

RAMP MD AND THE FUTURE OF ADDITIVE MANUFACTURING IN MARYLAND

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The Growth of Additive Manufacturing in Maryland

Additive manufacturing represents a significant opportunity for the state of Maryland to be at the leading edge of a “disruptive” technology that is going to dramatically reshape how we live, work, and play. Additive manufacturing (also called 3D printing) will be big business; some economists expect the nation’s additive manufacturing industry to grow to \$21 billion within five years.

When Maryland leaders authored SB889/HB1060 in 2014 to establish the Regional Additive Manufacturing Partnership of Maryland (RAMP MD), they envisioned Maryland as the nation’s center of excellence for additive manufacturing, and RAMP MD as the catalyst for industry growth. RAMP MD’s work is to build a network of resources for the additive manufacturing industry and put those tools in the hands of Maryland’s businesses. This legislation was unanimously passed, as was the follow-on legislation in 2016 enabling RAMP MD to expand its board to include more manufacturers.



Maryland is also in the unique position of already being a national resource in biotechnology and biosciences, with numerous government agencies and industry partners working within the state’s borders. Nowhere is additive manufacturing revolutionizing an industry more than in bio-medical applications. 3D printed medical devices and prosthetics are already commonplace in patient care. Similarly, we are quickly moving toward the day when 3D printed organs and tissue will replace current transplant methods. Bio-medical additive manufacturing is resulting in shorter and less invasive surgery, faster recovery, reduced cost, and increased capabilities. The geographic co-location of the biotechnology and additive manufacturing industries positions Maryland to be the “Silicon Valley” of medical device, prosthetics, wearable technology, and tissue engineering. RAMP MD is the organization in Maryland focused on bringing these two industries together.



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RAMP MD's Geographic Reach

Over the past two years, with very limited funding and an all-volunteer board, RAMP MD demonstrated on a small scale that its mission serves a vital need of the business community, and demonstrated the benefit to economic development across the state. RAMP MD initially focused its efforts on Harford and Cecil County businesses, but it quickly became apparent that the need was statewide. For instance, many of our business partners who have signed joint work statements are from across the state – Montgomery County, Baltimore City, Baltimore County, Cecil County, Harford County, Howard County, and Anne Arundel County. We have given tours to dozens of companies from across Maryland, from other states, and even other countries. Recently, we hosted a delegation from Singapore looking at partnership opportunities.

RAMP MD has also hosted three Symposia featuring the nation's leading voices in additive manufacturing: "Additive Manufacturing – More Than 3D Printing" in May 2015, "New Frontiers of Bio-Medical Additive Manufacturing" in March 2016, and "3D Aerospace & Defense" in January 2017. These Symposia have attracted hundreds of speakers and attendees from a very broad geographic area and from a broad range of industries. RAMP MD has successfully built a network of businesses and practitioners in the additive manufacturing industry, and this network is growing. We currently have a targeted mailing list of about 500 Marylanders involved in additive manufacturing and have become known as a go-to resource in Maryland for additive manufacturing.

Maryland legislators and members of Maryland Congressional delegation clearly see the potential of this innovative industry and RAMP MD's role in moving Maryland forward. Senator Cardin held an information session on additive manufacturing and met with RAMP MD partners in September 2016. Congressman Andy Harris provided the keynote at RAMP MD's March 2016 Symposium on Bio-Medical applications. Former Senator Barbara Mikulski toured additive manufacturing facilities with RAMP MD in 2015. And Congressman Ruppertsberger and his staff remain involved in RAMP MD's progress. At the State level, Senator J.B. Jennings and RAMP MD co-hosted a legislative breakfast for the Harford, Cecil, and Baltimore County delegations to the Maryland General Assembly in 2015.





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Return on Investment

There are many organizations that will play a role in the growth of additive manufacturing – colleges and universities, trade associations, and non-profits. But RAMP MD is the organization singularly focused on the goal of building Maryland into a national additive manufacturing resource.

The first two years of operation of RAMP MD was sustained with a \$15,000 grant from DBED, a \$5,000 direct grant from Harford County and a \$4,000 direct grant from Cecil County. We have supplemented these grants with income from Symposia sponsorships and registration fees. With these funds, we built a supportive board of directors, hosted three Symposia, conducted dozens of tours, and provided streamlined access for 20 companies to Army equipment, facilities, and expertise at Aberdeen Proving Ground. RAMP MD's high productivity with limited budgets to date has resulted a very high return on investment for the State, Harford and Cecil Counties, and all of RAMP MD's private and public partners.

More information about events and partnerships can be found at www.rampmd.org.

2017-2018 RAMP MD Programs

- **3DBioMedMD**: A Symposium on new developments in bio-med additive manufacturing, March 28, 2018, 8 a.m – 3 p.m., Baltimore, MD
- RAMP MD is compiling case studies of its partners and JWS holders on business growth that was aided by public-private partnerships.
- RAMP MD and Maryland Department of Commerce collaborating on survey of additive manufacturers on concerns, requirements, and opportunities.
- Building additive manufacturing industry community forum and discussion board. Web-based site hosted by RAMP MD web site where manufacturers discuss opportunities and challenges facing businesses in product development industry.
- RAMP MD will conduct outreach to manufacturers across the Mid-Atlantic and work toward adding five additional JWS holders during this grant period.
- RAMP MD coordinating with high schools and colleges to build apprenticeship pipeline in Maryland for careers in additive manufacturing.