CTIA'S PROACTIVE APPROACH TO FREQUENCY COORDINATION PAYS OFF

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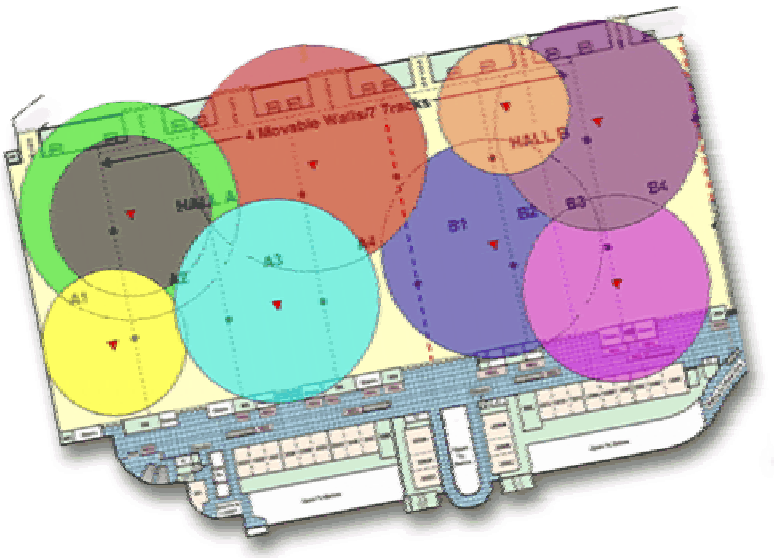
There were plenty of skeptics when it came time to implement the three month long plan laid out by CTIA and Comsearch to coordinate frequencies for the array of wireless demonstrations on the CTIA WIRELESS 2003 show floor.



Wireless vendors such as NTT Do Co Mo, Lucent, Nokia, Ericsson, Nortel Networks, Motorola, Hewlett-Packard, Qualcomm and Siemens, just to name a few, were there to demonstrate their latest wireless devices and they all needed spectrum to do it.

CTIA recognized the need for a managed frequency coordination process for its wireless shows. Each year the proliferation of emerging wireless devices and technologies raised new challenges in ensuring that exhibitors had the spectrum needed to demonstrate their wares.

Therefore, CTIA has relied on Comsearch, the Northern Virginia-based wireless engineering and spectrum management firm, to coordinate and manage this process for the last five years. "It was very much like engineering a wireless system for a small city," said Robert Mesirow, Vice President of Conventions at CTIA. "Most of the equipment vendors on the show floor weren't really sure how it was all going to come together." However, this year the word "challenge" proved to be a bit of an understatement.

Pre-show planning and engineering for the frequency coordination process began three months ago and included wireless device registration procedures, PCS and 3G coordination and engineering, and unlicensed device coordination. The weekend before the show

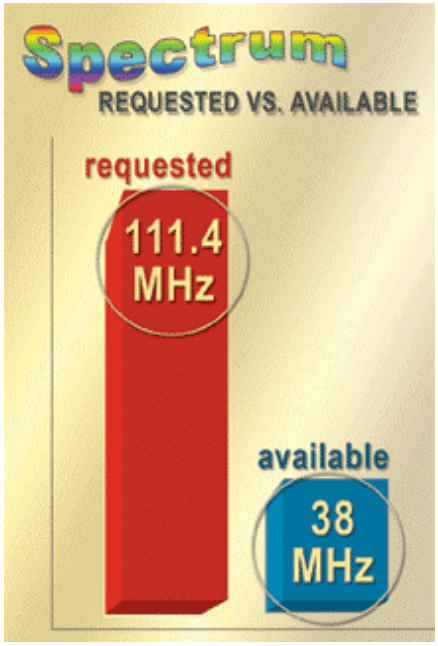
It is apparent that the pre-show planning was meticulous and paid off well by the avoidance of any interference disasters. Not only were the technical aspects managed well, they were managed in a non-intrusive fashion.
A job well done!

Nortel Networks

Comsearch RF team was available and ready to assist with any situations that may have arisen and we appreciated the support provided by Comsearch throughout the entire spectrum management process. Based on the lack of interference problems I believe that the frequency coordination effort was successful.

QUALCOMM Incorporated

opened, Comsearch engineers were onsite implementing the comprehensive plan to coordinate and monitor frequencies between vendors on the show floor.



As one of the first steps in the coordination process, CTIA requested spectrum from Carriers in the New Orleans market for temporary use during the show. "Basically we had requests for more than 100 MHz of spectrum and had only 38 MHz to distribute between all of the users," said Drew Cusick, Manager of Operations at CTIA. "Nothing close in concept for such a multi-technology frequency reuse has ever been implemented in an indoor area or trade show."

From a conceptual context, there was a fundamental problem in mobile engineering, which had been addressed previously in the various cellular-engineering domains, including the land-based networks. What was unique about the problem at hand was that of a reuse of the same frequency (ies) in an indoor arena (such as the Ernest N. Morial Convention Center) across multiple technologies with co-carrier locations as close as thirty to fifty feet. The analytic model for the suggested engineering solution was quite involved and there was no research addressing the specific challenges. Therefore, Comsearch carefully formulated design objectives that would cater to the individual requirements for the different technologies of cdma2000, W-CDMA, GPRS/ EDGE etc. Here lay the (potential) Achilles heel of the technical solution – to bring together exhibitors from varying backgrounds (TDMA based, spread spectrum based, etc.) under one umbrella, to agree on a fundamental set of design objectives, and to implement the suggested solutions.

Thank you for working with us flexibly on our show configuration, and also for your periodic updates and checking with us for interference issues.

The show was successful for Siemens, and the network technology demonstrations that we showed were a significant contributor to this success.

Siemens Information and Communications Mobile LLC

Only if ALL of the frequency coordinated exhibitors actively contributed to the implementation process would CTIA's show experience be successful. "Either we would have a minimal interference environment where everyone could coexist or we would have no demonstrations due to noise-rise on the co-carriers if the exhibitors did not abide by the common design-rules," said Khursheed Khan, Principal Engineer for Comsearch.

Each exhibitor was asked to operate their wireless demonstrations using assigned frequencies and demonstration set-up restrictions such as low transmit power levels and specific antenna placement and attenuation requirements. CTIA and Comsearch worked very closely with the exhibitors before and during the show to explain the complexity of the show's frequency coordination demands and limitations and to assist them with their set-ups. And it paid off.

Managing limited spectrum among exhibitors who are in close proximity to each other is a very difficult task, to say the least.

The New Orleans market posed significant challenges due to the scarcity of available spectrum. CTIA and Comsearch are already looking towards next year's show in Atlanta and are determining further efficiencies in managing the frequency coordination process for 2004.

> *I was very skeptical of different competitors using the same spectrum and working together, but from our experience at the show, you were able to do just that.*
>
> *The non-standard channel number was a good idea as it helped isolate our systems from commercial systems. We thank you for all your efforts.*
>
> Lucent Technologies

"We don't want to have to resort to strict engineering designs or restrictions if we don't have to," said Chris Hardy, Vice President of Spectrum Management Solutions for Comsearch. "The success of this year's show was due to the cooperation from the CTIA exhibitors. Future wireless shows will require cooperation and coordination from PCS carriers as well as exhibitors."