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Entrepreneur of the Month

Suceeding in the ENTREPRENEURIAL JOURNEY

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Company of the Month

Caliber Point: Creating Value through Solutions

R U Srinivas

Redpine Signals: Poised to conquer the M2M Market

Venkat Mattela, CEO

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Venkat Mattela resisted the momentum of the great recession of 2001, tough competition to the tune of 100 companies, critics and doubters during the wireless Wi-Fi boom of the starting of the second millennium. The company has emerged today as a dauntless adversary in the wireless chipset space to giants such as Qualcomm and Broadcom. The most important armory in the arsenal of Redpine Signals has not been a singular solution or a product range, but its bold adherence to Innovation, experimentation, and Mattela's hard work at single handedly engaging partnerships with global technology companies in many countries across the world. Though today there are no rough slides in comparison to early days of 2001, the 48 year old entrepreneur wakes up every day with the same level of passion and confidence to conquer and compete with the elephants in the wireless space.

San Jose headquartered Redpine Signals, today is a provider of wireless chipsets, modules and devices to over 1500 clients worldwide. With over 150 patents and 1000 person years spent in research and development of M2M and ultra low powered wireless SoC's for mobile phones, research and innovation has manifested into the soul of the company. With all the extensive focus on new inventions,

Redpine Signals should more appropriately be called an advanced wireless R&D laboratory instead of a wireless systems company. Now Redpine is all set to unleash its avant-garde ingeniousness into the M2M industry. Venkat Mattela, CEO of Redpine Signals, who himself holds a total of 11 U.S patents , embarked on a well laid out aggressive approach in 2008 to tap into the current emerging wireless M2M market. Mattela and his team are now armed with enough artillery to address multibillion dollar TAM in M2M space (Industrial and Multi-Markets) with highly differentiated products..

But the question to address is how Redpine emerged victorious during the great recession over such tough oppositions. Unlike the IT/ITeS space, the wireless industry was under constant stress to create new technologies. The downturn of the period gave the company the parameter of time to develop new technologies with a small and efficient workforce. But despite the inconsistency and the precariousness of the period, Mattela along with a few wireless warhorses, noticed a prominent opportunity in wireless technologies, especially in the emerging OFDM/MIMO wireless segment and subsequently created a company with high value product portfolio..

A wireless LAN system was what the company focused on in the first few years of its existence. The biggest challenge faced was funding the R&D to transform into a state-

Venkat Mattela

Redpine Signals:
Poised to conquer the M2M Market

By Vignesh Anantharaj

Market Landscape

Mainstream Wi-Fi markets — Consumer, Mobile & Netbook, Networking
Emerging Wireless M2M Market — Industrial, Medical, Building Automation, Smart Energy

Market Size

2011 – >1B units shipped
2020 – 50B units (E)

of-the-art facility with its own revenue generated in the down-turn market of 2001. Mattela took this bold step while other firms would have just stuck to a normal plan of action in fear of the recession turmoil. In 2005, Redpine Signals created the industry's first low power 802.11 b/g and in 2007, it created the Industry's first 802.11abgn technology which it licensed to a large semiconductor company, who would eventually use it in their product as a wireless interface for targeting 100s of million mobile chipset market. This enabled Redpine Signals to continue making R&D investment in advanced wireless technology developments in other wireless automations like Mobile WiMAX , LTE , CMOS RF and PA technologies and also enabled itself to create the flagship 802.11n low power chip in late 2007, its third generation of ultra low power Wi-Fi chipsets.

Redpine Signals is one of the old troopers still going strong since its inception and course of propagation. It functions today with a mission to created ultra low powered converged Soc for mobile phones. It's A-team of 160 strong R&D talent pool has leveraged the technology developed for mobile phones to create differentiated products for the M2M space from 2008.

The company is on course to stamp its authority in the "internet of things" by 2014. Today its offerings include an exhaustive range of OFDM, MIMO, multithreaded processors and CMOS RF & PA.

"Convincing clients to include Redpine Signals as a strategic partner was tough, as they are unwilling at first attempt, but observing the inventions and hard work put in by the skilled force, the clients soo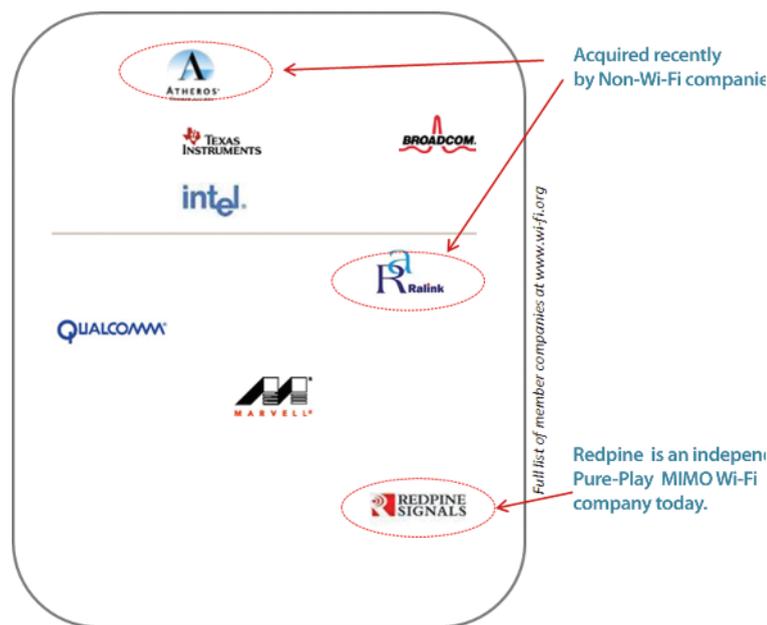n recognized that an alliance would do wonders to their organizations," says Mattela. In addition to the already built world-wide sales channel, Now there is a keen importance on building manufacturing methodologies with a strong world-wide partner network.

The DNA of Innovation

The company holds the acumen of bringing out the industry's first simultaneous, dual band 3x3 802.11n chipset in 2010 and the first 3x3 802.11ac chipsets which were aimed to allow everyday entertainment devices to connect to Wi-Fi and help gain access to demanding video applications in a congested wireless entourage. Since 2008 the company has been leveraging its technology developed for mobile phones to create differentiated products for M2M space.

The company not only develops advanced chipset for M2M and mobile markets but also creates zero-host overhead wireless modules which are certified for various regulatory standards (FCC,IC,CE and TELEC) to enable rapid product development in M2M space. Some of the firm's famous modules include the n-link, connect-io-n, and wiseconnect. To follow its tradition of doing research to find differentiated customer value in any product it intends to develop, The company daringly introduced the Industry's first 5 GHz Wi-Fi RTLS Tags and its approach of creating RTLS tags in the 5GHz spectrum has proven to be unique and effective for overcoming the limits of the increasingly crowded RF space of M2M devices. It has also been customized to fit well into the future 802.11ac 5GHz enterprise Wi-Fi infrastructure and was made capable of working with any third-party hardware and software RTLS infrastructures.

With the traditional 2.4 GHz only providing 3 channels which are already proving congestive with high electronic interferences, the 5 GHz, with its 14 channel space is sure to take over the less effective 2.4 GHz as it capable of carrying more data for faster and easier access at low power consumption levels. This 5 GHz invention landed Redpine Signals the prestigious Frost & Sullivan Global Technology Innovation in Wireless Solutions and RTLS in 2012. The company has made it a habit with accolades by winning on an average of one award on a quarterly basis. Moreover Redpine Signals was a winner in the Network Products Guide's 7th Annual 2012 Hot companies and Best Products Awards in the Mobile and Wireless Solutions category for its new Maxi-Fi BEAM450 chipset. The BEAM450 family is the first MIMO chipset to support "software configurable simultaneous dual-band." The firm then grabbed the Red Herring award for a place in the Global hundred Companies and The 100 companies from the Americas and Global for its dedication and successes in the field of innovation.
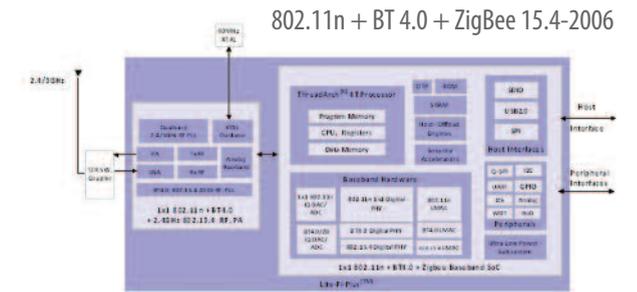
Over the course of ten years the team has provided good customer value with software certified modules with FCC, IC, CE and TELEC compliances to name a few. Redpine Signal's portfolio is renowned in the industry for its self containment and ease of usage. Along with its worldwide channel distribution partners in the form of Arrow Electronics, Future Electronics, Mouser Electronics, Macnica and Rutronik, Redpine has created a dexterous cornerstone in support Infrastructure.

Tapping the M2M boom

Until 2011 the market landscape for Wi-Fi technologies has shipped only close to 1 billion units. However the total market is expected to surpass five billion in a couple of years. "Initially we looked at targeting our chips into mobile phone market but found the market dominated by big players and integrating other wireless technologies on the same die was a critical item then. Since, in this segment, the volumes are very large, margins small, and competition intense, we decided to focus first on new emerging areas, one of them being the "Internet of things". In simple terms, this market 'inch deep and mile wide, taught us a lot of things which we did not know as a chipset company," adds Mattela

SmartCombo:
RS9117/RS9333: Single-Chip Simultaneous Dual-band
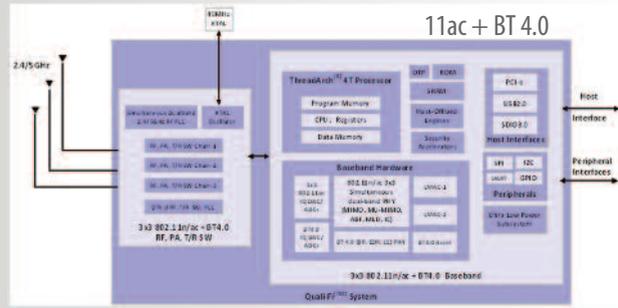
o Redpine's patented ML receiver supports data rates up to 1.3Gbps

o Uses the 3-Spatial Stream 802.11ac MCS-9 (256-QAM) with 80MHz bandwidth.

o Provides simultaneous dual band in a single SoC and ability to adaptively reconfigure bands simultaneously

SmartCombo- Mobile (RS9117) and SmartCombo-Networking (RS9333) Chips are highly integrated single chip deviceswith 11ac and BT 4.0 functionality on the same die. These chips incorporate Redpine's patented ML receiver implementations and support data rates up to 1.3Gbps using 3-Spatial Stream 802.11ac MCS-9 (256-QAM) with 80MHz bandwidth. Redpine's fundamental innovation in these chips is the capability to provide simultaneous dualband in a single SoC and ability to adaptively reconfigure bands simultaneously; (3x3 11ac can be reconfigured as simultaneous 2x2 11ac in 5GHz and 1x1 11n in 2.4GHz).

These SoCs integrate ThreadArch® Four-threaded processor with on chip memory for achieving high-throughputs with low-host overhead and leverage proven ' Intelligent power management' technology from earlier devices

o 3x3 11ac can be reconfigured as simultaneous 2x2 11ac in 5GHz and 1x1 11n in 2.4GHz.

o The SoCs have integrated ThreadArch Four-threaded processor with on chip memory

o Uses intelligent power saving techniques to provide the best sustainability

o Best for achieving high-throughputs with low-host overheads

Venkat Mattela envisioned R&D as its preeminent strategy to produce products that would cost a company today seven years effort to match the same innovation excellence and millions of dollars

Today Redpine Signals has the solutions for the major verticals of industrial, medical, building automation and smart energies are already deployed by the organization. This was achieved only due to Mattela's sheer focus to R&D and innovation. Mattela envisioned R&D as its preeminent strategy a good decade ago to produce products that would cost a company today seven years effort to match the same innovation excellence and hundreds of millions dollars. The firm now has a strong technology and product portfolio for the mainstream Wi-Fi which will hit the market in 2013, including the low power chip for the smartphone market. The company was among the first to get its product certified for a new Wi-Fi program called the Voice-Personal in 2008.

The latest innovation within its walls is its scalable SoC architecture that integrates multiple wireless technologies on a single die with unique re-use techniques. The company has created an echo system to address M2M market by partnering with leading MCU vendors like Renesas Electronics, Freescale Semiconductor, Cypresss Semiconductor and Atmel Corporation. Redpine's strategy to support customers with fully certified modules and making them available in a Kit form along with MCU platforms resonated well in the M2M market place. . Moreover Redpine Signals came up with a unique new chipset that can capture the M2M market in a significant way.

The M2MCombo™: RS9113 is the industry's first and Unique Chipset

for the M2M Market and is Redpine's trump card for success. Its other ace is its single chip software configurable simultaneous dual-band (the Smart-Combo RS9117/RS9333) with a High Performance MU-MIMO incorporated with the state of the art Interference Cancellation and ML Receiver implementation capabilities. The smart combo is known for offering simultaneous dual band operations and the M2M modules provide Zero Host Overhead, Self Contained and Certified Communication Modules. With upcoming mobile phones growing more and more dependent on the internet, these solutions are sure to find a large place in the mobile boom.

The three focal points of a unique business approach

At Redpine Signals, the importance is basically on three main focal points-innovation, innovation and innovation. While the company is making steady dividends in the emerging Wi-Fi markets, it has not taken its sight off from

The company goes the extra mile while empowering its workforce by providing opportunities to the tune of sponsoring their MS degrees from Stanford University

the mainstream Wi-Fi research. Redpine today has the technology and roadmap on par with the top two Wi-Fi players. Mattela is a strong believer in the saying that standard practices only lead to standard results. So he personally ensured that the company takes the right steps in empowering its employees by providing rare and expert coaching talent in the form of domain experts from across the globe.

The company goes the extra mile while empowering its workforce by providing opportunities to the tune of sponsoring their MS degrees from Stanford University. Mattela personally got in touch with industrial experts from across the globe and strived for many years to ensure that industry experts guide employees with the latest technological developments and innovational skills. Redpine's approach to develop talent is unique. It believes strongly in organic and in-house expertise "The industry specialists are hard to find. In the space that we play in, there are really a few. I spent many years to identify them and agree to partner with us.. Though these experts spend minimum hours and costs a lot of money, in the long run, it will definitely pay off," says Mattela. Unlike its competitors, the commitment towards turning employees into professional wireless experts is so pro-

nounced that Redpine Signals spends more than the annual CTC of the individual on the training and coaching programs. Moreover this dedication is not just in its employees but also is extended to its customers. The testimony of this dedication is in the customer base of Redpine Signals which exceeds 1500 clients today. Some of the prominent users who swear by Redpine Signal's wireless technologies are Ascom, Barco, Bang & Olfusen, Honeywell, SMA, and GE research to name a few.

The plans for Redpine Signals in the immediate future are to scale through multiple verticals of chipsets, modules and systems, including global partnerships. The company promises to be a bigger formidable force as it plans to increase its Indian R&D team to 300 by end 2013. With the M2M scenario set to grow to 89 billion by end 2017, it is most probably going to mark the era of companies like Redpine Signals providing state of the art products to address the multi-billion dollar TAM in the wireless space today.

"There's a way to do it better—find It." so said Thomas Alva Edison. Redpine has simply being applying the same technique all through its existence. Finding better ways and creating better chips for a better world.[si]