

The Smarter Way:

Accelerating Small Cell Deployments 10X with a Purpose-Built Approach





SMALL CELL A&E WHITEPAPER: JULY 2020

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The more things change, the more they stay the same.



Few industries embody this timeless observation more so than telecom.

The fact is that while we build out the 5G network to supercharge connectivity and capacity, we're doing so with the same legacy tools and processes we used to build 4G — and all the preceding generations. This phenomenon of building the future with yesterday's technology is a pervasive paradox within telecom, perhaps best underscored by Small Cell deployments.

This paper contends that there is a smarter way to approach Small Cell, specifically architecture and engineering (A&E), than simply repurposing outdated tools and workflows. By designing purpose-built equipment, adopting automation, and embracing cutting-edge technologies, Small Cell can be deployed faster and with far greater accuracy so that your team can put their expertise to work where it matters most.

While building a similar methodology to the one espoused in this paper may be daunting or wholly impossible, finding a partner with these capabilities is the smarter way that more and more major Carriers are choosing.

DEFINING THE PROBLEM:

By 2026, it's predicted that more than 800,000 Small Cells will take root in the United States alone — an increase of nearly 10-fold over eight years, according to CTIA. As these nodes proliferate, an ugly truth has crystalized that not all are willing to acknowledge.

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Traditional telecom stalwarts, who have thrived with a focus on Macro Towers, are essentially running the same play. All of their processes, experts, and experience are based around this technology. It's the classic, flawed approach of forcing a square peg into a round hole.

It probably made sense at the time: Macro Towers were the predominant infrastructure running the world's cellular networks. When Carriers and contractors supplemented these telecom workhorses with cellular access nodes known as Small Cells — providing tactical capacity in cities, stadiums, and campuses — they simply embraced what worked previously. Unfortunately, the volumes and speed required to successfully design Small Cell infrastructure dwarfs that of a Macro design.



In a vertical where height sticks, a surveyor's wheel, pencil and pads of paper still represent the state of the art, it was no surprise that we supported the launch of an entirely new technology with a "copy-and-paste" mindset.

To operate at its most optimal, Small Cell requires a specialized approach from groundbreaking to deployment. By embracing a tailor made mindset to Small Cell that permeates technology, workflows, and workforce training, only then can Carriers maximize their returns across the Small Cell value chain. Accelerated project timelines, enhanced data integrity and transparency, and cost effectiveness are just some of the direct benefits of choosing a purpose-built approach to Small Cell. The indirect benefits are even more numerous, and can be best summarized as massive resource haul that can be redirected around the entire telecom operation.

As we dial in our collective focus on Small Cell, perhaps nowhere are the aforementioned gaps and inefficiencies of building Small Cell infrastructure in the traditional manner more glaring than when it comes to the A&E phase.



Let's walk through some of the key initial steps of the traditional approach to Small Cell A&E, taking careful note of their inefficiencies:

- **Construction drawing creation:** This inefficient, multi-layered process consists of parsing through various sources of information: handwritten field notes that can often be rife with inaccuracies, RF designs, construction standards, and others. Once completed, the information from those sources is manually entered into the same document multiple times. The initial drafting can then take hours, while also presenting ample opportunity for transcription errors.
- **QAQC process:** This quality control step can deplete a team of productivity and morale. Here, someone serving in a supervisory role first prints out the drawings, pulls out their highlighter a reviewer's most important tool and performs a line-by-line verification of data fields: the street address, the spelling of the site name, coordinates to 6 or 7 decimal places, and the ZIP code. Again, all of these checks are done in multiple locations within the same document.

At this point, an organization is only two steps into what can be a very long dance. They have already invested significant resources and have barely scratched the surface of A&E. Not only that, but a senior team member has been tasked with tedious duties that can best be performed via automated solutions.



PROJECT PLAYBOOKS:

"...a unique methodology to consistently engage and connect with key stakeholders of any installation."

- Inside MTowers

While this paper explores the technical challenges and opportunities of Small Cell, there exists another arena that can make or break project success: building relationships and navigating red tape.

It's an issue that was put in the spotlight recently when T-Mobile President of Technology Neville Ray spoke about Small Cell at the Wells Fargo Virtual 5G Forum.

"The small cell progress has been meaningful but it's still a battleground with the various jurisdictions," Ray said at the event. "So if you're staring down the barrel of, 'I gotta build a couple hundred thousand of these things,' that's a nightmarish scenario."

The Essentia team knows this challenge of permitting and working in public rights-of-way inside and out — and we've met it head on by developing the right experience and soft skills over two decades. In fact, we have used our strong local relationships and vast institutional knowledge to create Project Playbooks.

This proven methodology enables our experts in the trenches to fast-track Carrier projects, connecting with key stakeholders in municipal and political environments to circumvent obstacles.









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THE ESSENTIA SOLUTION

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As we probed the steps of Small Cell A&E, we frequently reached the same answer: yes. And the core reason that we're able to punch up antiquated processes with superior alternatives is what we call the eSpeed Technology Platform.

We define eSpeed as a set of different technologies — hardware, software, and tools – wrapped around efficient processes through proprietary programming and workflows. By harnessing eSpeed, we can accelerate data collection, management, and analysis to efficiently produce deliverables such as A&E drawings, Site Candidate Information Packages (SCIPs), jurisdictional applications, and more.

In terms of Small Cell A&E, the impact of eSpeed can be felt from the very beginning of the process. Instead of carrying around a clipboard, notepad, height stick, and tape measure, Essentia field personnel use a handheld device called the lke+ to lead an entirely digital site walk. Whereas the traditional approach had personnel manually collect information piecemeal — frequently pausing to make notations — the lke+ enables instantaneous, point-and-click data capture. Collected information is first wirelessly transferred from the field into our database, carefully reviewed, and then placed into our Construction Drawings within a matter of minutes using our eSpeed Initial Drawing Tool.

Evolving the A&E process significantly improves all associated measurables, eliminating inaccuracies and lagging turnaround times. But equally important is how this eSpeed and Ike+ integration allows our team members to spend their time applying their expertise to much more impactful work.

Here is a look at some other areas of the Small Cell A&E process we've innovated with a purpose-built mindset:

 Project management platform: Replacing endless Excel trackers, we've developed a project management platform within the eSpeed system that tracks each portion of the project from the initial request to project completion. This enables project managers to have enhanced dynamic reporting on the status of their projects, daily tasks, and items requiring follow-up.

eSpeed integration with customer systems:

We seamlessly connect the eSpeed Technology Platform with customer systems to make your data work harder and smarter while providing optimal transparency and consistency across platforms. Imagine having customized reporting for each region/market right at your fingertips.

- Photo Sim App: Using Augmented Reality (AR), we're able to quickly create photo accurate pole/node simulations right from our smart phones or tablets. Not only are these used for quicker jurisdictional approval, but can also be used to provide landowners (university, military, etc.) a preview of the installation for initial sign-off.
- eSpeed Bulk Prelim Construction Tool: This program reduces hours of construction drawing time by utilizing information already collected previously by multiple sources and stored within eSpeed: customer-provided information, site walk data capture, mapping and GIS photos, etc.
 Replacement of manual data input eliminates transcription errors and cuts drawing time by at least 2 hours.





- **eSpeed Drawing Revision Application:** Companies spend more time revising drawings than they spend creating them initially. This causes companies to wait many days, or even weeks to receive a revised set. Even if a design is perfectly engineered to the initial specifications, changes can occur due to equipment changes, construction and RF comments, new jurisdictional requirements, etc. This application records the changes required to one drawing and applies those changes to all drawing sets that are selected whether it's five sites, or 100. It even creates a new PDF for review and approval.
- **Bulk-O-Calc:** Similar to the eSpeed Bulk Prelim Construction Tool, this program accesses the previously captured data, including from the Ike and the project scopes of work, and is able to simultaneously create O-Calc models and Structural Analysis reports for a group of sites. This leaves only minimal fine-tuning during the QAQC process for the engineer before approval.
- **1As:** Using the Ike+ we are able to provide coordinates that are accurate within an inch for all candidates during our initial site walks.
- SCIP creation as part of the A&E field visit: Once field data is captured via Ike+, we can instantaneously generate a SCIP so that Carriers can quickly select a candidate and transition to permitting.

BENEFITS

Automating and digitizing the Small Cell A&E process through eSpeed and other innovations is not change for the sake of change. It's a game-changing evolution of this key process with quantifiable enhancements at every turn. In fact, certain phases of our purpose-built A&E process can accelerate deployments 10X the speed of the traditional approach.



Here's another look at the process, this time with key benefits highlighted in infographic form:



This infographic doesn't account for some of the big-picture improvements manifesting behind the scenes. For example, with the addition of automation, we reduce the need for in-person site visits, decreasing health risks and costs associated with travel.

From KPI and cycle time reporting to overall data integrity, the benefits of our smarter way are manifold. And then there's the theme we've visited throughout this paper: workforce empowerment. Taking tedious tasks off your team's plate makes them happier, which in turn puts a smile on customers' faces. Equally critical, it allows them to focus on your next great innovation or process improvement, and not more busy work. Finally, with all the efficiency gains adding up — and the force multiplier effect of increased productivity — you're more likely to have the resources to invest in a best-in-class workforce.



Ready to Take the Next Step?

As stated, Essentia has been honing its purpose-built approach to Small Cell for two decades. While it's possible to make small, incremental improvements in your tools and workflows over the short term, the most efficient way to immediately optimize Small Cell A&E is to choose a turnkey partner that's already developed a smarter, purpose-built methodology.



At Essentia, we welcome the opportunity to be your go-to partner for Small Cell. Please contact Essentia CEO Lindon Hayes today to discuss how we can take the first steps toward helping you reach real estate complete 60 to 90 days faster on your next project.

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