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RadiaBeam and lessons learned building an accelerator company

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The advanced accelerator community is well familiar with high-risk initiatives, which has led to multi-decade development programs before concepts are realized. What is less obvious is that building an accelerator company requires continuous development on a similar time scale, and is not entirely dissimilar in nature. RadiaBeam was spun off in 2004 from UCLA's advanced accelerator laboratory, and its foundation was in many ways an experiment, in and of itself. Just like in many advanced accelerator projects, the founders overestimated the progress that could be made in a few years; and yet completely underestimated the success that can be achieved in over a decade. By 2022 RadiaBeam became a vital part of the world accelerator community, contributing to the advancement of accelerator technology and applications in research, industry, medicine, and security.

Unique among small accelerator manufacturers, RadiaBeam performs its own design, engineering, manufacturing, tuning, and testing, including "hot" testing, in-house. Yet, despite a considerable degree of self-sufficiency, RadiaBeam remains an organic part of the accelerator community and is ever more dependent on the ideas, skills, and sense of purpose propelling the entire field. Most of RadiaBeam's capabilities have been developed in collaboration with US national laboratories and universities under the realm of the DOE Small Business Innovation Research (SBIR) program.

Many RadiaBeam products are currently in service in laboratories, hospitals, and universities around the world. On the other hand, many of our R&D projects have either failed, or never been completed, or never obtained any traction with the market or funding agencies, and many important capabilities the company had aspired to achieve have yet to be realized. This necessary hard work of trial and error inevitably expresses itself in the ponderomotive nature of the company's growth and defines the long-term vision of RadiaBeam's mission as a business, and as a partner to the larger US accelerator community.

In this talk, we will discuss the company's development history, the role of the U.S. SBIR/STTR programs, the successes and failures of developing products for National Laboratories and industrial customers, and the fine balance between R&D and industrial production activities.

Acknowledgments

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