SiteSee

AI Digital Twin for Infrastructure inspection and auditing enables businesses to make informed decisions based on accurate and accessible data. Without the need for onsite human inspection

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Sponsored by Oracle for Startups program

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About this report

Based on direct interviews with the co-founder and CEO, Lucio Piccoli, this brief report introduces SiteSee, one of the many startups supported by the Oracle for Startups program.

SiteSee is an exciting and innovative business providing AI and drone-enabled remote site inspection of infrastructure assets such as cell towers. Without the need for onsite and often hazardous site audits. In the realm of 5G infrastructure rollouts and replacement of 4G equipment, this saves considerable time and cost. Major beneficiaries are cell tower owners and 5G communications services providers. Utilities and power companies can also benefit from the same SaaS-based technology.

The theme for this month is around startups in the 5G communications sector and how they are innovating and changing the competitive landscape.

CX-Create is an independent IT industry analyst and advisory firm, and this report is sponsored by the Oracle for Startups program team.

The business context for SiteSee

Key drivers

In the context of the communications sector, two major constituents stand out, though with differing needs – cell tower owners and 5G operators

Cell tower owners need accurate billing to avoid revenue loss

Cell tower owners are responsible for building and maintaining the infrastructure as a platform for 5G communications equipment. The average number of cell towers in their infrastructure portfolios varies from an average of 100 in the US and Europe to over 300 in some parts of Asia. While cell tower technology has continued to evolve, most cell tower owners who have poor inventory records are losing out on $millions of unbilled revenues. They need accurate audits of all installed equipment and which operator to charge. The traditional approach is to send out engineers infrequently due to costs and rely on manually produced site audits.

5G network operators are vying for cell tower space as they roll out 5G

5G network operators want to rollout 5G infrastructure and optimize coverage as fast as possible. Siting new 5G equipment and replacing a vast inventory of 4G kit across thousands of cell towers is a Herculean planning task. Even more demanding and time-consuming if relying on manually produced and often inaccurate records.

They are also competing for available space on cell towers with other 5G network operators, and the positioning of their equipment has a significant impact on the efficiency of the cellular network. Considerable effort goes into designing, planning, and optimal 5G equipment to deliver the network, involving hundreds of cell towers. Without the support of remote audits, 5G rollouts could take years.

Both cell tower owners and 5G operators have a massive stake in speed, cost reduction, and safety – SiteSee solves the challenge

Faster rollout of 5G infrastructure and equipment is in the interests of cell tower companies and 5G network operators. Many of the tens of thousands of cell towers are sited in extreme environments, deserts, the tropics, or in countries with arctic winter conditions. This makes them difficult to reach and hazardous to inspect.

It is these challenges that SiteSee exists to solve through its integrated SaaS applications covering remote drone-based inspection planning, advanced 3D modeling, and AI-supported analysis—creating a digital twin of the complex infrastructure and all it contains.

Key observations

- From RF emission predictions to an integrated suite of SaaS applications covering the entire infrastructure auditing lifecycle
- AI Digital Twin for Infrastructure enables businesses to make informed decisions based on accurate and accessible data
- SiteSee makes its mark with cell tower infrastructure owners and 5G network operators in Australia, India, the UK, and the USA

SiteSee the story so far

From RF emission predictions to an integrated suite of SaaS applications covering the infrastructure auditing lifecycle

SiteSee, headquartered in Brisbane, Australia, was founded in 2016 by the CEO, Lucio Piccoli and David and Lachlan Crane. David Crane a former radio frequency (RF) engineer, came up with the idea of predicting RF emissions as a viable use-case for a new business. Piccoli, a 3D programmer, offered his help and developed the initial solution. Public concern about the potential health risks of 4G emissions was amplified by even greater concerns over 5G, which was exponentially more powerful.

The solution caught the attention of Australia's largest telco, Telstra. In September of 2016, SiteSee was selected by Telstra Corporations' prestigious Muru-D business accelerator program and successfully received funding from Australian Shark Tank celebrity, entrepreneur, and investor - Steve Baxter, Seven West Media, and Muru-D.

Following the first flush of success and recognition, the team visited a tower cell owner in the US, and Piccoli was disappointed to learn that RF emissions were the least of the owner's concerns. The biggest headache was lost revenue due to inaccurate billing based on poorly kept individual cell tower records. Records were often out of date and relied on maintenance engineer's updating records, which lacked the precision required for accurate invoicing. The cost to inspect some 90,000 towers was prohibitive.

Piccoli and the team returned a couple of months later with a solution – to audit towers using 3D video capture from drone-mounted cameras. This serendipitous pivot led to the current solution. SiteSee's solution, outlined in more detail below, uses machine learning (ML) to analyze the 3D images much faster than is possible by human observation. The firm has also invested time and effort in developing and patenting ML recipes that reflect the complex array of cell towers' environments. While 3D video capture via drones could be easily replicated, the manual effort and tedium in trawling through millions of videos would take too long and lead to significant errors.

SiteSee has the first-mover advantage and a clear vision – 'to digitize complex infrastructure.'

Solution overview

SiteSee's solution, outlined in Figure.1, manages the complete workflow from planning inspections via drones to capturing detailed audits of any equipment such as panels, antennas,

microwave dishes, and remote radio units. The level of detail goes right down to the elevation, tilt, and manufacturer's serial number. A complete digital twin of all assets is provided, including their current state or need for replacement or maintenance. It also helps resolve any invoicing issues between the cell tower owner and the 5G mobile network operator.
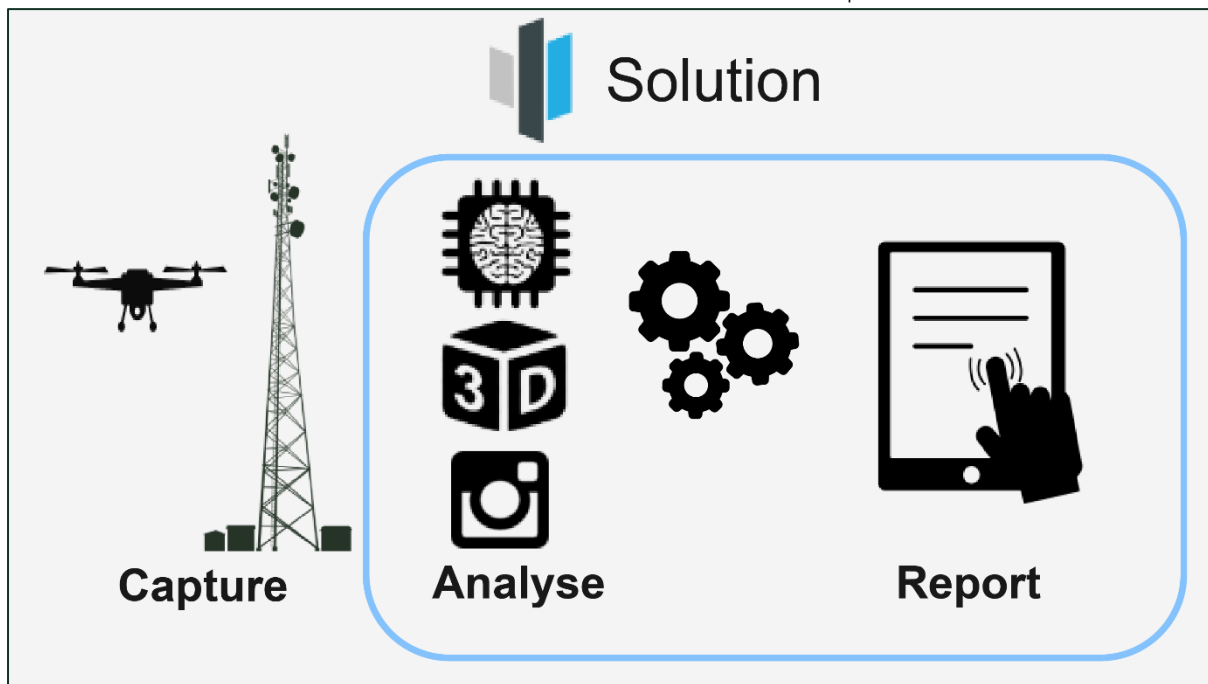

FIGURE 1 SITESEE'S SOLUTION OVERVIEW - SOURCE: SITESEE

AI Digital Twin for Infrastructure enables businesses to make informed decisions based on accurate and accessible data

As Piccoli said: 'Our solution leads to the identification of lost revenue and the discovery of more revenue potential on the tower, and this is done without having anyone climb the tower,"

It does so, elegantly, by providing three integrated applications with options that span the entire workflow:

- **DroneSee** – for developing automated drone inspection flight plans
- **TowerSee** –to digitize assets, create a 3D model and digital twin, and use SiteSee's advanced object recognition and ML algorithms to catalog individual equipment items or inspect their condition.
- **TowerSee Max** – provides enhanced accuracy beyond the standard that GPS-enabled drones offer. TowerSee Max combines with ground control points (GCPs) during the capture process providing angle measurements with accuracy within a fraction of a degree. This includes accurate tilt and bearing measurements of antennas that can contribute significantly to the quality of RF networks.
- **AI Boost Engine** – to enhance images if, for some reason, the video quality has been compromised, perhaps from weather conditions. This avoids having to repeat the exercise and saves time.
- **AI Audit Engine** – which automatically detects the classification and position of equipment. Advanced convolution neural networks (CNN) to automatically detect and classify infrastructure through an end-to-end process without the need for human intervention.
- **EME Compliance** – the interactive 3D environment can be used to simulate the spatial distribution of electromagnetic fields. Any exclusion zones and distances can be

measured. Reports can then be shared with local authorities or interest groups to provide complete transparency and reduce any health concerns about emissions.

Current position

SiteSee makes its mark with cell tower infrastructure owners and 5G network operators in Australia, India, the UK, and the USA

After its initial success with Telstra, SiteSee has several major cell tower companies as customers in the US. Other customers include Nokia (Australia), Indus and JIO (India), Arqiva and WHP Telecoms (UK)

Go-to-market model

It also has several partners with systems integrators, including Accenture and Deloitte. Local engineering and maintenance companies provide an additional route-to-market, and SiteSee offers a white-label service to bundle the SiteSee solution into their offerings.

Current investors

Current investors include Australian Shark Tank, Steve Baxter, Seven West Media, and Muru-D, TerraDone and Hapstone Partners

Future direction

SiteSee will continue to focus on cell tower owners and 5G network operators in the immediate future. It is a high-value low volume market, and growth will come primarily through partners with a local presence.

Power companies have many characteristics in common with cell tower companies, with remote and distributed complex infrastructure. The same techniques to improve infrastructure auditing and monitor the effects of corrosion apply.

Oracle Cloud Infrastructure and the Oracle for Startups program prove their value to SiteSee

SiteSee was already a member of the forerunner to Oracle for Startups Program. Oracle Cloud Infrastructure (OCI) provides the development environment for the solution. Oracle bare metal GPUs are used for the massive workloads that are required. As Piccoli commented, 'OCI provides a large cloud data and analytics processing ecosystem including ML.'

Piccoli's one regret with the program is that it did not start a year earlier. In his own words: 'the new program was especially attractive, a really good initiative on pricing and the large computer machines we need to run our workloads. We've also had lots of helpful support from the team and feel like they really wanted us to succeed. I can't thank them enough. We'd definitely recommend them.

SiteSee won all three categories in Oracle's APAC Startup Idol: Most Creative, Best Overall Pitch, and Best Innovative Solution in September 2020. Based loosely on the famous TV program Dragon's Den, six startups were given three minutes to introduce themselves to regional analysts.

CX-Create's viewpoint

We expect SiteSee to grow rapidly for several reasons:

- Estimates of between 2.5M and 5m 4G cell towers that must be upgraded to 5G, provides significant market opportunity for SiteSee, a first mover in this field.
- The company meets a need with clear benefits for cell tower owners, 5G network operators, and utilities. The drive for ever-faster rollout of 5G and the need to automate remote inspection, serves each type of organization.
- Patents on ML models covering all kinds of physical environments will make it harder for copycats attempting to compete.
- SiteSee's partner strategy focused on local specialists and international systems integrators provides an effective route-to-market, providing global reach.
- Oracle Market Access is also likely to increase SiteSee's visibility and opportunities.
- Further integration with 5G network planning systems may provide additional opportunities for intelligent automation and keep SiteSee ahead of the innovation curve.

This all adds up to a promising future for SiteSee.

Summary details
Table 1: Fact sheet

Solution name	AI Digital Twin	Solution category	Automated infrastructure intelligence solution
Key industries	Cell tower infrastructure owners and 5G network operators	Geographies	Global
Deployment model	SaaS	Licensing basis	Subscription
Size of organizations served	Large enterprises in telecommunications and power supply industries	Go-to-market model	Direct and through reseller partners
Number of employees	10	Key partnerships	Accenture, Deloitte, and local engineering and maintenance companies
URL	www.sitesee.io	HQ	Brisbane, Australia

Appendix

About CX-Create

Jeremy Cox founded CX-Create Limited in January 2021, a former principal analyst at Omdia (formerly Ovum) focused on customer engagement strategies and platforms.

He is recognized by major CX vendors, clients, and former colleagues as a leading thinker in customer experience and engagement. Formative experiences in the 1990s at IBM convinced him of the critical importance of understanding the business world from the outside-in. These insights were put to practical use in his former roles as a principal CRM consultant at KPMG Consulting and as an independent consultant supporting public and private sector organizations.

Our mission

CX-Create's mission is to help enterprises and the vendors that serve them remain relevant. The company's primary focus is to track and understand the constantly evolving customer experience world and share those insights with clients. Continuous innovation is also an essential component of persistent customer relevance, directly and indirectly, which is why we are enthusiastic about startups and the Oracle for Startups Program.

Further reading

- Four communications industry trailblazers accelerate monetization of 5G and Edge
- Oracle gives startups a big lift and a boost for continuous innovation

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