ATOMIC OBJECT

Wireless Data Collection System

Herman Miller

Herman Miller's one-of-a-kind Space Utilization Service shows customers which of their workspaces are being used, and how often.

WEB MOBILE DESKTOP EMBEDDED

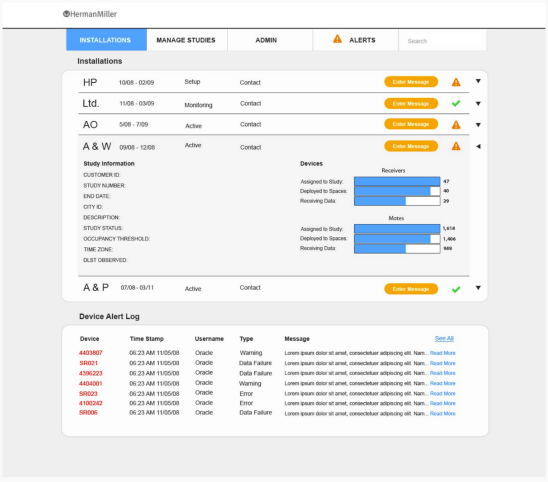
The patented wireless data collection system gathers data from hundreds of sensors via wireless networks, then compresses it and sends it to a central database, where it can be analyzed via an interactive web app.

To perform a Space Utilization review, Herman Miller collects workspace occupancy data via uses small devices called Motes attached to the bottom of chairs and desks.

A series of custom gateway devices gather data from the Motes via a proprietary radio frequency (RF) link and protocol. The gateways error-correct, aggregate, and compress the data before pushing it to a central gateway, which sends it on to Herman Miller via the cellular network.

The system also includes a custom web app for monitoring and managing each collection system, as well as analyzing and reporting on the data collected.

The hardware/software platform has automated data gathering, improved accuracy, and allowed Herman Miller to manage the system remotely. The entire system system was patented by Herman Miller.



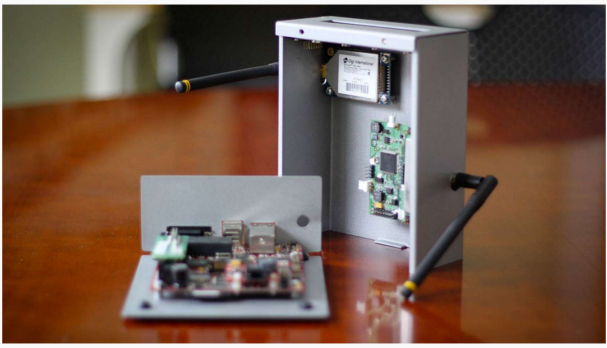
Technical Specs

Atomic designed the system architecture and wrote software and firmware for:

Custom RF Protocol
Reduces required bandwidth and handle collisions, allowing reliable transfer of a high volume of information through RF and cellular communications back to the data collection service.

Gateway Devices
Each is a Technologic TS-7800 single-board computer with a custom RF receiver. They run a combination of C and Ruby on an embedded Linux system.

Web App
A JRuby on Rails application using an Oracle database that deploys to IBM Websphere.



Project domain(s)

WEB
MOBILE
DESKTOP
EMBEDDED

Services provided

Software Product Design
System Architecture
Interaction Design
Visual Design
Software Development

Tools used

JRuby on Rails
Ruby
Java
Maven
CMock/Unity
Sqlite3
C
Oracle
Linux