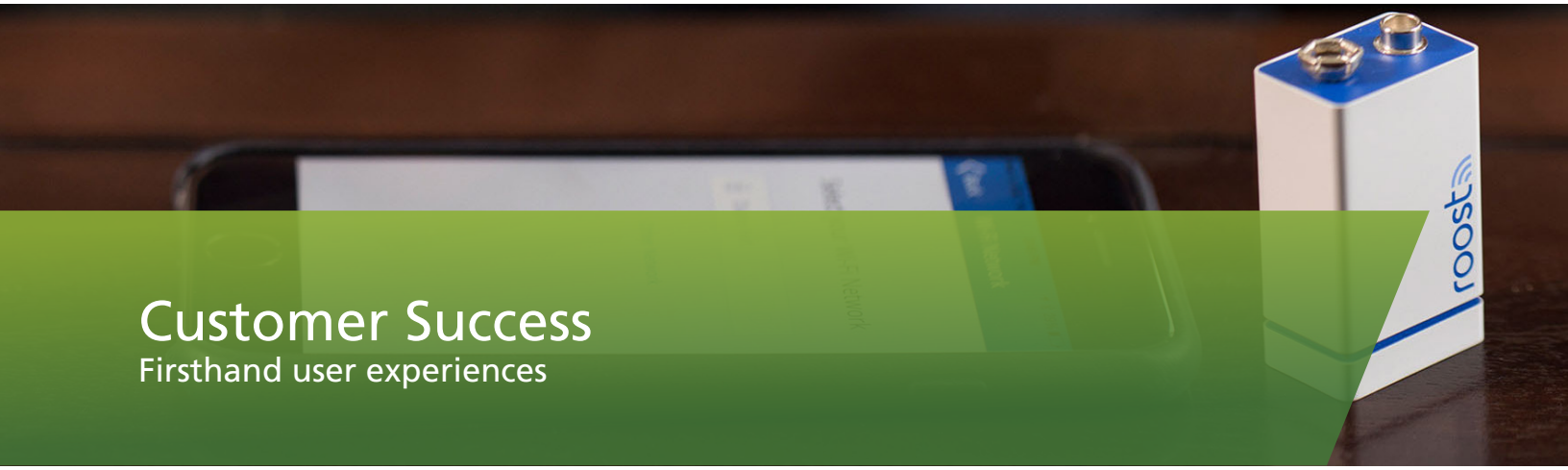

Customer Success

Firsthand user experiences

Introduction

Roost has developed the first Internet connected smart 9V battery, with its initial application targeting contractors, property management companies, and homeowners as a replacement battery for smoke alarms. But it's not just an average 9V battery! The Roost smart 9V battery transforms a standard smoke detector into a smart home device. It sends emergency alerts to smartphones and lets people know weeks in advance of a pending low battery level condition. Because the low battery level notification is sent providing ample time for replacement, people will no longer get woken up in the middle of the night from the sound of a chirping smoke alarm with a low battery.

Instead of purchasing costly new Internet connected smoke and CO alarms, people can simply replace the battery in their existing smoke detectors with the Roost smart battery. Then with the Roost app on their smartphone, they can be notified about emergencies no matter where they are, false alarms can be turned off, and neighbors or friends can be notified when the homeowner is on vacation. Setting up the app is fast and easy because the Roost battery uses a unique audio provisioning process to connect the WiFi radio in the Roost battery to a home network.

Design Challenge

- Fitting a lot of electronic technology into a small form factor
- Requiring a circuit board layout with no interference problems

The Solution

Roost chose a set of tools from the OrCAD tool suite to cover their needs for schematic capture, PCB layout, library management, revision control, documentation, and integration to their PLM system.

> "I personally have been using PCB design tools for 30 years, so in addition to being affordable and capable for our initial product release, I was looking very closely at the long term growth potential of tools being in line with those of a fast growing startup. EMA provided a solution that easily met these requirements."
>
> - James Machiorletti, Hardware Architect, Roost

OrCAD Benefits for Roost

The Roost 9V Internet connected smart battery is a two piece enclosure that allows for the replacement of the battery pack so that the electronics can be re-used. As such, there are two very small circuit boards in each of the two enclosure segments. These circuit boards required a schematic capture program for creation, a layout program to produce production ready PCB output files in a way that guaranteed there would be no interference problems with the battery enclosure housings, and an automated method for transferring the bill of materials (BOMs) to Arena PLM. Prior to purchasing OrCAD, Roost engineers used a freeware schematic capture program, but its Design Rule Check (DRC) capabilities were inadequate, it had a limited number of nets, and it did not translate a netlist that was acceptable for any of the more popular layout packages.

Roost originally chose to use a freeware schematic tool because of the limited budget of their startup company. As problems arose with the freeware tool, Roost investigated other PCB

The patented Roost Smart Battery, and free mobile app, transforms existing home smoke and CO alarms into smart alarms.

design packages and discovered that the cost for a complete OrCAD suite still fit within their budget and also met the technical requirements of being able to produce final manufacturing output.

An infrastructure has been established at Roost, allowing for rapid growth of the hardware team, as well as product design growth through efficiency in the CAD infrastructure provided through the integrated OrCAD tool suite. Many of the duplicate engineering support functions occurring between hardware design, and operations and production have been eliminated, which reduces personnel required as well as mistakes commonly made when documentation packages flow between functional team boundaries. "With OrCAD and the integration to our Arena PLM tool, we are able to create a BOM component once, and it is the same BOM component used in Capture CIS, PCB Editor, and in Arena. These translate into real time-to-market advantages and will result in real operating cost improvements, providing our customers with the best products sooner," added Machiorletti. "We were also able to easily interface the layout program to the different mechanical design programs, Pro/Engineer and SolidWorks, used by our mechanical design and manufacturing teams."

Roost took advantage of the ECAD/MCAD integration capabilities in OrCAD to ensure both electrical and mechanical designs could proceed efficiently in parallel. By importing board outlines and keep-out diagrams from their MCAD tool, they could perform the layout placement accurately the first time. Similarly, the electrical team was able to output the board layout so that the MCAD team could bring the board into the mechanical design to verify fit and mechanical functionality.

"The integrated suite of tools from OrCAD has been performing well, and the application support team at EMA has been very helpful at getting us going," said Machiorletti.

> "With OrCAD and the integration to our Arena PLM tool, we are able to create a BOM component once, and it is the same BOM component used in Capture CIS, PCB Editor, and in Arena."
>
> - James Machiorletti
> Hardware Architect, Roost

About Roost

Roost is a technology company headquartered in Sunnyvale, CA. Roost has developed a unique, patented connected platform that delivers the ultimate in installation simplicity and the most affordable way for consumers to enter the smart home space. Roost's initial hardware solution, the Roost Smart Battery for smoke alarms, addresses a disruptive retrofit opportunity to transform any existing smoke alarm that uses a 9V battery into a smart smoke alarm. Learn more about Roost at: www.getroost.com

About EMA Design Automation

EMA Design Automation offers leading product development solutions including electronic design automation software, engineering data management, consulting services, training, and support. EMA is a Cadence® Channel Partner supporting OrCAD, PSpice®, and Allegro®. EMA also develops TimingDesigner®, CircuitSpace®, EDABuilder®, and Enterprise Link to complement the Cadence PCB design suite.

Sales, Technical Support, and Training

For more information, please contact EMA Design Automation, a Cadence channel partner.

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