

PHYTunes Wins National Science Foundation Grant Phase 2 to Fund Commercialization of 5G Connectivity Inside of Buildings, Bringing Ubiquitous Coverage for All.



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PHYTunes

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PALO ALTO, Calif., December 14, 2023 -- PHYTunes, a Deep Tech Startup headquartered in Palo Alto, CA, is announcing that it has been awarded a National Science Foundation (NSF) Small Business Innovation Research (SBIR) Phase 2 Grant of \$1M to accelerate commercialization of technology focused on providing ubiquitous coverage of High-Frequency mobile solutions, such as 5G, 6G, Wi-Fi 6, and Wi-Fi 7, indoors where 80% of data traffic occur.

The broader impact of this Small Business Innovation Research (SBIR) Phase II project is to provide ubiquitous indoor access to high capacity, low latency 5G and 6G networks which can have direct and indirect benefits to society. The direct benefits include such things as an impact on our ability to support manufacturing, health care, education, and enterprises. For instance, remote diagnosis and surgery requires a very high data rate, low latency network, but medical equipment and the architecture of hospitals generates significant interference and propagation issues which drastically limits coverage. Modern industrial manufacturing (Industry 4.0) also requires advanced networks to

enable in-building robotics with artificial intelligence and augmented reality to enhance productivity. Solving high frequency 5G coverage limitations can directly impact the ability of these industries to drive medical advancements, increase manufacturing safety and efficiency, increase educational opportunities, and improve general workplace productivity. The indirect benefits, while more difficult to quantify, may be more important as the diversity of network users brought about by lowering the economic burden brings nonlinear innovation to society.

This Small Business Innovation Research (SBIR) Phase II project's goal is to commercialize a novel technology developed in Phase 1 to enhance 5G indoor coverage. The core innovation is a convergence of wireline and wireless technologies enabled through a collaboration between one of the inventors of core DSL (wireline) technology and experts in the development of mmWave 5G (wireless). Specifically, the solution allows for the transmission of mid-band and mmWave 5G signals over an existing wireline medium such as a CAT 5e/6 or a co-axial cable which has limited use nowadays but is deployed in buildings throughout the world. This solution is possible today because of an ecosystem that includes new Open Radio Access Network (ORAN) standards, 5G cores available in the cloud and increased processing power. The research conducted through this project should prove the ability to provide ubiquitous in-building coverage at scale with multiple low-cost RF nodes broadcasting a 5G signal that does not interfere with the outdoor signals from cell towers. The result of this project should be a seamless customer experience that provides the bandwidth and latency promised from 5G and 6G technologies inside buildings.

" The SBIR Phase 2 grant will expedite the PHYTunes effort toward building an affordable, energy-efficient solution to address the challenge of expanding 5G coverage within residential and commercial structures." said Dr. Akula Aneesh Reddy, Chief Scientist of PHYTunes. "We take pride in our collaboration with the National Science Foundation to bring to market our sustainable converged wireless-wireline solution, which repurposes the current cabling infrastructure."

About PHYTunes

PHYTunes is a leader in 5G at the Edge, enabling Wireless Wireline Convergence (WWC) and the transport of high-frequency wireless signals over existing wired infrastructure to seamlessly deliver full 5G inside the home, small business or enterprise. PHYTunes empowers service providers and businesses to deliver extraordinary customer experiences fostering brand loyalty and trust. Ultimately, PHYTunes delivers mission-critical connectivity enabling services innovation in gaming, healthcare, hospitality, industrial IoT and retail. For more information, visit www.phytunes.com or follow us on LinkedIn.

About the National Science Foundation's Small Business Programs:

America's Seed Fund, powered by NSF, awards \$200 million annually to startups and small businesses, transforming scientific discovery into products and services with commercial and societal impact. Startups working across almost all areas of science and technology can receive up to \$2 million to support research and development (R&D), helping de-risk technology for commercial success. America's Seed Fund is congressionally mandated through the Small Business Innovation Research (SBIR) program. The NSF is an independent federal agency with a budget of about \$8.5 billion that supports fundamental research and education across all fields of science and engineering.

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