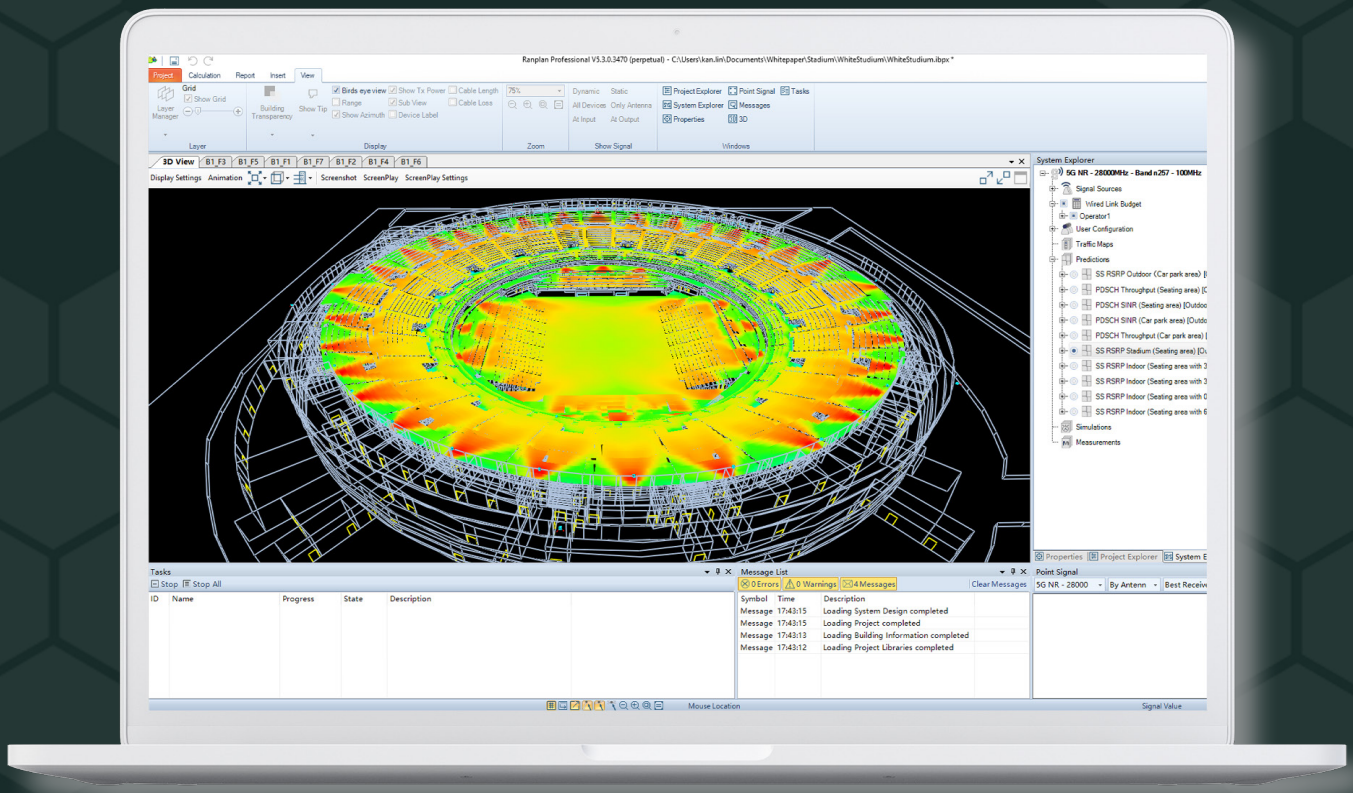
Ranplan Professional

Comprehensive HetNet design platform with intelligent algorithms to optimise your wireless network performance



What is Ranplan Professional?

Ranplan Professional is an advanced 3D modelling and simulation platform which enables RF designers to efficiently design and optimise the next generation of indoor and outdoor wireless networks in coordination prior to physical deployment.

This platform will increase your design productivity, significantly reduce your CAPEX/ OPEX spend and help you rapidly deploy your projects into the world.

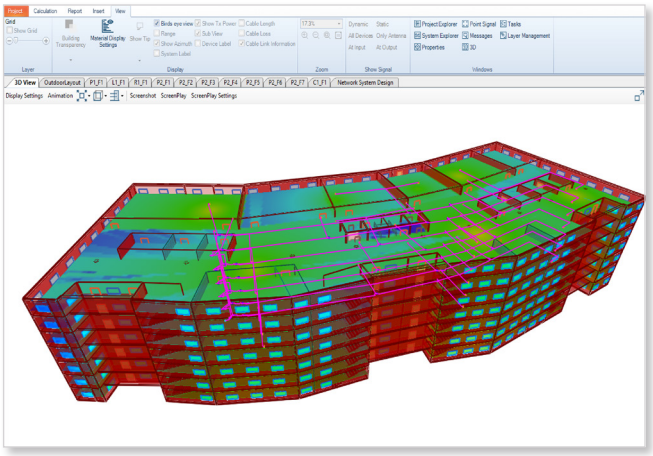
Key Benefits

- Comprehensive 3D structure modelling.
- Advanced HetNet design capabilities.
- 3D RF coverage propagation simulations.
- Design automation and optimisation.
- Customisable reporting.

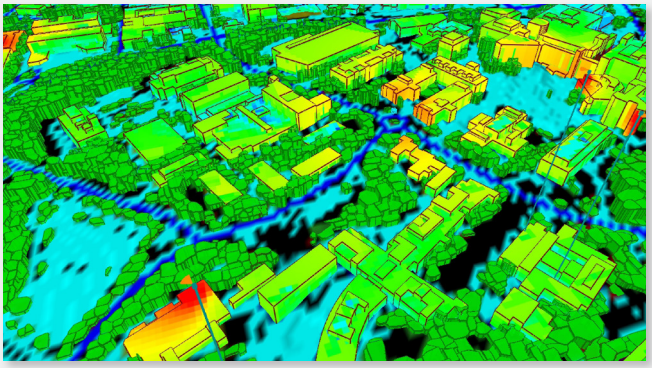
Comprehensive 3D structure modelling

Ranplan Professional offers a set of flexible tools to help significantly speed up complex structure modelling, incorporating building information and materials.

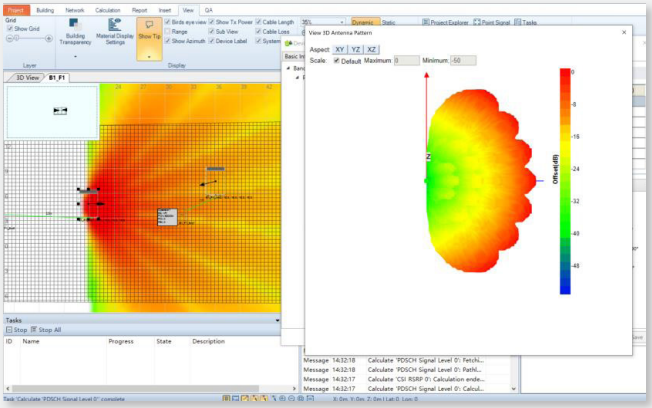
- The Smart Extract feature automatically converts 2D/3D CAD files into rendered 3D building models.
- Comprehensive 3D models (stadiums, tunnels, stairwells, campuses) can also be created from scratch using the intuitive 3D modelling capability.
- Exact building information of walls, doors, windows and interior objects are characterised by their frequency properties in the materials database. This increases the accuracy of the bill of materials.



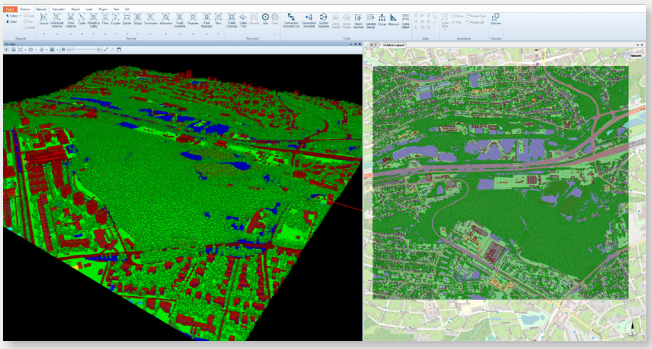
3D structure modelling



Simulate outdoor to indoor predictions with foliage considerations



2D and 3D RSRP Broadcast Antenna Beam Prediction



GeoData import including buildings, terrain, foliage and clutter

Powerful HetNet design capability

Ranplan Professional provides solutions to the challenges faced when combining increasingly complex technologies, some of which can interfere with each other, resulting in reduced network speed, coverage and capacity.

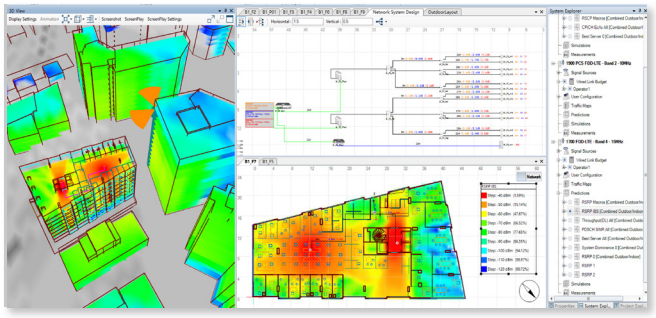
- The design platform enables the accurate modelling of real-world (indoor/outdoor) scenarios to evaluate network performance using different combinations of technologies and vendor devices before deployment.
- Direct imports of geographic information (buildings, terrain, foliage and clutter) from all major Geographic Information Systems accelerates the time it takes to model the outdoor environment.
- The results can be used to measure the return on investment and decide which solution should be used to deliver a cost-effective network that meets coverage, capacity and other KPI performance requirements.
- Multi-vendor solutions for in-building and outdoor:
  - Active/Passive DAS
  - Small cells design
  - DU/RU system design
  - O-RAN and vendor agnostic solutions.
- Vendor specific databases, supporting:
  - Multi-beam antennas capabilities
  - Multi-core fibre capabilities.

Fast 3D RF propagation simulations

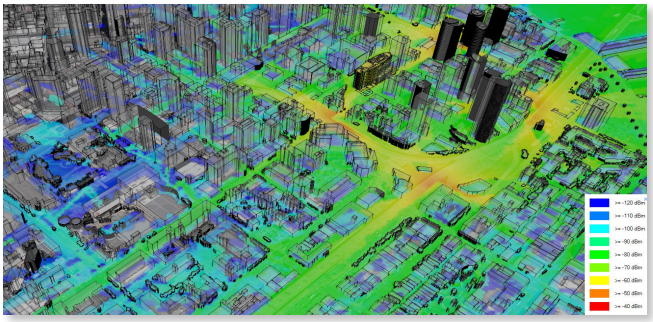
Ranplan's true 3D ray-tracing propagation engine generates realistic indoor and/or outdoor network coverage simulations to predict and determine the end users' quality of experience in a real world environment.

3D coverage and capacity prediction

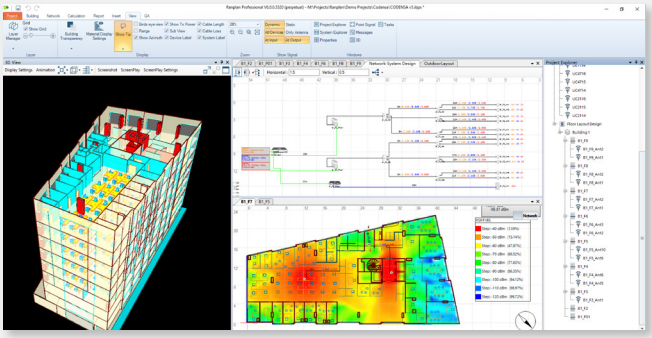
- Advanced calculation accuracy of the whole environment to represent all connected devices, whether they are operated by people or machines.
- Define body loss zones within venues such as stadiums to factor this into the predictions.
- Field measurement and propagation model calibration.
- Indoor/Outdoor channel modelling.
- Real traffic-based dynamic capacity simulation.
- Supports 2D/3D Massive MIMO antennas, beam selection and beamforming interference calculations.



Realistic 3D visualisation of indoor coverage prediction



3D visualisation of indoor and outdoor network coverage



Intelligent Frequency Optimization (IFO): optimizes channel allocation and transmission power, reducing inter and intra network interference and signal leakage.

Intelligent Cell/Antenna Optimization (ICO/IAO): automatically fine tune the location, number, transmit power, and antenna types of cells or individual antennas within a network to achieve KPIs.

Intelligent Topology Optimization (ITO): efficiently creates the optimal network topology by optimising the route of cables and selection of components.

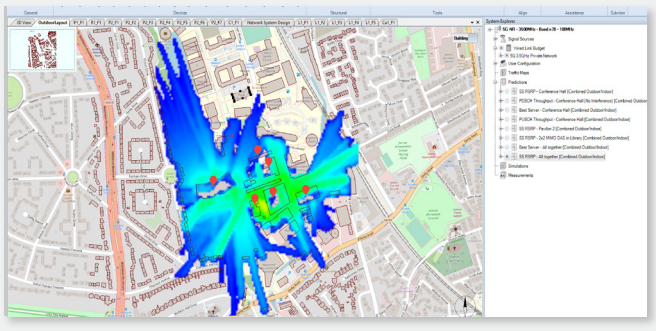
Intelligent Network Profiler (INP): preset network system measurements such as signal strength, coverage, and leakage to analyse system performance and optimise the network design.

Automatic Cell Optimizer (ACO): automatically tunes the transmitter's location, quantity, power, and antenna configuration to achieve the pre-defined KPIs.

Design automation and optimisation

Reduce the time spent on repetitive and manual tasks by using Ranplan's design automation features.

- The SmartCADExtract and SmartLayout enables RF engineers to automate building/structure modelling.
- The intelligent optimisation modules run algorithms based on the KPI criteria set by the RF Designer, which recommend changes to optimise the network design. This increases the design accuracy and validates the network performance prior to deployment.
- Greater accuracy in the network design helps to generate a reliable bill of materials which is automatically created in Ranplan Professional.



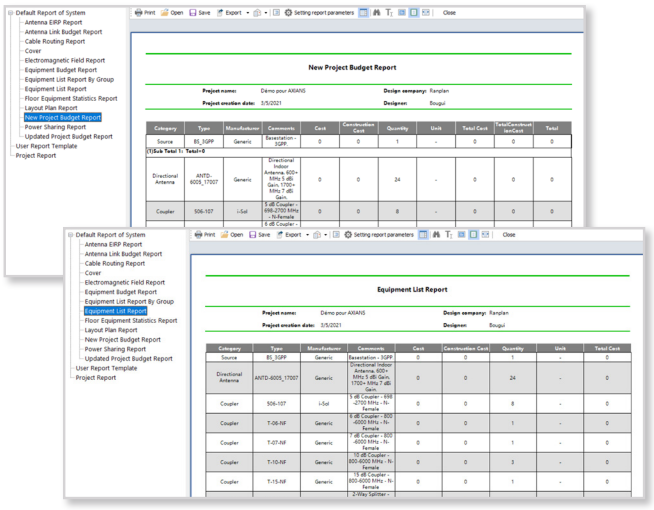
Identify RF Leakage to maximise network performance

Customisable and powerful reporting

Monitor and track project progress using the customisable and automatically populated reports, to ensure designs are delivered on time, within budget and meet all KPIs.

Gain quick access to all project information for presentations to customers and deployment teams.

- Multiple reporting templates in multiple languages.
- Customisable equipment and budget reporting.
- Project compliance reports.
- One-click comprehensive reporting.
- Project costs reported in real-time.



Project Budget Report / Equipment List Report

Technical specifications

Minimum hardware requirements

Processor: Core i5-6th Generation, 2.0 GHz

Operating System: Windows 10 (64bit)

Memory: 8GB

Hard Disk Space: 50GB

Display: 1024 x 768

Recommended hardware requirements

Processor: Core i7 7th Generation, 3.0 GHz

Operating System: Windows 10 (64bit)

Memory: 16GB for medium projects /
32GB for complex projects

Hard Disk Space: SSD with minimum 100GB

For HetNet projects: minimum 300GB required

Display: 1920 x 1080

GPU: RTX graphic cards 3070 or above are recommended, (For AMD CPU we recommend GPU with 4GB+ RAM)

API: OpenGL, OpenCL 1.2 or higher

Cloud/Virtual platforms: Microsoft Azure

Wireless technologies supported

5G NR Sub-6GHz and mmWave

4G systems (3GPP Release 16) LTE 600MHz – 3700MHz

3G systems HSPA/HSPA+/WCDMA/1xEV-DO/TD-SCDMA

2G systems GSM/CDMA/EDGE/GPRS/TDMA

Public safety systems P25/PMR/DMR/LMR/TED/TETRA

IoT systems LoRa/eMTC/NB_IoT/SIGFOX

Wi-Fi (IEEE 802.11a/b/g/n/ac/ax)

About Ranplan Wireless

Ranplan Wireless pioneers software solutions that help perfect the design, optimisation and automation of in-building and urban outdoor wireless networks, either in isolation or in coordination.

Our solutions enable companies to deploy next generation wireless networks for a range of applications, supporting multiple technologies and providing an unmatched quality of experience.