



## CASE STUDY

# CTS DOUBLES PRODUCTIVITY WITH IBWAVE DESIGN

### Facts-at-a-glance

**Client:** CTS

**Headquarters:** Marlborough, MA U.S.A.

**Founded:** 1990

**Services offered:** Nationwide, turn-key integrator of wireless communications solutions

**End-clients:** All the major US wireless operators, system integrators, and equipment manufacturers, enterprise/end-users

### Benefits

iBwave Design helped CTS to:

- Double productivity for the entire team in the creation of in-building wireless infrastructure designs
- Decrease the overall costs of their installations
- Increase the profitability of the company with more accurate designs
- Reduce training and travel costs



**"iBwave Design allows me to quickly change the way I configure a design, to see if there's a more cost-effective way to build it out. It's just an outstanding tool that has helped us double our productivity and reduce the overall costs of our installations."**

### - Kely Davis

Director of Business Development, Wireless Division  
Communication Technology Services (CTS)

## Wireless Infrastructure Company Makes Waves by Increasing Profitability with iBwave Design

Sometimes being too good at something can cause you more headaches than you expect. That's what CTS discovered as they won more and more contracts to design and install wireless infrastructures within buildings for their customers. They desperately needed a tool that would help them better manage the huge amounts of data they were using in their designs, and, most importantly, keep accurate.

"One small mistake early on in the project can turn into real problems at the end," explains Kely Davis, design engineer and Director of Business Development for the Wireless Division at CTS. "One-eighth of an inch on my scaled drawing can translate into 15 feet of cable too much or too little at installation — there's exponential potential for issues."

### Highly qualified engineers spending valuable time on clerical tasks

Initially, CTS was using mostly manual methods to create their designs. Design engineers used Microsoft® Visio to show the types of equipment and its placement within a building on a scaled drawing of the structure. They then used a spreadsheet application to create link budgets — a list of calculations of the predicted signal strength across the site based on equipment used, structural influences, and other factors.

"The link budget is a very technical calculation that is easy to make mistakes on," says Kely. "There are so many points of failure when entering, tracking, and amending this data."

To ensure accuracy in their designs, the engineers were laboring over their calculations. "The design engineers felt like data entry clerks — they were spending so much time just managing spreadsheets," says Kely.

### CTS doubles productivity with integrated tool

CTS decided it was high time they found a way to get better value from their investment in their design engineers. They implemented iBwave Design, a complete software tool that fully automates the design, planning, and management of indoor wireless networks and predicts their performance. It provides RF engineers with the right mix of usability, control, and flexibility to simulate real project situations and accurately predict the network quality of service.

"We considered Wireless Valley, but the license fees were cost prohibitive," says Kely. "I used iBwave Design when I was working at another project, and I was blown away by what it could do."

With iBwave Design, engineers are now putting their best skills and intelligence to work, spending less time managing spreadsheets and diagrams and more time designing. "iBwave Design has literally doubled our productivity in design engineering," Kely enthuses. "Each design engineer can now handle at least double the amount of work they could have done using Visio. And I'm able to do more for my staff: when they get stuck, I can help them more easily."

"We are a much more efficient machine now," he says.

### Creating more cost-effective designs

Remarkably, in addition to their increase in productivity, CTS has seen a simultaneous decrease in cost estimates for their designs. The software helps them analyze signal levels across a structure more accurately, and thus eliminate extra equipment previously put in to cover the margin of error.

"The propagation model allows us to look at environments and much more confidently cut equipment out without fear of failing to cover an area sufficiently," Kely says. "If I can cut three, six, or even nine antennas out of a project, I can create an estimate that is much lower in cost. That makes our bids more competitive and ultimately saves our client a lot of money."

The CTS engineers are developing more cost-efficient designs using iBwave Design's propagation modeling. They quickly compare different configurations of equipment to develop the most cost-efficient model possible. "In about twenty minutes, I can take a fairly good size building and flip it to a different technology, to see what the signal propagation will look like with different technology," says Kely. "That level of comparison used to be cost prohibitive — it just would have been too time-consuming."

iBwave Design houses an internal database of more than 4,000 equipment components available on the market today as well as their technical specifications. "We work with about 40 different antennas and about four or five major equipment types. We have to be very well versed in hundreds of pieces of equipment, connectors, and cables, etc. and more or less aware of about 1,000 others," says Kely. "iBwave Design helps us stay on top of all that."

**"iBwave Design, with the propagation module, pays for itself very, very rapidly. Someone starting fresh could easily see ROI within three months"**

### Easy-to-use software reduces internal costs

CTS has also dramatically reduced training times using the new software. Kely uses the tool to explain the abstract concepts of in-building design to field technicians, using visual images that demonstrate key concepts. "iBwave Design is a very good tool for me to put up a simple design, walk them through a link budget, and show them how that budget is reflected in their daily activity," says Kely.

"It definitely increases how quickly you can teach," he adds. "It has cut our training time out in the field by a third to a full half."

CTS is also cutting down on travel costs, since now they can rely on staff other than their specialized design engineers to conduct the on-site survey of a building. "I can use other personnel that are located across the country to collect the essential data the engineers need to start designing," says Kely. "They then send that data to our half-dozen or so design engineers, who can crank out designs from wherever they're located."

"We are just bowled over by this product," he concludes. "We can't say enough good things about it."



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