Machine learning tool Alchemite™ predicts highway drainage problems

Skanska takes the data high road

Skanska is bringing big data to life in its infrastructure services business.
Skanska is using AI and data analytics to transform highways asset management. The contractor has a seven-year contract with Hampshire County Council, running to 2024, where it is testing out the technology, explains James Daniel (above), head of digital engineering for infrastructure services at Skanska UK. “Hampshire is a very progressive client, with a digital agenda, so with this long-term contract we have the opportunity to try out new technologies,” he says. “One of our goals is to be better at deploying our people in places on the network where they’re most needed.”

Hampshire supplied an existing asset database, created from GIS surveys. The network includes 5,300 miles of carriageway, 3,800 miles of footways and 1,800 structures. Daniel’s team is now building up more detail about the condition of the assets. This is where AI comes in.

“We have been working with a Cambridge University tech startup, tech firm Intelligens, which has an AI tool called Alchemite,” explains Daniel. “They work with sparse datasets. Their AI tool takes the sparse data and through machine learning predicts what the gaps will be. It’s been used to help with jet engine development. “So Intelligens took the data on gullies and fed this into Alchemite. Then we added environmental and weather data, both historic and forecast. The machine learning technology uses all this data to predict any gaps in the gullies’ asset information and, with that information, tells us whether the gullies need regular cyclical maintenance or a review.

“The AI tool is a real game changer. On this contract alone, it has the potential to achieve significant savings through helping us deploy the resources more effectively. People are really appreciating the benefits of good quality data.”

Daniel says information management is vital and Skanska is currently working with BSI to embed the principles of ISO 19650.

“We have created exchange information requirements (EIRs) which will help us build rich asset databases for our clients,” he says. “All these assets we are tagging are following the Gemini Principles so we will end up with a digital twin for our highways clients. And once we have all that data, it’s about leveraging it.”

Skanska is also using increasingly sophisticated surveying tech to collate data on highways assets.

“In Hampshire, we’ve used point cloud scans to survey a couple of structures,” says Daniel. “On other contracts, we are trialling vehicle-mounted scanners which assess the road condition.”

AI toolset optimises highway maintenance targeting a 20% saving on annual maintenance costs

Alchemite™ successfully predicts where drainage and gully blockages are most likely to occur, preventing expensive, unplanned failures.

Benefits of implementing predictive maintenance:

- Predict problems accurately
- Reduce maintenance costs
- Reduce unexpected failures
- Manage teams and stock better

For more information on Alchemite™, visit intellegens.ai/alchemite

For more information on predictive maintenance, visit intellegens.ai/manufacturing/predictive-maintenance/

Source: Centre for Digital Built Britain Construction Manager Construction Build, February 2020