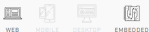


Wireless Data Collection System

Herman Miller

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



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 was patented by Herman Miller.

HermanMiller

INSTALLATIONS

MANAGE STUDIES

ADMIN

ALERTS

Search

Installations

HP	10/08 - 02/09	Setup	Contact	Enter Message		▼
Ltd.	11/08 - 03/09	Monitoring	Contact	Enter Message		▼
AO	5/08 - 7/09	Active	Contact	Enter Message		▼
A & W	09/08 - 12/08	Active	Contact	Enter Message		▼
Study Information CUSTOMER ID: STUDY NUMBER: END DATE: CITY ID: DESCRIPTION: STUDY STATUS: OCCUPANCY THRESHOLD: TIME ZONE: DIST OBSERVED: Devices Assigned to Study: 47 Deployed to Spaces: 40 Receiving Data: 29 Motes Assigned to Study: 1,414 Deployed to Spaces: 1,404 Receiving Data: 888						
A & P	07/08 - 03/11	Active	Contact	Enter Message		▼

Device Alert Log

Device	Time Stamp	Username	Type	Message	See All
4403807	06:23 AM 11/05/08	Oracle	Warning	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam...	Read More
SR021	06:23 AM 11/05/08	Oracle	Data Failure	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam...	Read More
4396223	06:23 AM 11/05/08	Oracle	Data Failure	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam...	Read More
4404001	06:23 AM 11/05/08	Oracle	Warning	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam...	Read More
SR023	06:23 AM 11/05/08	Oracle	Error	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam...	Read More
4100242	06:23 AM 11/05/08	Oracle	Error	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam...	Read More
SR006	06:23 AM 11/05/08	Oracle	Data Failure	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam...	Read More

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.



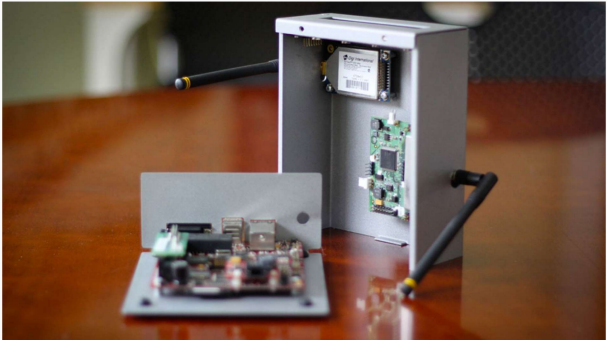
Gateway Devices

Each is a Technologic TS 7900 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)



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