



Smart devices > Smart networks > Smart Planning

White Paper

Data Sharing Across the Enterprise



Data Sharing Across the Enterprise

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Overview

A common divide within the wireless engineering industry is the ability to clearly communicate the highly technical work that the wireless network design team produces with other stakeholders of the enterprise that do not have access to engineering design tools. However, online mapping tools such as Google™ Earth have become main stream and integrating their mapping functions with the engineer's design tools offers innovative and useful solutions to this problem by allowing the sharing of propagation study graphical plots and network assets. The following paper discusses this solution and demonstrates its functionality.

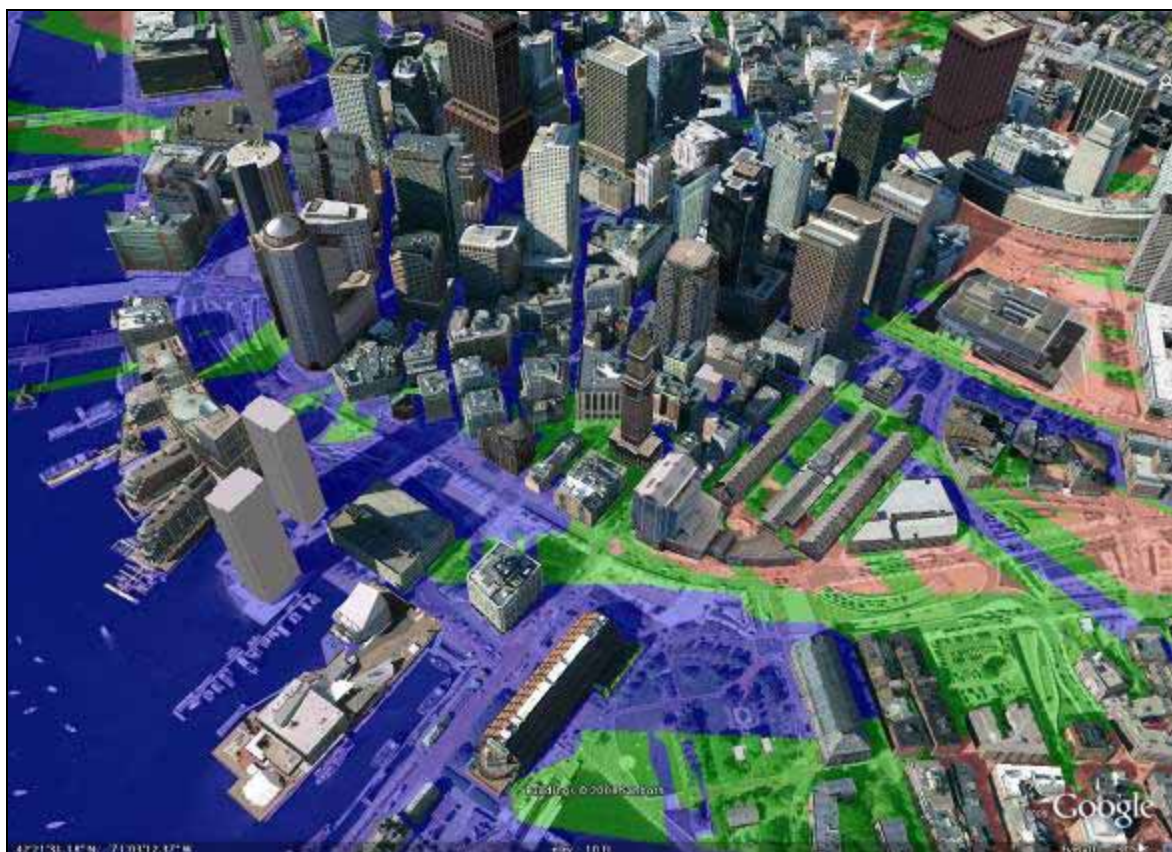


Figure 1 – EDX SignalPro coverage study overlaid on 3D buildings in Google Earth



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Data Sharing Across the Enterprise via a Direct Google Earth Export

Wireless network planning and design tools such as EDX's carrier-class EDX® SignalPro® have previously included tools that allow network design engineers to export study layers to industry-standard GIS tools, MapInfo® and ArcView®. This capability allows the network design team to integrate their study information with their company's GIS system. Although this feature is highly useful, the drawbacks remain that the viewer of the engineering studies has to be proficient with the GIS tool of choice, the user must have a commercial license of the GIS tool, and interactive functions are limited.

As freeware mapping applications such as Google Earth became popular, EDX recognized how valuable it would be for system designers to be able to have their work integrated with these interactive tools. As such, an innovative export feature for EDX SignalPro was developed that allows the engineer to directly export his or her work in Google Earth's KMZ and KML formats. The integration with Google Earth deals with the three previously mentioned issues: it is a free tool, it can easily be used by anyone who can browse the internet, and it is highly interactive.

Other advantages of integration specific to Google Earth include the robustness of its native formats, KML/KMZ, which allows a wider variety of engineering data to be visualized in 3D. Although the detailed engineering data that is predicted by sophisticated planning tools such as EDX SignalPro can contain large amounts of data, the Google Earth export is relatively small in size and can be easily emailed back and forth between anyone who needs to know about predicted system performance.

The type of data that an engineer can share with other stakeholders includes:

1. Coverage maps
2. Backhaul/microwave link maps
3. Mesh system routes and alternate links routes
4. Performance data along a specified route
5. Base station, backhaul/microwave link, mesh access point, and customer premise equipment (CPE) locations

Demonstration of Solution

The following portion of the paper will demonstrate how easy it is to implement a Google Earth KMZ export in EDX SignalPro and provide readers with an example of how the data can be visualized within the free version of Google Earth. The additional features of Google Earth Plus and Google Earth Pro are not covered in this paper.

Step 1 – Selecting the Area Wide/Coverage study for export

Open the Map Layers dialog and select the study layer for export by right clicking on the EDX study. From the list of current map layers available in the EDX project, select the layer that is to be shared across the enterprise. Figure 1 shows that the WiMAX Modulation Regions Downlink study has been selected for export.

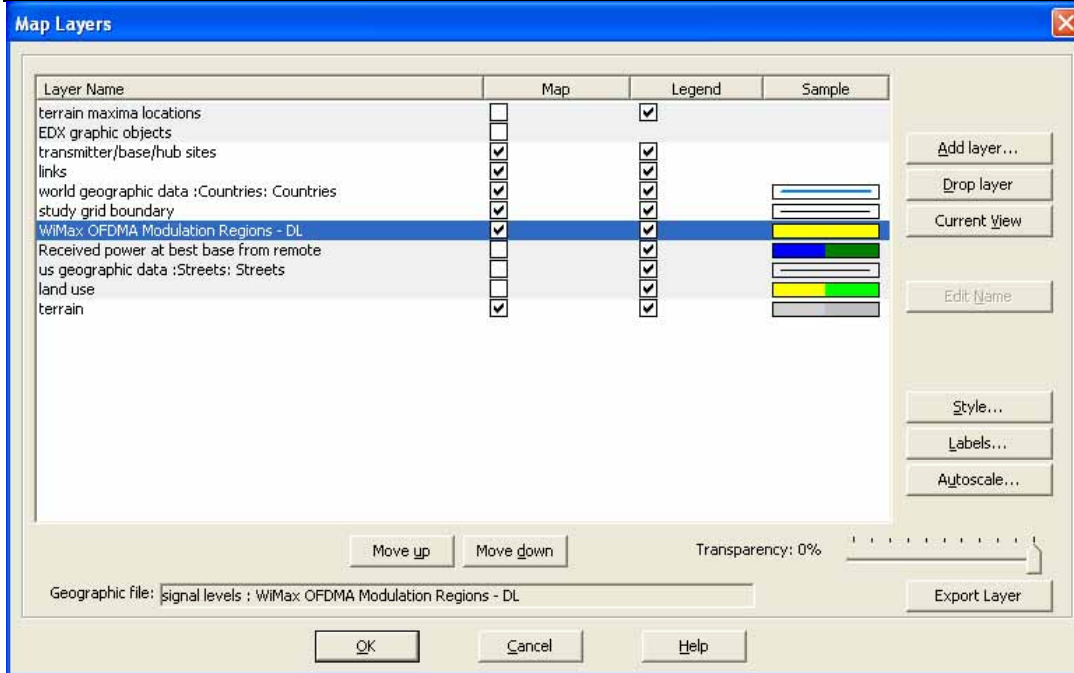


Figure 2 - EDX SignalPro Map Layers Dialog

Step 2 – Exporting the study layer to Google Earth KMZ format

From the Map Layers dialog select the Export Layer button in the bottom right hand corner of the dialog box, as displayed in Figure 2.

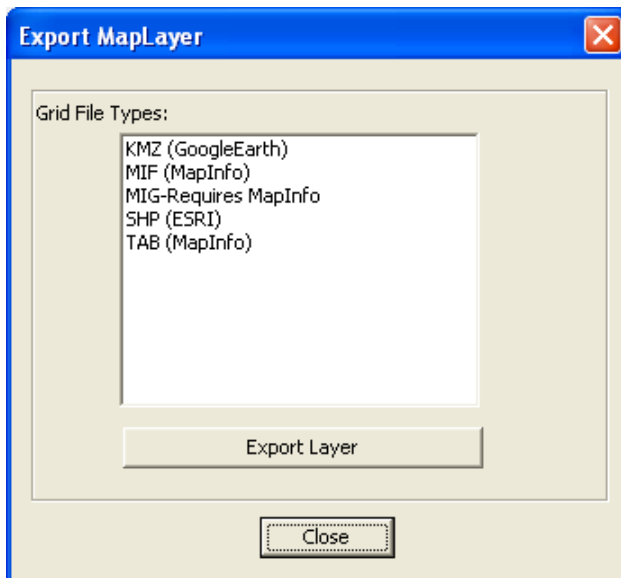


Figure 3 - EDX SignalPro Export Map Layer Dialog

Select the KMZ (Google Earth) option and click the Export Layer button. This will run through a Save As... dialog and after that has been completed the dialog in Figure 4 will pop up.

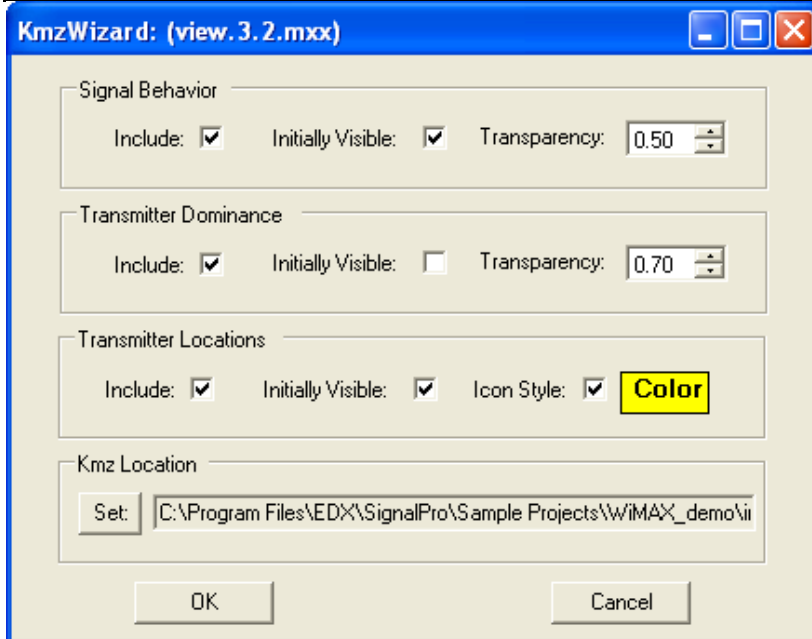


Figure 4 - EDX SignalPro KML Wizard

The KML Wizard dialog allows the engineer to control the type of information that is exported to Google Earth as well as how the data will initially show up on the end user's map before the end user has interacted with it. The Signal Behavior section refers to the predicted engineering study data. The Transmitter Dominance section refers to the graphical coverage map of the associated Most Likely Server (strongest server). The Transmitter Locations section refers to the base station/link/access point/CPE site locations for the equipment group that is used for the coverage study. These settings are how the engineer can adjust the graphical defaults that define how the layer is initially viewed in Google Earth.

Step 3 – Importing the KML file into Google Earth

There are a number of ways to load a KML file into Google Earth:

1. The file icon can be dragged into the Google Earth window
2. The file icon can be double clicked which will open it in Google Earth
3. The file can be opened by going to Open File and browsing to the file

When the file has been opened, it will automatically navigate the view down to the coverage area and the view will include the coverage study graphical layer as well as the transmitter site locations as shown in Figure 5.



Figure 5 - Google Earth with EDX SignalPro overlay – WiMAX Modulations Regions (DL)

Step 4 – Navigating the EDX SignalPro data within Google Earth

After the EDX SignalPro data has been loaded into Google Earth, the view properties of the data can be adjusted via the Google Earth control bar. The graphical coverage maps can be adjusted for transparency and hierarchy. The transmitter site locations (place marks) can be adjusted for icon style, transparency, and coloring. Also, the site locations are pre-loaded with the key attribute information for each base station viewed that allows for quick access to relevant site information. Any of the imported layers can be turned on and off depending on the information that is desired by the user.

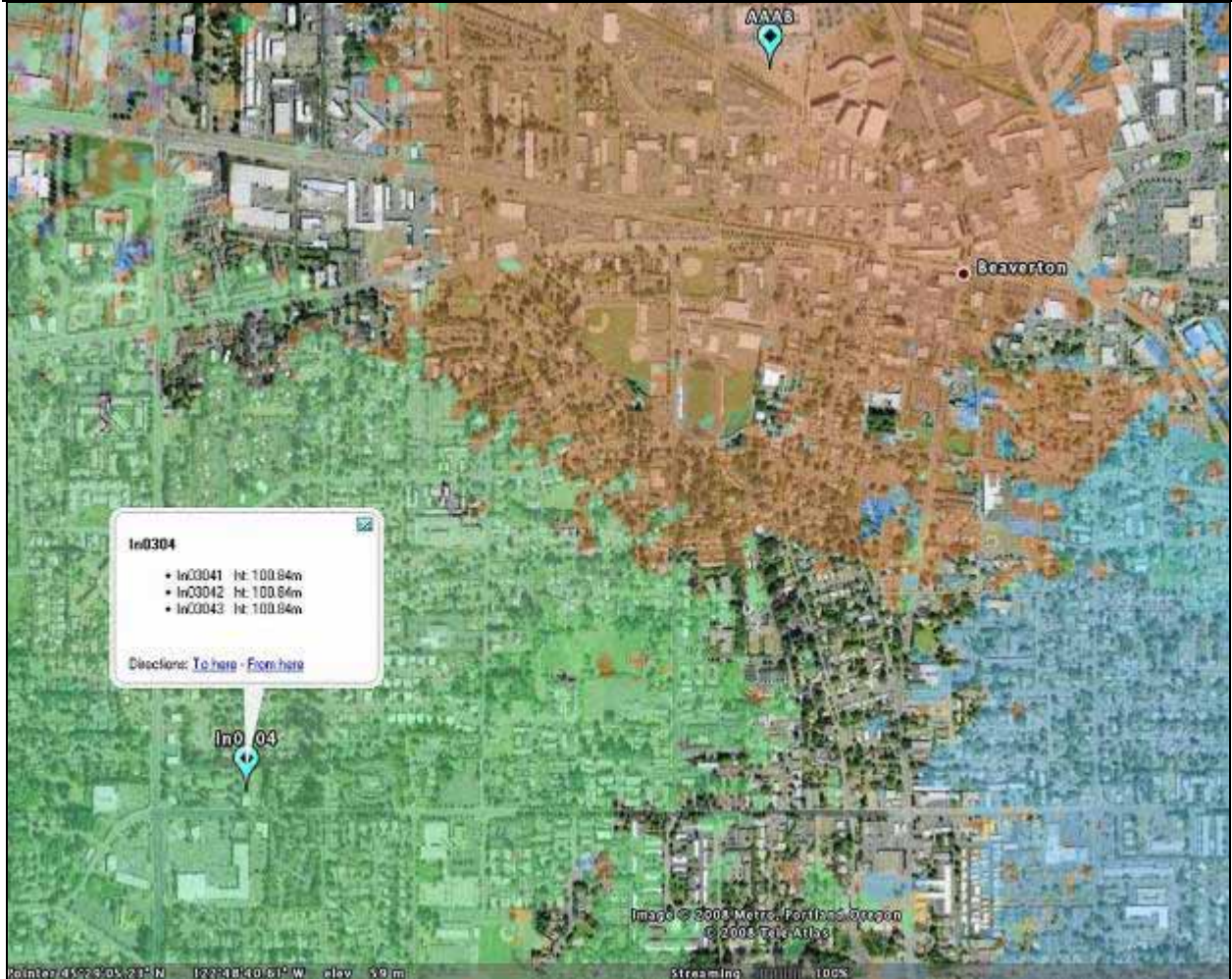


Figure 6 – Google Earth with EDX SignalPro overlay – Strongest Server

Figure 6 has the WiMAX Modulations Regions (DL) layer disabled from the view and has the Strongest Server (Transmitter Dominance) layer enabled. After playing with the graphical settings within Google Earth, the user can then save the KMZ file and then email it to others, thus sharing the interactive data around the enterprise with ease, flexibility and no additional cost.

Everyone can use the KMZ file to set up their unique network view to best serve their specific needs. The users can select from Google Earth's extensive and easy to use virtual globe mapping functions, including 2D views, 3D views from any perspective, tilt and rotation. 3D building databases can be added, as well as SketchUp data, where available in Google Earth. The user can interact with Google Earth and the engineering data layers as they need to see the data and produce the results that lead to better understanding of the network and more effective communication about the detailed data all across the enterprise, whether it's the birds eye view of the prediction studies that they need to see, and/or the details of the key attribute information from each piece of equipment.

Additional Data Sharing Options for Enterprises

Most carrier-class planning tools such as EDX SignalPro also include the ability to link to external Enterprise databases that help companies store their network equipment details. Such databases also provide version control for the data as well as user access controls, such as read/write permissions. While some planning tools



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require external databases to store such data, EDX SignalPro offers more scalability by either saving equipment data within its own project files and/or exporting to external databases via a flexible XML/CSV import/export utility. This allows an enterprise to integrate EDX SignalPro with an Oracle/Revision Control type database without adjusting their current database structures and activities. Another data sharing option in EDX SignalPro that is of great importance is the ability to produce a bill of materials via its direct Microsoft® Excel® connectivity. This feature allows an engineer to directly export the network configuration designed in EDX SignalPro to Excel for utilization within the deployment group of an enterprise.

Summary

Major advantages of viewing network design detailed data in Google Earth include the following:

1. Access to Google Earth imagery and data resources including 3D building data and GIS information which allows the viewer to create his or her view of choice
2. Interactive experience for the viewer (customer or enterprise member) of the network data which provides a hands on experience that truly makes an impact beyond screenshots and still images
3. Enables an Adobe® Reader® experience of EDX SignalPro data which reduces capital expenditures
4. Provides the sales group within the enterprise the opportunity to utilize the engineering data in sales presentations in both face-to-face situations as well as over the web
5. Google Earth is free and is easy to learn for the average person

EDX SignalPro has successfully implemented an innovative solution that brings significant time and monetary savings to the long-standing issue of how to share highly technical wireless engineering data across the enterprise - in terms of time spent on preparing views and software license fees required to interact with such detailed data. The ability to directly export EDX SignalPro graphical study data and network asset information to Google Earth provides the wireless engineering team and the enterprise as a whole a powerful tool to aid in understanding the details of their wireless network investment across all levels of their enterprise.