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Symphony of Software Saves Millions

Microsoft and ICONICS Partner to Fine-tune Energy and Maintenance Systems

A small, covert team of engineers at Microsoft cast aside suggestions that the company spend US$60 million to turn its 500-acre headquarters into a smart campus to achieve energy savings and other efficiency gains. Instead, applying an "Internet of Things meets Big Data" approach, the team invented a data-driven software solution based upon ICONICS COTS software that is slashing the cost of operating the campus' 125 buildings saving Microsoft millions of dollars.

The application has been so successful that the company and its partners are now helping building managers across the world deploy the same solution. And with commercial buildings consuming an estimated 40 percent of the world's total energy, the potential is huge.

Darrell Smith and his team have been working for more than three years to unify an incongruent network of sensors from different eras (think several decades of different sensor technology and dozens of manufacturers). The software that he and his team built strings together thousands of building sensors that track things like heaters, air conditioners, fans, and lights – harvesting billions of data points per week. That data has given the team deep insights, enabled better diagnostics, and has allowed for far more intelligent decision making. A test run of the program in 13 Microsoft buildings has provided staggering results. Not only has Microsoft saved energy and millions in maintenance and utility costs, but the company now is hyper-aware of the way its buildings perform.

Today the campus spans 500 acres. There's a soccer field and cricket pitch, miles of wooded walking paths – and 14.9 million square feet of office space and labs that now function as one interconnected system.

Until recently, Microsoft was using disparate building management systems to manage 30,000 unconnected, sensor-enabled pieces of equipment. Imagine a symphony orchestra, but with every musician playing from different sheet music. Then, imagine trying to conduct that symphony – to make sure the music was on tempo, in key, and starting and stopping as it should. Microsoft's buildings were experiencing data dissonance that would make the works of Igor Stravinsky sound like a barbershop quartet.

This is the challenge faced by many in the Public sector. Old legacy equipment is not perceived to be capable of true energy efficiency!

The question was raised "Do we rip and replace, or try to reduce energy through technology?"

"Give me a little data and I'll tell you a little.
Give me a lot of data and I'll save the world."

- Darrell Smith, Director of Facilities and Energy Microsoft

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Smith's team created a pilot program in 13 of the buildings on Microsoft's Redmond campus. The team developed an "analytical blanket" based upon ICONICS software to lie on top of the diverse systems used to manage the buildings. The blanket of software enabled equipment and buildings to talk to each other, and to provide a wealth of data to building managers.

The new tool got data out of the buildings – great tidal waves of data that came cascading into the ROC, telling engineers about everything from wasteful lighting schedules to hugely inefficient (but up until then, silent and undetectable) battles being waged between air conditioners and heaters to maintain temperatures.

Engineers are no longer climbing over rooftops, inspecting pump rooms and peering above ceiling tiles, no, engineers are now spending 95 percent of their time doing engineering. Suddenly, the symphony of sensors was not only following the conductor, its musicians were all playing the same song. As buildings came online and data poured in, it created what engineers called a "target-rich environment" for problem solving.

They used to move from building to building, camping out in each for two weeks at a time to inspect and tune it top to bottom before moving on to the next. It would take them five years to tune up all of the buildings on campus, and then they'd start the process all over again. Their tune-ups were making the buildings run more efficiently, saving the company around $250,000 annually – but the new data gold rush has helped them save six times that much!

ICONICS and its partners are looking to engage with any company, institution or person who is looking to drive energy reductions through technology. We have a suite of tools that can both scale to size and budget. ICONICS promotes an international culture of innovation and is the reigning Microsoft Sustainability Partner of the Year. This award recognizes software innovations built on the Microsoft platform that help organizations, governments and cities around the world reduce their impact on the environment.

For more information, please visit us at: www.iconics.com

This article and its images were excerpted and adapted from Jennifer Warnick's feature story "88 Acres: How Microsoft Quietly Built the City of the Future," which was originally published at www.microsoft.com/stories.

Key features

- Reduces energy consumption and costs
- Extends the life of building assets
- Drives labor efficiencies
- Shrinks carbon footprints

Microsoft's Smart Campus