Altair SmartCore™ Enables Real-Time Foundation Monitoring to Omnifor

For local governments, housing corporations, and building owners or managers knowing the condition of their assets and being informed of any structural changes is key to ensure safety, schedule preventive maintenance, and plan adequately for future investments. Unfortunately, visual inspections of buildings and structures are often not conducted frequently enough, as they tend to be time-consuming and costly.

Based in the Netherlands, Omnifor provides monitoring solutions for building management professionals and governments with operational intelligence through innovative sensor network solutions.

In the western part of the Netherlands, the soil has insufficient bearing capacity to allow for the construction of buildings and houses. To overcome this issue, buildings in this area have been built on timber pile foundations. These foundations have to be fully submerged in water to avoid pile deterioration from rotting and fungi.

Using Altair SmartCore, Omnifor has developed a Structural Health Monitoring solution (SHM) based on wireless sensor networks that enables owners to predict damage and plan repairs. This solution allows real-time monitoring of buildings through a comprehensive dashboard, which displays structure shifts such as changes in settlement, crack width over time, and other indicators of deterioration or shifts.

Industry
Smart Building • Region, Europe

Challenge
Property owners wanted a way to monitor the structural condition of their timber pile foundations. They wanted to optimize the timing of inspections and maintenance work.

Altair Solution
Omnifor teamed up with Altair SmartCore and created a platform for structural health monitoring to trach any signs of deterioration or shifting of the foundation. Data is collected at a specific rate to track the evolution of the deterioration and estimate how long the property owner has until repairs are necessary.

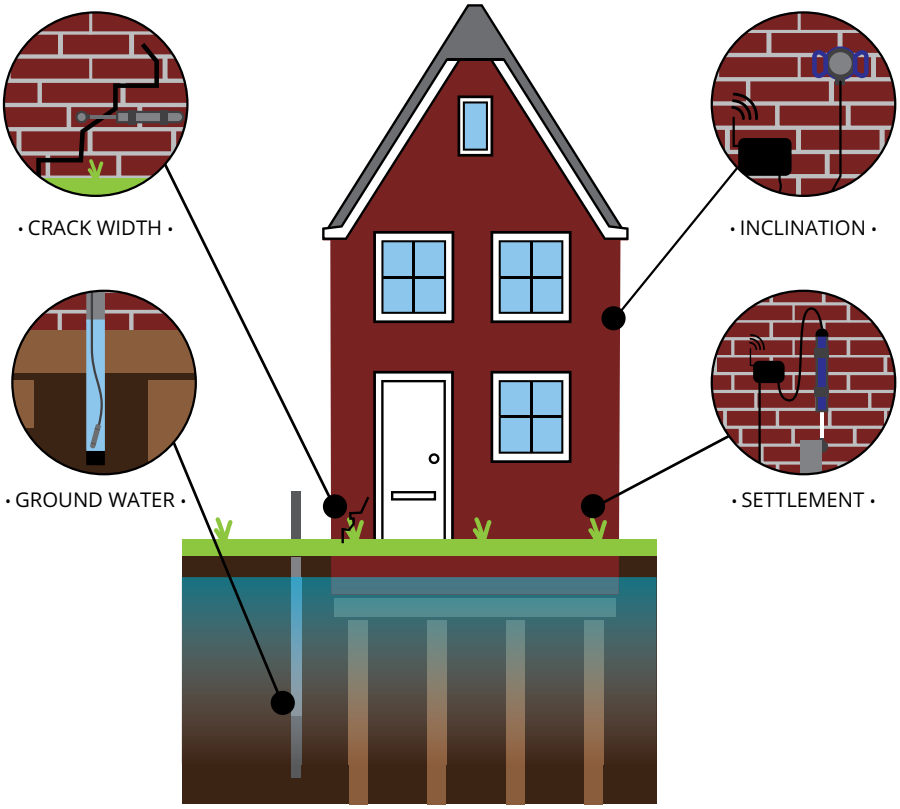
The Technology

Omnifor used Altair SmartCore's IoT platform for all core functions of its Omnifor Service Bus. For this specific SHM solution, all sensor nodes are grouped by building or street for each client. This enables Omnifor to control and manage the massive amounts of data produced by the sensor nodes. The portal environment, which is provided by Omnifor to its clients, uses Altair SmartCore's RESTful API to display the data via comprehensive and interactive charts for further analysis.

Since operating the wireless sensor network does not require human intervention, structural health assessments can be performed more frequently and cost-effectively. With multiple automatic measur ements performed each day over long periods of time, trends become visible. The information provided facilitates decision-making and prioritization, and allows foundation renewal projects to be executed before the damage becomes serious.

Benefits

- Property owners save time and money on building inspections and maintenance
- Deterioration monitoring prevents a building from being damaged beyond repair
- Close tracking of structural health leads to safer housing environment
- Data is accessible 24/7



The Team

Omnifor teamed up with Altair SmartCore for its IoT platform. Altair SmartCore's RESTful API is used in conjunction with Omnifor's portal environment to communicate with customers. Sensors were provided by Omnifor and the data was collected using Altair SmartCore IoT platform. Additionally, hourly precipitation data from the Royal Netherlands Meteorological Institute is automatically collected and aggregated.

"The Altair SmartCore platform proved to be a perfect fit for our structural health monitoring solution. It has become the standard for all of our new projects because of its flexibility, scalability, and security."

Marcel Dusée
Head of Technology and Innovation, Omnifor

Visit AltairSmartWorks.com to learn more.

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