

Michael Raphael, CEO Direct Dimensions

This kicks off the 3D Industry Pioneers column. I really did not have any trouble deciding who would be my first interview. Although there are many worthy candidates, I chose Michael Raphael the founder of Direct Dimensions. Michael was one of the early supporters of the LiDAR News blog and from my perspective he has as much experience in the 3D dimensional measurement business as anyone. I say it that way because Michael has such a breadth of knowledge, both in the metrology and medium/long range 3D scanning worlds.

I am planning to use a standard set of questions as part of each interview for this column. I hope that this will provide readers with the ability to compare and contrast backgrounds and personalities. If you have other suggestions for this column please let me know.

Unlike a lot of people I have met in the 3D laser scanning business Michael Raphael's formal education and early work experience played a direct role in where he is today. (I wish I had been that focused.) Michael has a B.S. in Engineering Science and Mechanics from Virginia Tech and a M.S. from George Washington in Engineering Administration, which he earned while working full time at Martin Marietta—a large aerospace company.



In 1985 Michael began his career working in his home town of Baltimore, Maryland as a Liaison Engineer for Martin Marietta. He notes, “I was responsible for solving manufacturing problems on various large programs including: Patriot missiles, Titan launch vehicles, and GE and P&W thrust

reversers. As a Liaison Engineer for the first 5 years of my professional career, I liked the broad perspective I had within this huge aerospace company. My role was to interface with the many departments to resolve manufacturing and assembly problems including fabrication mistakes and engineering design errors.”

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That explains a lot to me about Michael's ability to be comfortable in such a broad range of projects that his company takes on, but more on that in a minute. If this experience was not enough, in 1989 he moved into the Quality Engineering Department where he became the manager of a new group—Advanced Quality Technologies. They would be responsible for finding and applying 3D problem solving measurement technologies to the manufacturing process. The die was cast.

Michael had started to work with 3D CAD and various coordinate metrology tools such as CMM's and photogrammetry in his previous position. But it was his collaboration starting in 1989 with a small technology company just moving from Montreal, Quebec to Lake Mary, Florida that developed and sold a unique 3D measurement tool for medical applications which put him on the path to eventually starting his own business focused on solving 3D problems.

The company was FARO Technologies and the device was called the Metrecom. It was a portable jointed articulating arm that measured the location of points in 3D space. The wheels began to turn. They needed this new kind of 3D measurement ability for their manufacturing inspection, but it was not nearly accurate or rugged enough for industrial plant environments.

Two years later, in 1991 after much collaboration, the first industrial FARO Arm was delivered to Michael and his team at Martin Marietta. At first people were skeptical, but Michael developed a number of demonstration projects including reverse engineering

of complex ducts and fairings that had no digital files that demonstrated the value of the Arm.

In 1995 with a young family—three-year old twin girls, Michael and his wife decided he should leave the security of aerospace, buy a FARO Arm—given his unique competitive advantage, and start his own business. Today Direct Dimensions is one of the premier 3D measurement firms in the U.S., and I am sure it is fair to say the world. With over 25 employees Michael reports that, “The firm specializes in the unique application of advanced 3D scanning and imaging systems and the conversion of raw ‘point-cloud’ data into high-resolution/high-accuracy 3D computer CAD models for subsequent downstream manufacturing, analysis, and visualization applications.”

Over the past nearly 18 years they have performed thousands of 3D scanning and modeling projects in what seems like every conceivable industry and application. They have scanned such notable objects and sites as the Liberty Bell, Iwo Jima Memorial, Tomb of the Unknown Soldier, sculptures at museums including The Smithsonian, MoMA, National Gallery of Art; many airplanes, submarines, and other vehicles. They even scan actors and props for movies like “Men in Black 3” and “Black Swan”.

As for starting Direct Dimensions, he credits former colleagues Dan Buckles and Richard Lee from Martin Marietta and the original founder, CEO and Technical Director of FARO Technologies Simon Raab, as well as Spike Milligan and Mark Klusza, among others for their more recent positive influence.

When he is not enjoying time with his family, Michael is heavily involved with industry groups and conferences. In particular, “I am on the organizing committee's for CMSC and RAPID, which occupies a great deal of time. For both I am very active in developing the technical content (speakers) for the conferences and creating educational workshops.”

He sees unlimited potential for 3D measurement and is struggling to keep up with the pace of change. Michael sees the most pressing need for the industry to be, “Development of effective educational organizations that are not tied to products or services, and can rise above the noise to be reliable sources of truthful information about 3D tools, capabilities, and methods.”

Michael has never considered switching careers—he loves what he is doing and encourages people to make things happen, “Get involved – don't sit back and watch. Don't just work your job, step up, become a member of groups, read, post, tweet, blog, reach out, and refer others...”

And as a true scientist his final words of advice are, “Question your results—don't just accept what the scanner or software tells you—check it over, test and verify, make sure you understand what it means and that it is correct.”

Thanks Michael for your contributions to this industry. You are a true pioneer in this field. It has been a pleasure to know you and I look forward to many more years of growth and collaboration. ■

Gene Roe is the Managing Editor and Co-Founder of LiDAR Magazine