

## Understanding Technology Enablers for Building Efficiency 2.0

**Alex HERCEG, P.Eng.**  
**Analyst, Intelligent Buildings, Lux Research**  
**Amsterdam, The Netherlands**

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### **Abstract**

Traditionally, sensing in the built environment was dominated by companies from traditional domains, such as lighting and HVAC control, and building energy management. These companies were able to reduce energy considerably in commercial buildings, and to some extent homes as well. However since energy accounts for only about 1% of business operating costs, a number of new entrants have developed new sensors and advanced data analysis tools focused on Building Efficiency 2.0 – maximizing space use, comfort, and even productivity. This sensor revolution extends to the smart home, where we have seen other applications such as digital health, which leverage existing energy sensing infrastructure. At the city level, there are a growing number of IoT-enabled sensor networks, capable of gathering real-time data on conditions such as traffic flows, air quality, and even pedestrian movement. These new tools allow unprecedented levels of operational efficiency at the city level, but also citizen engagement.

All of these novel applications have been possible due to advances in connectivity, sensor technologies, and data analytics. We will present an analysis of these technologies, to uncover the potential of advanced sensing and the specific value propositions that it can bring to smart commercial buildings, homes, and cities.