AIRCOM and Wavecall

Combine to Swisscom Mobile's Advantage

The Requirement

Swisscom Mobile, part of Switzerland's leading telecoms company Swisscom Group, had a UMTS network which already covered around 90 per cent of the populated areas of Switzerland. In 2007, it also became the first carrier in the country to roll out HSDPA.

Swisscom wanted to optimise its existing 3G sites across the country and more accurately predict the network's coverage footprint in urban areas. In particular, the operator wanted to ensure it was maximising the capacity of the network, while maintaining a high quality of service to its customers.

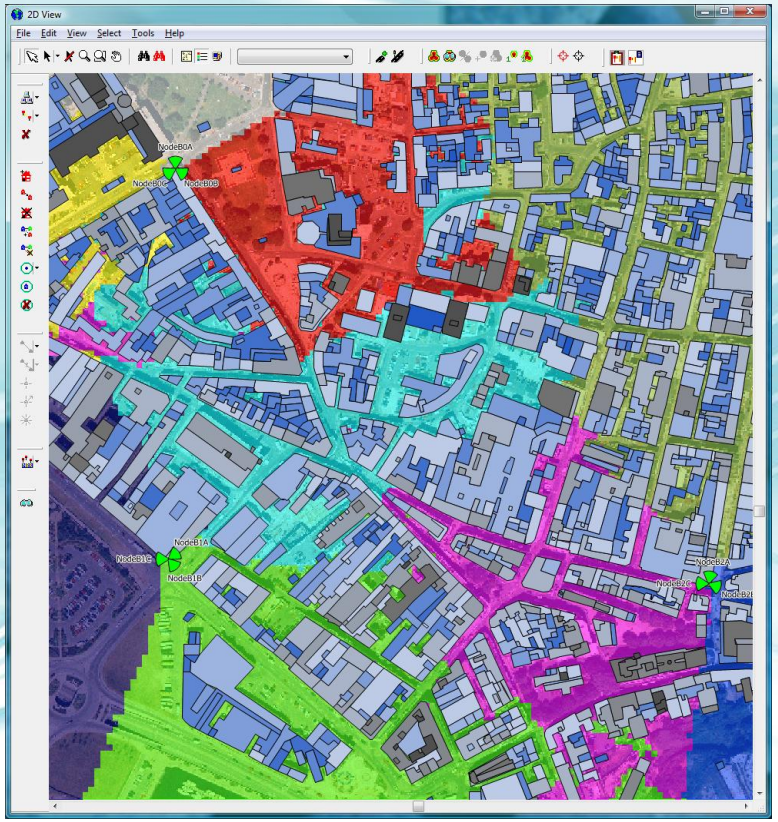
"We aspire to give our customers the very best mobile coverage, offer them the latest technologies and exceed their expectations," said Thomas Vonlanthen, Head of Access Technologies at Swisscom Mobile. *"Ongoing investment in expanding, developing and optimising our services through world-class products will ensure we can continue to deliver the highest European standards of efficiency and quality of service."*

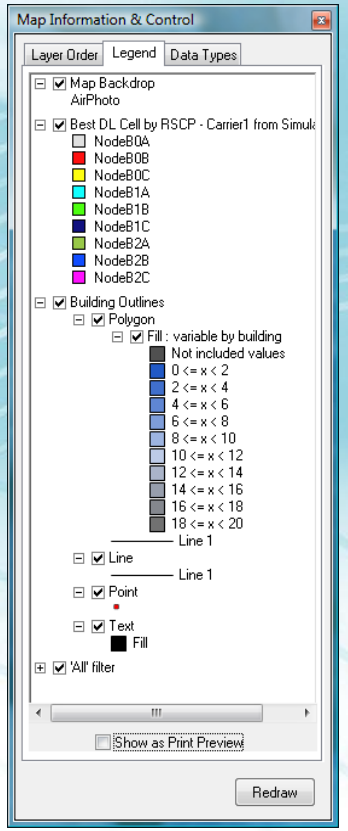
Swisscom needed to utilise the limited spectrum it had available and ensure the coverage footprint of each site met the requirements defined for the network. This would virtually guarantee that no additional cell sites would be needed later on and capital expenditure was kept to a minimum.

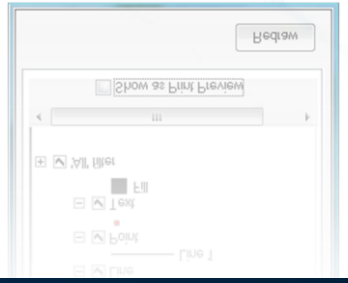
The Solution

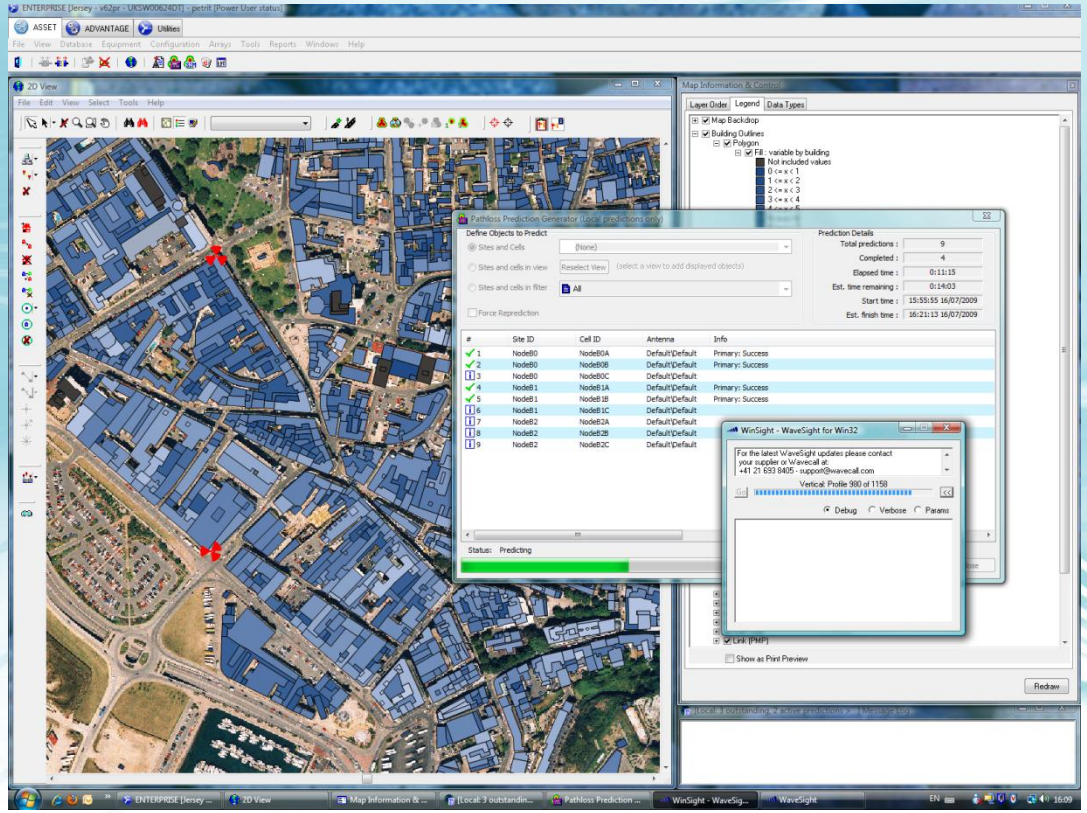
After completing a thorough formal evaluation of the leading network planning and optimisation products in the marketplace, Swisscom Mobile chose to deploy AIRCOM International's **ADVANTAGE** automated cell planning (ACP) and optimisation productivity pack, in conjunction with Wavecall's sophisticated propagation module, WaveSight. The two tools were seamlessly integrated into the network, allowing Swisscom's engineers to enjoy a unified, transparent platform for enhanced design and optimisation.

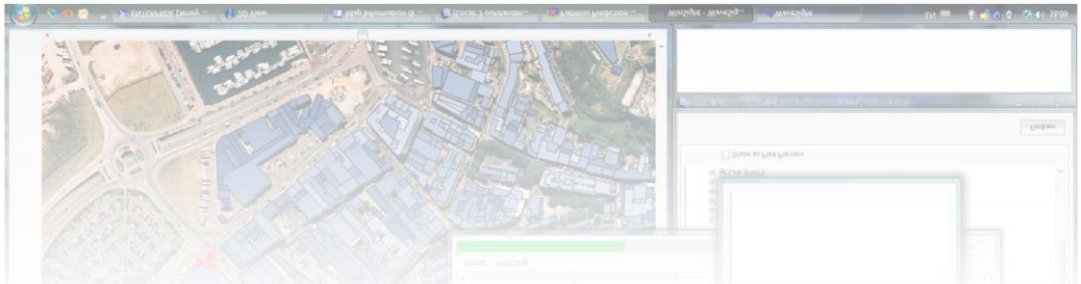
ADVANTAGE forms part of AIRCOM's **ENTERPRISE** suite of network engineering tools. Operating from **ENTERPRISE**'s single universal core Oracle® database, **ADVANTAGE** provides the most accurate picture of network performance possible, through the utilisation of key information available within the database, and uses a robust optimisation engine to maximize network performance, quality and capacity in a cost-effective manner. Consistently accurate representation of real-world performance is of paramount importance during the process of producing reliable and practical network solutions, and generating the most efficient network design. Radio network design is the foundation of a network's ongoing health and capacity. Propagation modelling is the most critical input in achieving design effectiveness and real-world correlation; urban areas present strong modelling challenges and hence require sophisticated 3D ray tracing models.











WaveSight is a leading edge propagation modelling technology which has proven to deliver highly accurate RF propagation representation in urban environments and others. When Swisscom used **ADVANTAGE** in conjunction with WaveSight, they were able to apply sophisticated automatic optimisation techniques to generate best-in-class network solutions, with minimum probability of error in network design. Similar optimization efforts with **ADVANTAGE** performed with empirical Hata-based models in urban environments would prevent Swisscom from achieving consistent reliability and effectiveness, and resulting solutions could potentially deteriorate network performance, quality and capacity.

The first optimisation work performed took place in the city of Basel. Through the application of WaveSight, which is able to predict how radio waves propagate through and are affected by man made and natural obstacles, the target area to be optimised was defined appropriately. **ADVANTAGE** then enabled radio network engineers to pinpoint precisely which sites needed to be deployed to achieve the anticipated uplift in service coverage and quality. Similar work was carried out on Zurich's urban network later in the year.

Design changes in both cities were limited to antenna electrical down-tilt and CPICH power. Remote implementation of these parameters removed the need for time consuming – and costly – visits to each site involved. Within six weeks, an overnight switchover to the optimised network configuration was achieved.

The Results

With the ability to capture more traffic, AIRCOM and Wavecall, would expect that optimising medium-sized networks (such as that run by Swisscom Mobile) could add an additional £300 million in annual operator revenue, with further potential 3G penetration.

The measured results in the cities of Basel and Zurich, as a result of the combined **ADVANTAGE**/WaveSight optimisation work, have constantly revealed an improvement in efficiency, quality and coverage area. In Basel, the network quality has improved by as much as eight per cent when measured network wide; localized cluster improvements would measure orders of magnitude higher. This has reduced the requirement for additional in-fill sites, and resulted in a parallel uplift in subscriber revenue. *"We are delighted with the results achieved to date,"* confirms Vonlanthen.

In Zurich meanwhile, a mobile network almost three times the size of Basel, network quality has been boosted by more than three per cent, also measured network wide. In both cases, the significant improvement in network quality was driven purely by the performance of the combined **ADVANTAGE**/WaveSight solution, with no additional capital expenditure required by Swisscom.

Consistency, reliability and efficiency have brought exponential gains in terms of OPEX and CAPEX to Swisscom. Achieving similar results through new site investment would correspond to a 10 per cent increase in both CAPEX and OPEX, illustrating the significant cost saving benefit of the combined **ADVANTAGE**/WaveSight solution for genuine network optimisation. This is in addition to the incremental subscriber revenue-earning opportunities resulting from increased data capacity and speed.

Margaret Rice-Jones, CEO at AIRCOM International adds:
"The initial feedback following deployment of the combined solution has been remarkable, particularly when you take into consideration the already high quality of the Swisscom Mobile network."

There is also potential for further optimisation and revenue as the national network expands. Through leveraging AIRCOM and Wavecall's capabilities to keep the number of blocked and dropped calls to a minimum, Swisscom will be able to improve 3G coverage, performance, quality and capacity through the swift re-design of trouble spots across the country.

"Our work with Swisscom highlights the significant value that the combined Wavecall/AIRCOM solution can deliver to mobile operators. By optimising key aspects of network performance, our solution can deliver significant CAPEX reductions and boost an operator's bottom line." concluded Karim Rizk, CEO at Wavecall S.A.

"We are delighted with the results achieved to date"

Thomas Vonlanthen