

Venkat Mattela,  
CEO

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# ***Redpine Signals: Introducing a Simpler Way to Create an IoT Device***

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ne cannot build a company with fear,” remarks Venkat Mattela, CEO of Redpine Signals. He does not mince words when asked about his advice to young entrepreneurs: “Do not fear about big companies, they have a natural limitation to be agile; be efficient and innovative.” Mattela, as a semiconductor industry veteran, has driven his company Redpine Signals to success without apprehensions as, “we built the company on the fundamental technology developed in-house.”

Mattela has held numerous positions like Director at Network Media Platform Group of Analog Devices, Director at Infineon Technologies, as well as led a team to take the microarchitecture and design of TriCore MCU-DSP processor to multiple silicon implementations. Over the years, Mattela has witnessed the rise and fall of Original Equipment Manufacturers (OEMs) in the telecom arena and states that the Internet of Things (IoT) landscape will undergo a similar transition.

“Since the IoT space exhibits Inch Deep Mile Wide phenomenon—too little volume for any one device—

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vendors face difficulty to build a sustainable business when the solution provider or consumer (in this case the CIO community) has demands on cost reduction,” explains Mattela. The OEMs are struggling to arrive at a one-stop shop, and hence most of the development time is spent on addressing integration issues of chipsets, modules, devices, and cloud. Even though the market is full of single source platforms, the companies are failing to offer an end-to-end IoT device maker platform. This is not the case with Redpine Signals.

“The idea of a single source solution is the fundamental value proposition of Redpine Signals, in addition to patented techniques to reduce the OEM’s cost of development,” remarks Mattela. Be it RS9113, Redpine’s M2M Combo Chipset, or its latest offering WyzBee, IoT maker platform, the expert team of Redpine has ingrained the idea of single source solution. “One of the things we do religiously is that we do not build anything if there is no usage level differentiation in a significant way compared to the best in the industry. This practice is embedded in Redpine’s culture and we probably are here today because

of this, while over 100 companies failed to make a mark in the last 15 years,” states Mattela.

### **Single Source Solution for IoT OEMs**

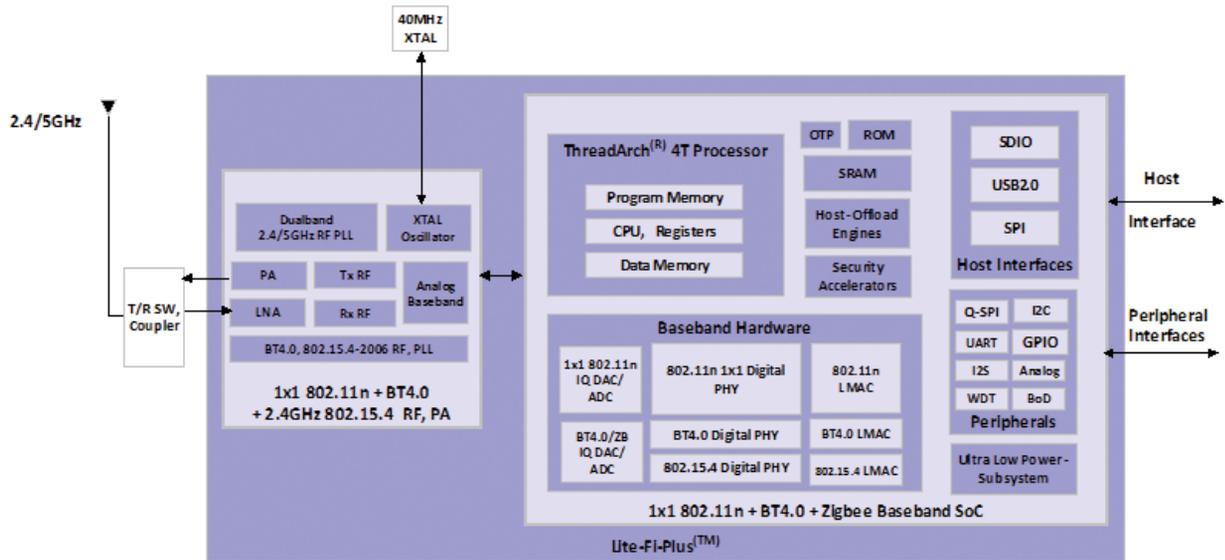
Redpine introduced WyzBee platform to speed up the development process without going through the hassles of integrating solutions from multiple vendors. WyzBee includes a flexible hardware platform, development environment, and cloud software and services framework that significantly reduce the time it takes to develop and bring to market new IoT devices. The platform provides integrated sensing, computing, communicating, power management, cloud, and application support. To further accelerate the IoT device development, Redpine provides a broad portfolio of Things profiles to developers like sensor, audio, GPS, GSM/GPRS and more.

“With the new WyzBee platform, we are removing multiple layers of complexity and cost in product development while giving product and application developers everything they need in a compact solution to jumpstart their IoT device or application,” says Mattela. “Redpine doesn’t just want to enable the IoT; we want to unify the IoT maker process from product development to the customized cloud and application software.”

OEM’s can commence their device development process by leveraging WyzBee Board. The compact board incorporates Redpine’s Wireless Secure MCS (WiSeMCU) with a multi-protocol wireless module providing Wi-Fi, Bluetooth 4.1, and ZigBee connectivity. The platform encompasses six-axis inertial sensors, an infrared received, a debug port, push-buttons, LEDs, USB ports, and WyzBee Thing expansion connector. The WiSeMCU module runs an embedded TCP/IP networking stack with SSL/TLS/HTTPS security, apart from complete Wi-Fi, BT 4.1, and ZigBee stacks.

To accommodate other symbiotic devices, OEM’s can take advantage of the WyzBee THING expansion headers. WyzBee THING has a number of peripheral—called ‘Things’—which includes Redpine’s audio, GSM, GPS, capacitive touch display, rechargeable battery, and additional sensors.

Application developers have a band of development environments—IAR, Keil, and the free CoIDE from CooCox—to choose from. WyzBee Workbench, a unique debugging tool, addresses a common debug need that arises when engineers validate systems that communicate with the cloud. This tool is integrated into the development environment offered for WyzBee and provides a comprehensive debug analysis of data traffic between the device and the cloud. This Enhanced Debugger includes the capability of analyzing all transactions with the cloud,



including secure SSL protected exchanges. The platform includes WyzBee IoT cloud, a Redpine hosted cloud framework that offers flexible and customizable connectivity, analytics, and user interfaces.

### Modules, Chipsets, and Devices and Services

The company has pioneered Wi-Fi in the Real-Time Locationing System (RTLS) market. “We were the first to use 802.11a (5GHz) technology for Wi-Fi RTLS in the industry,” states Mattela. “The main value with our solution, as compared to our competition, is that our solution is an overlay architecture which means OEMs do not have to disrupt the existing network while introducing Redpine RTLS solution.”

The ingenuity lies in the fact that even though RTLS solution has a 5GHz circuit, the multi-protocol wireless chipsets and software based RTLS technology gives a much lower power solution (longer battery life) compared to a 2.4GHz solution. “When we introduced this, it was counterintuitive because 5GHz circuits consume higher power than 2.4GHz circuits. In reality, while

running an application over a standard protocol, the power depends on protocol than the underlying circuit power,” explains Mattela.

Since cost, development time, and performance are the key value propositions of the RS9113 chipset, it serves as a potent chipset for the IoT space. RS9113, which is in production since 2013, is the industry’s first wireless combo chip for the IoT space supporting all the wireless protocols; Wi-Fi, Bluetooth classic, Bluetooth low energy, and ZigBee with ultra-low power profile. “We have learned a lot of coexistence issues since 2013. When a manufacturer designs with RS9113, the resultant cost saving is because of one chip which supports four wireless protocols, instead of using four different chips from disparate vendors,” elucidates Mattela. “Using different solutions from multiple vendors not only extends development time, but also makes the solution sub-optimal. We were able to analyze fine-grained coexistence with our chip since we control all four protocols. Our M2MCombo chipset expertise and relentless focus on convergence research helped us position Redpine ahead of the leading companies in the

wireless space for the IoT market. Essentially, the chipset expertise is the key part of our play in the IoT space, without which, we will not be a credible sustainable player.” The RS9113 chipset integrates PUF (Physical Unclonable Function)-based hardware security block, thereby providing unique, individual device entities, thus ensuring that each IoT device can be individually authenticated.

Driving wireless convergence has been the company’s main theme for the last 14 years. Having successfully crafted a state-of-the-art chipset and IoT maker platform for IoT Market, Redpine has shrugged off the tag of being a chip-only company. “We have all encompassing chipsets and modules to address a myriad of market requirements in the IoT space. In addition, we are focusing on tools and cloud services. Our product synthesis tool is critical for us going forward to making the caption ‘Time to Be a Maker’ a reality,” says Mattela. With OEMs trying their hands on WyzBee, the transition from being just a chip-only company to a comprehensive tool provider has just begun for Redpine. 