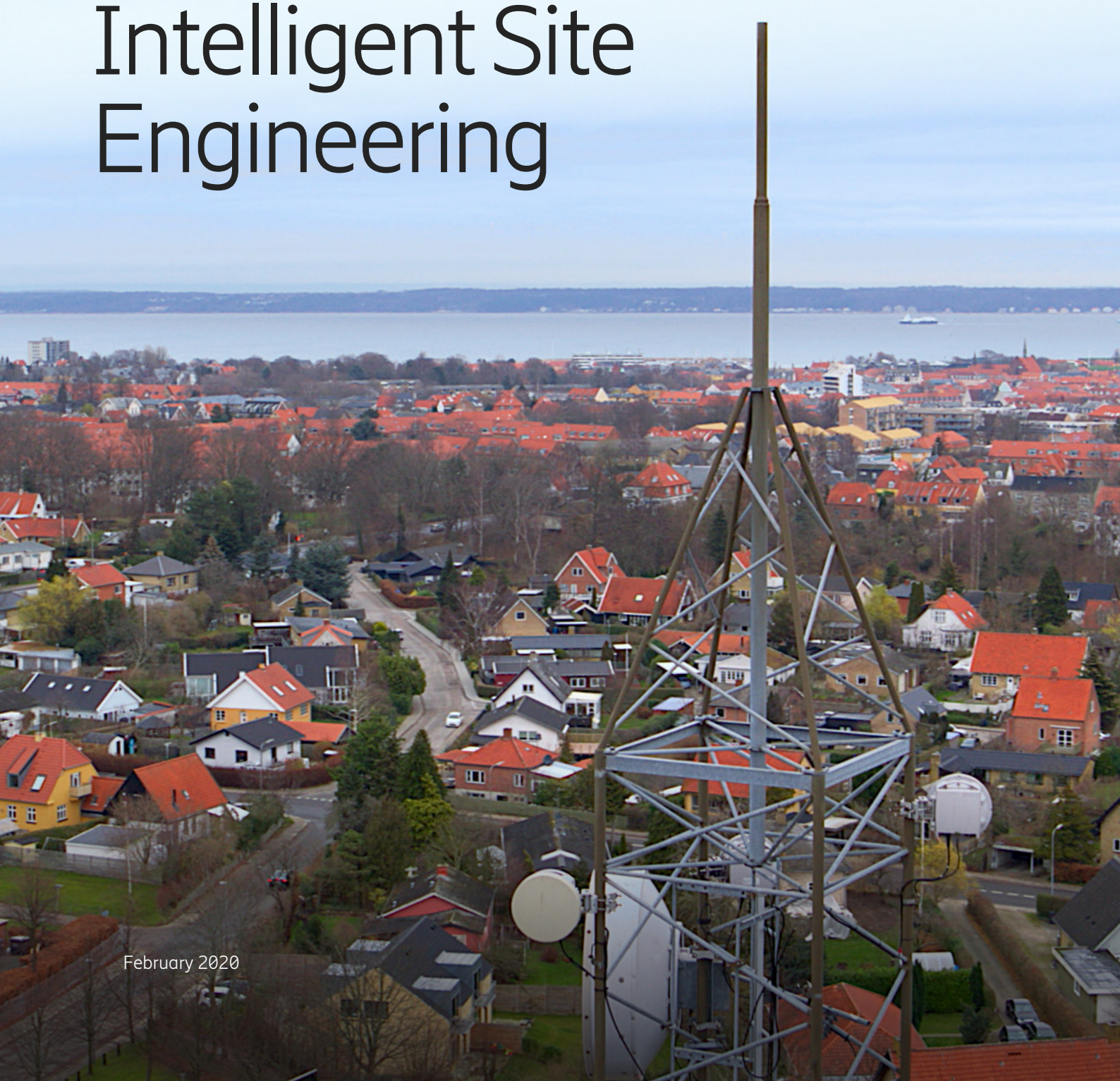
ERICSSON

in collaboration with

tdc net

Success story:

Intelligent Site Engineering



February 2020

Smarter site engineering with drones and asset digitalization

The need for greater agility in the planning and deployment of 5G networks has led to Ericsson pairing with TDC NET to implement a more efficient methodology for site visits and preparations: Intelligent Site Engineering.

About the customer
TDC NET has a history of connecting Denmark dating back to 1882. A subsidiary of TDC Group, it is the largest telecommunications company in Denmark, connecting over 6 million customers. TDC NET delivers the best mobile network and the fastest fixed connections in the country – and is shaping Denmark's digital future by rolling out fiber and 5G.

Mobile subscriptions in Denmark have a penetration of 144 percent, which is above average for Western Europe, with almost 100 percent 4G coverage across the entire country. Moreover, user expectations are high for upcoming 5G mobile networks in terms of performance, coverage and availability. With TDC NET dedicated to providing the very best mobile network in Denmark, any solution would have to ensure a fast and efficient roll-out of their new 5G network in order to meet these expectations. This led the company to partner with Ericsson to further mature and trial Intelligent Site Engineering. This new, innovative method for site engineering causes minimal disruption to surrounding areas and optimizes allocation of resources in terms of time, equipment and manpower.

Together, Ericsson and TDC NET have used Intelligent Site Engineering to complete over 200 site surveys across Denmark. In the past, each survey would have taken a full team several hours of on-site surveying at each location, often with the deployment of a crane due to Danish health and safety regulations, along with several hours of post-survey analysis to complete the appropriate engineering decisions. Thanks to the new methodology, a survey can now be completed in under an hour by one engineer equipped with a drone. 3D models can be created efficiently and quickly, and several engineering decisions can be completed by AI and machine learning-driven analysis, allowing remote staff to produce accurate site documentation faster by using digital twins and specialized software.

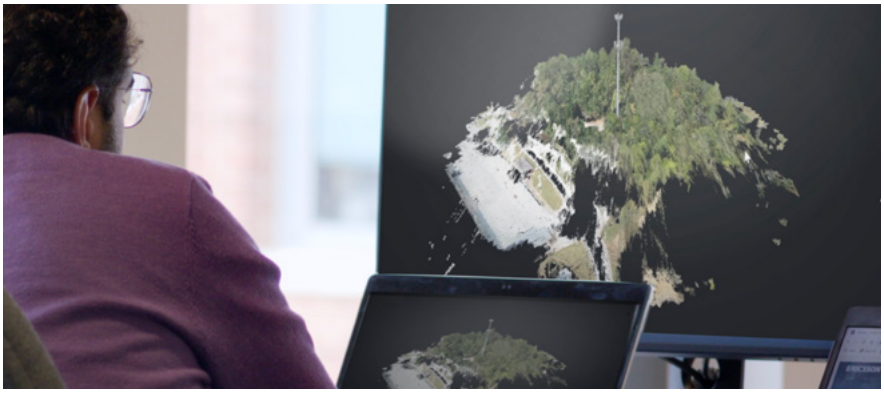
"It has been easier to use the intelligent site surveys in the planning and preparation phase. We have been able to access more than 200 sites that way, and it has been easier to get access and has been efficient and much faster."

Uffe Tomasson,
VP of Network Plan, Build and Rollout, TDC NET

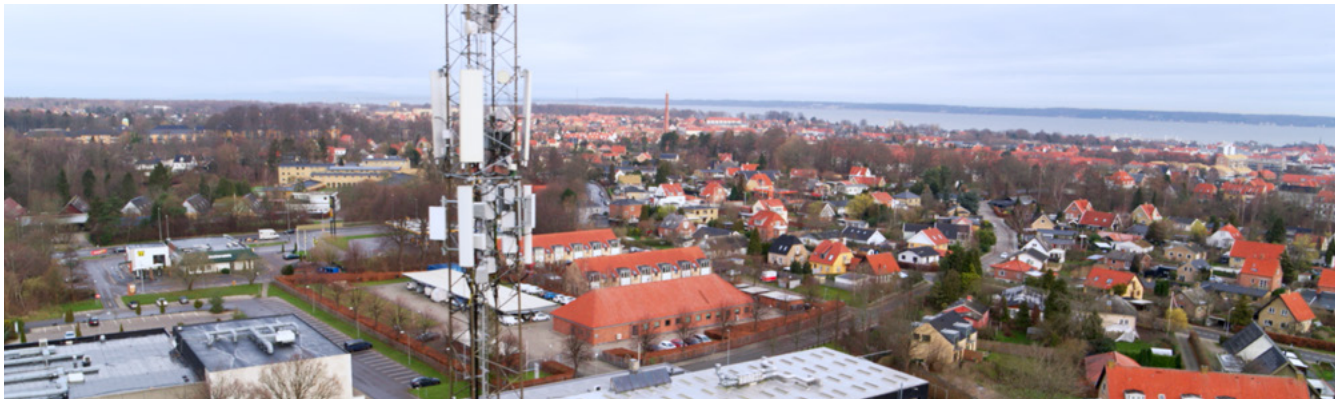
The challenge
Designing and maintaining network sites has traditionally been one of the bigger hurdles when delivering mobile networks, requiring a large amount of resources, manpower and time, and potentially slowing down roll-outs. As the number and density of radio sites increases with 5G, a roll-out that is fast, efficient, accurate and that causes minimal disruption to existing services becomes increasingly important.

The solution
New technologies were introduced to streamline the site survey process. Using drones and visual technology to create 3D models of buildings as "digital twins" allows software to measure and perform remote actions, such as identifying optimal setups for hardware. A digital twin also enables additional remote site engineering work, including measuring and quantifying the required site materials and equipment. Site layout proposals can also now be digitally created using specialized software. This combined service is Ericsson's Intelligent Site Engineering.

The result
A full site survey can be completed by one engineer operating a drone in as little as one hour, rather than requiring a full team and cumbersome equipment across several hours. TDC NET has used this service in over 200 sites quickly and efficiently. It has been particularly effective in enabling site surveys to take place in weather conditions that would make it too dangerous or difficult for on-site personnel to complete. Climbing towers is already a complicated task, and the challenges are exacerbated by adverse conditions such as rain, wind and low levels of light, all of which are restrictions that can be overcome to a certain degree by using drones.



Intelligent Site Engineering in action



A "drone's eye view" of a network tower site

Speed, safety and societal concerns

The health and safety of workers is a top priority in Denmark and so robust regulations are in place to protect individuals on site. This includes restrictions on climbing tall towers in adverse conditions, which means that cranes are often required to carry out work, leading to increased resources, time and costs. It can also cause great disruption to the local community and the landowners. These safety concerns are extremely valid but can make landowners reconsider allowing mobile service providers permission to build and maintain sites. By using drones and digitalized visual technology, TDC NET has been able to provide landowners with detailed 3D models showing the full scope of the project before work begins. The reduced disruption and newfound transparency over project scopes have made landowners much more willing to allow the installation and maintenance of 5G equipment. This provides TDC NET with greater flexibility and opportunity to install their network in optimal locations, to give the very best coverage possible. Overall, Intelligent Site Engineering minimizes the risks to both individuals and the roll-out as a whole. The increased efficiency and reduced need for heavy machinery conform to Ericsson, TDC NET and the Danish government's aims of using technological advances to meet environmental goals. A reduction in heavy-duty equipment lessens the carbon footprint of each site visit, and smarter, easier-to-maintain sites mean that fewer physical site visits are required in the long term, reducing the environmental impact overall.

"Ericsson and TDC NET are forward-leaning companies, and we always strive for the latest technology, to be more efficient, to look at quality and ultimately, to have the best service for end customers."

Ulf Granhäll,
Network Program Director for TDC NET, Ericsson

"Our ambition has been to create a Scandinavian powerhouse. Ericsson shares that ambition, so this is the core of our cooperation."

Uffe Tomasson,
VP of Network Plan, Build and Rollout, TDC NET

Flying into the future

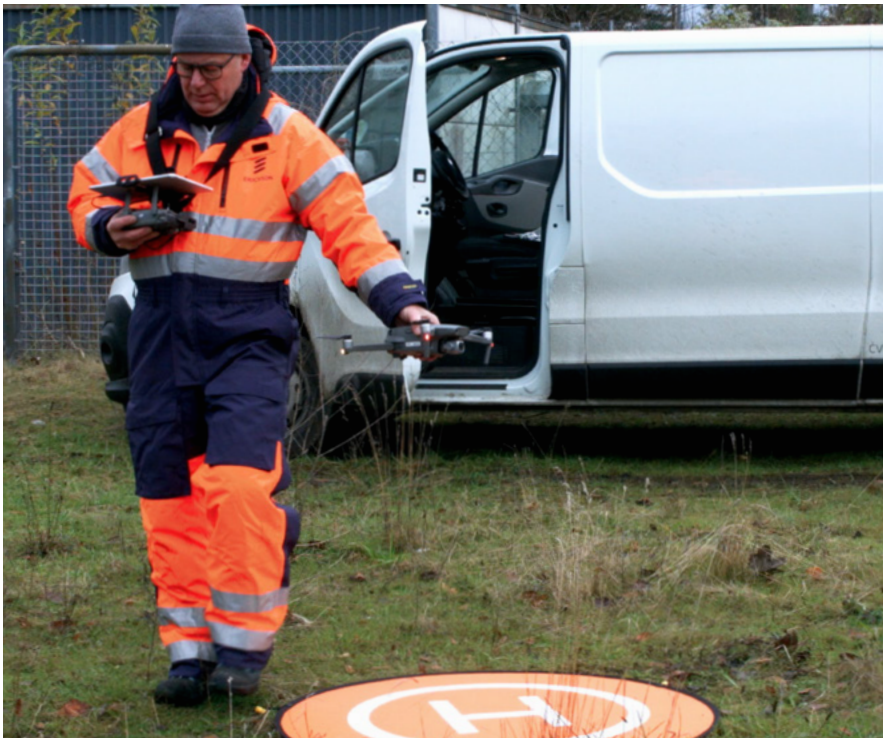
We are just beginning to unlock the potential that Intelligent Site Engineering can bring to 5G networks, not only in Denmark, but globally. There are myriad possibilities enabled by site digitalization coupled with AI and machine learning. Proactive maintenance is important, as utilizing drone scans to investigate faults and problems can be more effective in terms of both time and resources. There is even potential to use live feeds in conjunction with machine learning to provide continuous monitoring and maintenance, and identify potential faults and issues before they even occur. The machine learning applications can identify any changes to the environment of the site and judge how this could alter the effectiveness of coverage as a result.

The next big step, which Ericsson is developing, will involve utilizing machine learning and AI to accurately and automatically generate a site's bill of materials after each site survey. This will reduce the amount of man-hours required in creating site documentation, and the removal of manual inputs decreases the risk of human errors and over-expenditure on unnecessary resources and materials.

Overall, Intelligent Site Engineering is bringing new levels of efficiency to the roll-out of 5G networks in both the short and long term, enabling mobile service operators to meet the increasing user expectations across the globe.

"We're expanding networks all around the world with 5G – and speed is becoming very important. Intelligent Site Engineering means that we are basically optimizing the process."

Ulf Granhäll,
Network Program Director for TDC NET, Ericsson



Flying into the future

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

www.ericsson.com

Ericsson
SE-164 80 Stockholm, Sweden
Telephone +46 10 719 0000
www.ericsson.com

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