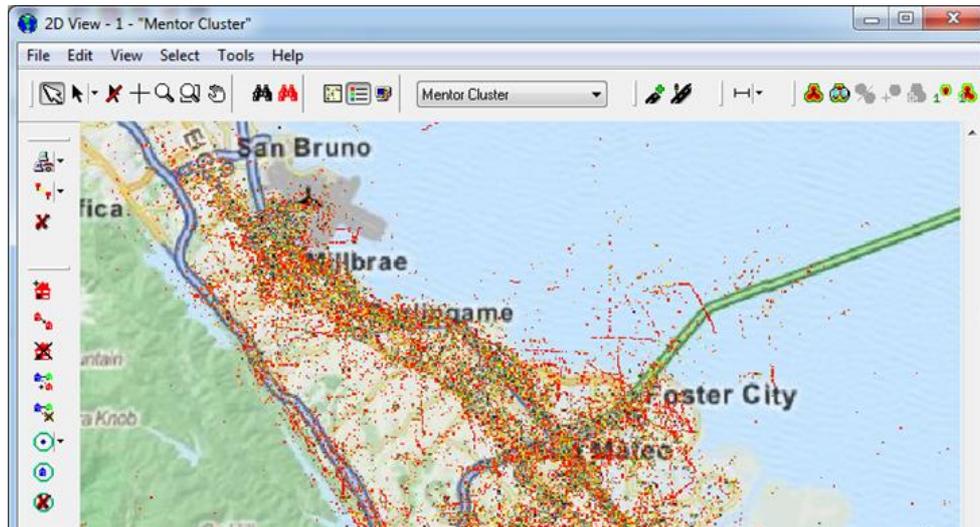


# ASSET Geo – Enhanced Radio Planning



## ASSET Geo provides geo-located traffic and performance maps for more accurate radio network planning and network design optimization

Radio network planning has always been the fundamental first step to ensure a high performing network. As customers have grown to rely more on their mobile devices, their expectation of network performance has also increased. To meet the increased coverage and capacity demands requires additional sites to be built, but increased market competition means the budget available for network expansions is under severe pressure. Planning engineers therefore need, more than ever, to determine the most profitable and efficient locations to deploy new sites.

To solve this challenge TEOCO created ASSET Geo, a module for our ASSET radio planning tool which provides an interface to the TEOCO Geo Server. ASSET Geo enables planning engineers to visualize geo-located traffic and performance data within ASSET increasing the precision with which they can place new sites for coverage offload or to solve network performance issues, ensuring every new site delivers maximum return on investment.

ASSET Geo is technology agnostic and supports CDMA, GSM, UMTS and LTE. It leverages the geo-location capabilities of TEOCO's Geo Server which includes advanced positioning algorithms and the ability to isolate stationary, moving, indoor and outdoor traffic allows for the creation of highly accurate traffic maps.

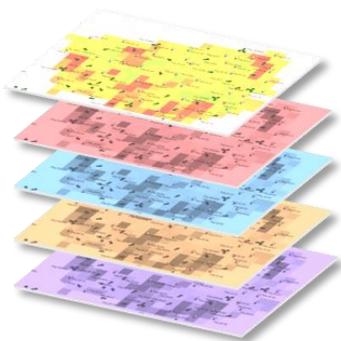
Maximize the return on investment of every new site planned

Traffic and performance maps built from actual mobile measurements

Better indoor loss estimation delivers CAPEX savings and better indoor quality of service

Accurate network measurements allow models to be tuned for greater planning accuracy

ASSET Geo provides geo-located traffic and performance maps for more accurate radio network planning and network design optimization. It assists planning engineers in 3 key areas:

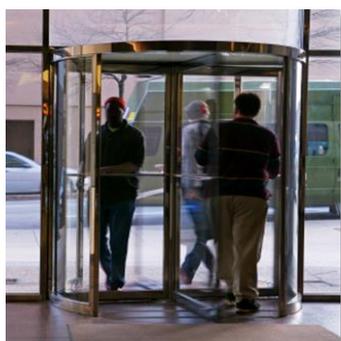


### General radio planning

ASSET Geo creates traffic maps based on actual measured traffic from the network which is geo-located with the help of sophisticated algorithms. These traffic maps consist of multiple layers and show traffic on a per bearer, per service or per UE basis.

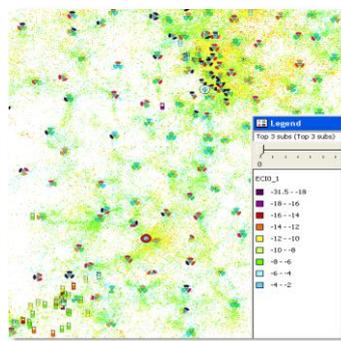
Leveraging these maps allows not only highly accurate placement of new sites but also analysis of specific services or bearers allowing a planning engineer to design for specific usage and not just traffic volume. Adjusting network parameters within ASSET provides 'what-if' scenarios to be modeled helping engineers to understand how load distribution changes given certain criteria and constraints.

By adding different scaling factor to specific services, or UE's a planning engineer can gain a much more accurate picture of traffic growth and plan expansions to a much higher degree of accuracy.



### Indoor loss estimation

Traditionally planning teams estimate the attenuation of indoor signals based on a few limited sample measurements. Since ASSET Geo is able to determine whether measurements are indoors or outdoors an accurate view of indoor loss can be gained. This means network plans can account for indoor users much more accurately which leads to better indoor quality of service. In addition it can also lead to CAPEX savings due to fewer sites since engineers are often overly conservative in their indoor loss estimations.



### Improved network modeling

Since the data produced by ASSET Geo comes from the live network, many insights can be gained which help to improve the planning tool's network modeling. By using actual signal strength, throughput and quality measurements planning engineers gain a much more accurate view of the network performance and simulation models within the tool can be tuned to more closely match reality. In addition, by understanding where static vs. moving and indoor vs. outdoor traffic is concentrated planners can adjust their network designs and cell parameter settings to optimize for the predominant traffic served by a cell.