – Use the built-in scripting interface (Python or JavaScript) to automate repetitive tasks like batch simulations or report generation.
- **Optimize Gradually** – Apply small changes to antenna parameters and re-simulate to observe effects. The undo/redo feature is your friend.

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Even with this **Mentum Planet User Guide**, you may encounter difficulties. Here are solutions to frequent problems: