Dali Wireless has announced the successful completion of a distributed antenna system (DAS) dynamic-capacity-allocation trial with NCS, a member of Singtel. The proof point comes on the heels of Dali Wireless' Mobile World Congress launch of its next-generation modular architecture for the company's digital DAS – RF Router.

Expanding upon its RF Router platform, the new Dali Matrix consists of a rack-based shelf housing system modules for base station interfaces, RF conditioning, signal splitting/combining and signal distribution to Dali Wireless remote radios. A notable feature of the portfolio is an open API backed by a secure sandbox architecture, enabling network equipment providers (NEPs) to supply confidential software for decoding proprietary CPRI data components. Along with the Dali Matrix, the company launched modular radio remotes for low-power and high-power output. The Dali Matrix is slated for general availability in Q4 2015.

The 451 Take

Dali Wireless stands out with its fresh approach to creating a flexible digital DAS based on RF routing. Gaining a public nod from one of the member companies at Singtel is an important affirmation as Dali works to expand its customer base. The nod comes at a good time as Dali prepares to bring its new Dali Matrix platform to market toward the end of 2015. The new platform is important for its size reductions and a creative approach for direct CPRI integration to NEP base stations. We doubt that NEPs will support this integration on a standard basis, but the presence of Dali's mechanism removes excuses for case-by-case integration.
Context

Dali Wireless offers flexible DAS supporting large-venue wireless coverage for mobile broadband, cellular voice and public safety communications. Founded in Silicon Valley in March 2006 by entrepreneur Albert Lee and power amplifier expert Shawn Stapleton, Dali Wireless originally targeted the software-configurable radio power amplifier (PA) market. The company, however, shifted direction as radio system builders moved PA technology in-house. Leveraging benefits from its software-configurable radio PA technology, Dali Wireless moved up the value chain, and now delivers a full portfolio for in-building cellular coverage.

CEO Lee and CTO Stapleton lead the company. It has approximately 60 employees, with headquarters in Menlo Park, California, and an R&D center in Burnaby, Canada.

Technology

Dali Wireless' Mobile World Congress launch of the Dali Matrix, a new platform for its digital DAS offering, reflects an important addition to the company's portfolio. By moving away from monolithic system elements, Dali embraces a building-block approach that gives DAS owners the freedom to mix and match modules that install in Dali's Universal Base Station Interface Tray (UBIT). Blades inserted into the UBIT include host and RF conditioning modules. With the compact blade design, Dali points to a 50% savings of head-end space requirements. In addition, each RF conditioning module incorporates a spectrum analyzer for detailed analysis. The Dali Matrix supports a throughput of 10Gbps over a single optical fiber and 328MHz of aggregated bandwidth per wavelength.

The Dali Matrix offers a unique feature to enable direct CPRI-based digital connections to base stations. With its Baseband Interface Blade, the company has incorporated secure, special-purpose FPGA hardware into a digital interface blade supporting CPRI links. With this secure programming environment, NEPs can implement proprietary MIB extensions to integrate the Dali radio units into the NEP base station. The benefit for the operator and the venue owner is significant – the direct CPRI connection eliminates the requirement for a pair of radio transceivers serving as an analog interface. Beyond savings on equipment costs, owners realize ongoing operating cost savings, thanks to lower power consumption, as unnecessary radios disappear.

Taken together, the new platform and the RF routing capability at the heart of Dali Wireless' value proposition helps position the company with a play in radio access network virtualization efforts that aim to centralize baseband assets and distribute radio heads. The company points to elasticity
and flexibility as key RAN virtualization model benefits. Of course, mobile operators have little experience with this level of agility. The trial conducted by NCS suggests operators are both interested and gaining confidence.

**Customers**

Primarily a supplier of in-building wireless capability for hotels, hospitals and other venues, Dali Wireless' customer base spans mobile operators, building owners, mining companies, metro transits and municipal governments. When deployed by a venue owner, an installation can support multiple operators connecting to a point of interface (PoI) offered by the Dali portfolio. Some customers elect to purchase a DAS in response to local regulations that mandate DAS installations in support of public safety.

Although not all customer wins can be publicly identified, the company points to wins for a major airport in North America and a metro underground transport system in South America. The company has also engaged in major rail tunnel projects in Europe. With more than 20 venues to date, Dali Wireless now sells its products in more than 30 countries in North America, Asia, Europe, Latin America and the Middle East.

**Competition**

Dali Wireless competes against the major DAS suppliers. The dominant players include CommScope, TE Connectivity, Corning Mobile Access, Comba Telecom, Axell Wireless and SOLiD Technologies. This list will reduce when CommScope's planned acquisition of TE Connectivity closes toward the end of 2015.

JMA Wireless, a new player, emerged at the end of 2012 with the combination of Italian DAS specialist TEKO Telecom and Maryland-based CSS Antenna. The private company claims 150 deals since launching, including some significant wins such as the new football stadium in Santa Clara, California.

Dali Wireless remains unique in the competitive field, however, by breaking down the digital encoding of RF into routable packets. Other approaches include optical switching to route RF paths to radio heads or simple passive signal distribution via coaxial cable.
**SWOT Analysis**

**Strengths**

The Dali Wireless RF router provides flexible interconnect of remote radios to its DAS point of interface. With the new Dali Matrix, operators gain leverage for pushing NEP support of direct CPRI attachment to the DAS.

**Weaknesses**

The company has limited scale to bring its offering to market and provide support.

**Opportunities**

Strong interest in digital DAS means Dali Wireless has a window of opportunity to get the interest of complex venues, where the need to shift radio sector loading on a granular basis is critical.

**Threats**

Competitors are moving to provide improved signal distribution granularity. Even without the degree of granularity offered by Dali Wireless, competitors will argue that existing fiber systems offer sufficient flexibility to offset the risk of bringing in an alternative solution.