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SON (Self-Organizing Networks) in the 5G & Open RAN Era: 2022 – 2030 – Opportunities, Challenges, Strategies & Forecasts

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Abstracts

SON (Self-Organizing Network) technology minimizes the lifecycle cost of running a mobile network by eliminating manual configuration of network elements at the time of deployment right through to dynamic optimization and troubleshooting during operation. Besides improving network performance and customer experience, SON can significantly reduce the cost of mobile operator services, improving the OpEx-to-revenue ratio and deferring avoidable CapEx.

Early adopters of SON have already witnessed a multitude of benefits in the form of accelerated 5G NR and LTE RAN (Radio Access Network) rollout times, simplified network upgrades, fewer dropped calls, improved call setup success rates, higher end user throughput, alleviation of congestion during special events, increased subscriber satisfaction and loyalty, operational efficiencies such as energy and cost savings, and freeing up radio engineers from repetitive manual tasks.

Although SON was originally developed as an operational approach to streamline and automate cellular RAN deployment and optimization, mobile operators and vendors are increasingly focusing on integrating new capabilities such as self-protection against digital security threats and self-learning through AI (Artificial Intelligence) techniques, as well as extending the scope of SON beyond the RAN to include both mobile core and transport network segments – which will be critical to address 5G requirements such as end-to-end network slicing.

In addition, with the cellular industry's ongoing shift towards open interfaces, virtualization and software-driven networking, the SON ecosystem is progressively transitioning from the traditional D-SON (Distributed SON) and C-SON (Centralized

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SON) approach to open standards-based components supporting RAN programmability for advanced automation and intelligent control.

The surging popularity of innovative Open RAN and vRAN (Virtualized RAN) architectures has reignited the traditionally niche and proprietary product-driven SON market with a host of open standards-compliant RIC (RAN Intelligent Controller), xApp and rApp offerings, which are capable of supporting both near real-time D-SON and non real-time C-SON capabilities for RAN automation and optimization needs.

SNS Telecom & IT estimates that global spending on RIC platforms, xApps and rApps will reach $120 Million in 2023 as initial implementations move from field trials to production-grade deployments. With commercial maturity, the submarket is further expected to quintuple to nearly $600 Million by the end of 2025. Annual investments in the wider SON market – which includes licensing of embedded D-SON features, third party C-SON functions and associated OSS platforms, in-house SON capabilities internally developed by mobile operators, and SON-related professional services across the RAN, mobile core and transport domains – are expected to grow at a CAGR of approximately 7% during the same period.

The “SON (Self-Organizing Networks) in the 5G & Open RAN Era: 2022 – 2030 – Opportunities, Challenges, Strategies & Forecasts” report presents a detailed assessment of the SON market, including the value chain, market drivers, barriers to uptake, enabling technologies, functional areas, use cases, key trends, future roadmap, standardization, case studies, ecosystem player profiles and strategies. The report also provides global and regional market size forecasts for both SON and conventional mobile network optimization from 2022 till 2030, including submarket projections for three network segments, six SON architecture categories, four access technologies and five regional submarkets.

The report comes with an associated Excel datasheet suite covering quantitative data from all numeric forecasts presented in the report.

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