



# Spectrum Engineering Goes Online

## MULTIPLE ACCESS LEVELS FOR DIFFERENT USERS

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When representatives of APCO-AFC, APCO International's spectrum management division, met with ATDI Inc. this past year during the annual APCO International Conference and Expo in Philadelphia to sign a contract for their new spectrum engineering system, it was the beginning of a unique partnership, as well as the development of an innovative system that has revolutionized RF engineering.

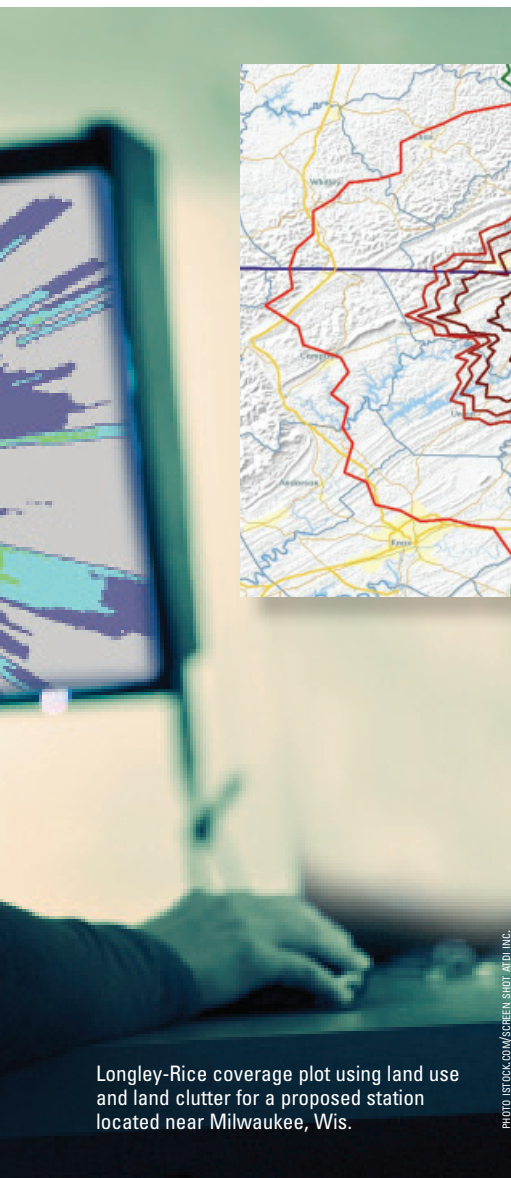
APCO wanted the new system to be personalized, zero footprint and capable of supporting its members and advisors located across the U.S.

Over the past several months, the ATDI Inc. team and APCO have worked together to develop a web application dedicated to spectrum engineering and have changed the way these tools are developed and distributed. They combined their many years' worth of industry-related experience in the areas of public safety communications, frequency coordination and software development to create a cloud-based Web application, Spectrum-E, that supports FCC Part 90-compliant propagation analysis, interference analysis and frequency nomination studies in the VHF and UHF frequency bands. Also included are specific considerations for 700 MHz and 800 MHz band

frequency coordination.

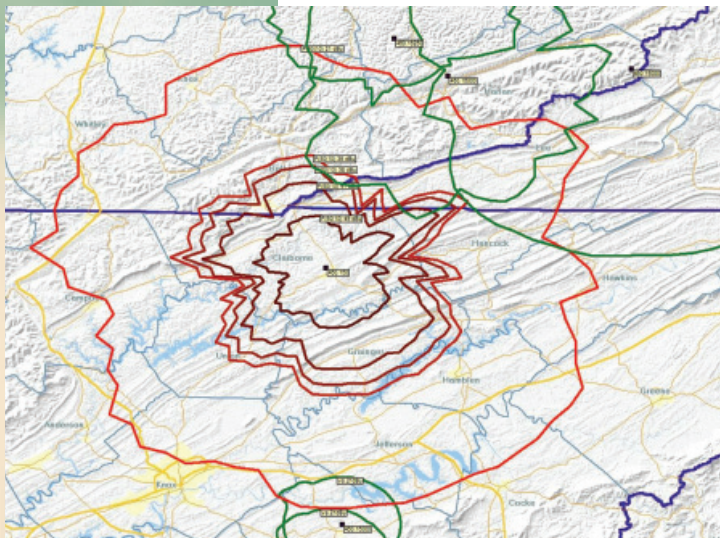
Spectrum-E is now the official tool used by APCO advisors to perform a variety of studies essential to supporting public safety communications networks on a local, state and national level.

Originally, ATDI Inc. had planned to deliver a modified off-the-shelf version of its legacy software applications. However, delivery constraints to all 70 of APCO's advisors located around the country proved to be too costly and cumbersome for everyone involved. The ATDI Inc. development team began to investigate various distribution options, including remote desktop sharing and Web development. Ultimately, the Web application architecture was



Longley-Rice coverage plot using land use and land clutter for a proposed station located near Milwaukee, Wis.

PHOTO: ISTOCK.COM/SCREEN SHOT AND INC.



FCC R-6602 derated contour analysis performed in Spectrum-E.

### CUSTOMIZABLE

The fact that Spectrum-E is a web application and users have separate accounts allows for customization of individual accounts that can hold both individual and shared information. The customization process also allows an APCO-specific implementation of the software that does not include superfluous functions and information that is not relevant for APCO users, making the software more transparent and easier to use.

Users can upload personal files to their accounts, including digital antenna patterns, large networks contained in spreadsheets and GIS ShapeFiles that can be overlaid on native map and terrain data.

### ACCESS & PRODUCTIVITY

Spectrum-E offers multiple levels of access for different user types. These user types could include power users performing a TSB.88-C Service Area Reliability Degradation analysis and frequency nomination on a regular basis or a non-power user who may only need to perform a basic import, profile or coverage analysis from time to time. This "lite-client" implementation also mitigates the need for the user to have a high-performance computer with large on-board storage capabilities, and it allows for ease of access. Because the software is not installed directly onto the user's computer, any Internet-connected device with a compatible Web browser

may be used to run the application and the complex functions that it performs.

APCO advisors now have the ability to take their work on the road and access the application on anything from a laptop, to a smart phone or tablet. They're no longer tied to their desk and can work from almost anywhere.

An increase of work productivity is achieved through the use of the ATDI Data Center where dedicated servers hold the users' files and perform all the user-requested functions. Aside from the computing speed advantage, functions are streamlined, eliminating mouse-clicks. Workflows are designed and implemented for common analyses, further saving time. During the customization of Spectrum-E for APCO users, its interface has become fairly robust and includes several dedicated frequency coordination functions specific to FCC coordinators. These functions include:

- HAAT and DHAAT analysis;
- Point-to-point path profile analysis and reporting;
- R-6602 Carrey curve contours for interference and service area analysis;
- Talk-out and talk-in coverage analysis using multiple propagation models;
- Region 8/55 analysis; and
- Safe harbor calculations.

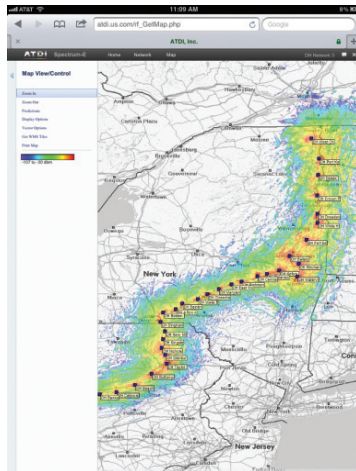
### UPDATES

System upgrades are no longer a complex and time-consuming issue; users are not required to upgrade their software because any upgrades implemented within the ATDI Data Center during the process of improvement and maintenance are immediately available to all users. This removes the uncertainty of multiple users working with differing versions of the software and eliminates the often-complex procedures of upgrading a local software installation, especially on secure networks. Spectrum-E also has a Secure Socket Layer protocol to encrypt each user session with the ATDI Data Center, which is the equivalent to the level of security provided by a typical online banking session.

Finally, accuracy and repeatability of results were a major consideration and

# SPECTRUM ENGINEERING GOES ONLINE

are an ongoing goal in the development of the software. By using a central data center, the effects that the native settings of a client-side computer may have on the results of an analysis are removed. Further, the newest data and practices are used by the software. *Example:* TIA TSB-88.C service area reliability degradation may be used for interference analysis; the TIA TSB-88.D standard will be implemented as soon as it's ratified. For coverage plot analyses that require the consideration of land use/land clutter information, the most current NLCD01 data is implemented in high resolution.



Multi-station UHF coverage for LMR relays along a railway line performed on an iPad with Spectrum-E.

exceptional, and the resulting platform reflects what best-in-class partners achieve when their efforts are pooled together. This step forward for our organizations and the RF engineering field in general promises great opportunities for many years to come,” says Pierre Missud, CEO of ATDI Inc.

Through ATDI Inc.'s development of Spectrum-E, APCO users now have a tool in their hands that is easy to maintain, use and constantly upgrade to continuously meet changing compliance and workload requirements.

Current FCC narrowbanding and super narrowbanding mandates are making this necessary, and it's now

possible to access an FCC Title 47 Part 90-compliant frequency coordination and spectrum engineering platform that requires very little ramp-up time. **||PSC||**

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## FORWARD PROGRESS

“The collaboration with APCO has been



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