

MARYLAND INDUSTRIAL PARTNERSHIPS MIPS

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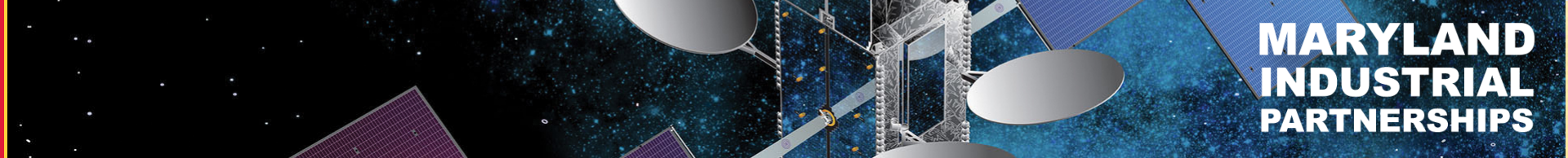
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MIPS Overview

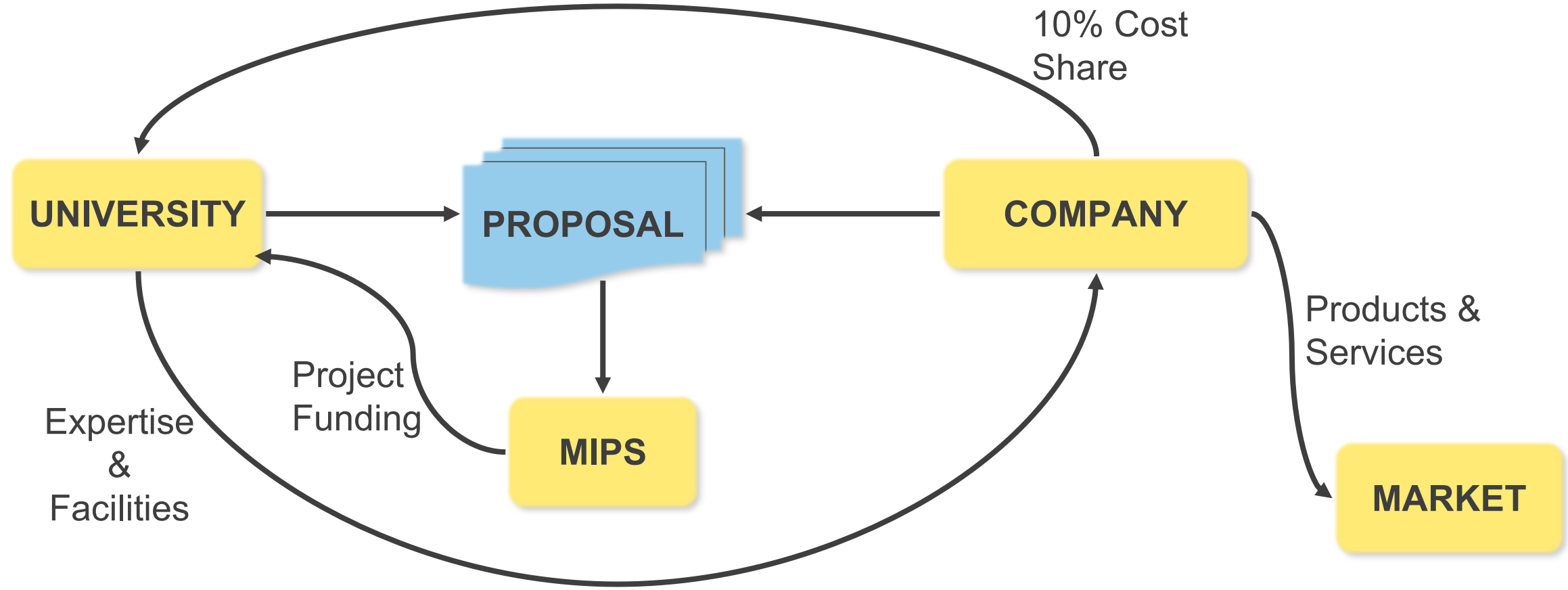
- MIPS fosters academic-industrial partnerships for innovation aimed at job creation
- Funds from MIPS and Maryland companies go toward accelerating research and knowledge into products
- Commercialization potential (economic development) is the primary criterion

Key Points about MIPS

- MIPS projects are conducted by university faculty in conjunction with company researchers
- Proposals are evaluated on technical merit and economic development potential
- Projects jointly funded by MIPS & companies
- All funding goes toward university project costs
- Not required to be university IP

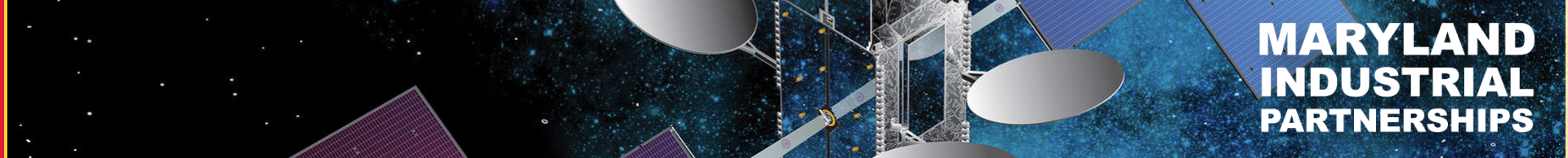


MIPS Program Flows



Eligible Campuses

- Bowie State University
- Coppin State University
- Frostburg State University
- Morgan State University
- St. Mary's College of Maryland
- Salisbury University
- Towson University
- U of Baltimore
- U of Maryland, Baltimore
- U of Maryland, Baltimore County
- U of Maryland, College Park
- U of Maryland Eastern Shore
- U of Maryland University College
- U of Maryland Center for Environmental Science



Eligible Companies

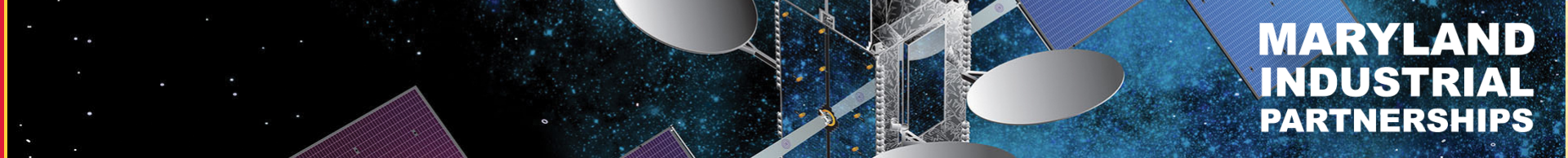
Any company that has a Maryland presence that will likely add Maryland jobs if the project proves successful.

More Key Points about MIPS

MIPS is win-win-win:

- Companies leverage their R&D funding and gain access to faculty expertise
- Non-dilutive, non-debt funding
- Faculty and students gain funding to engage in commercially relevant research
- State benefits via accelerated and increased tax revenue

MIPS: *The Process*



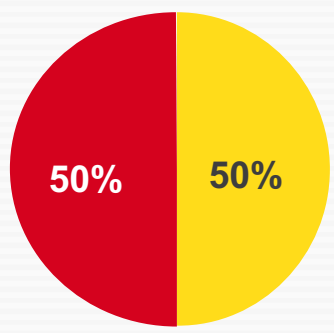
Competition for MIPS Awards

The primary criterion for ranking proposals:

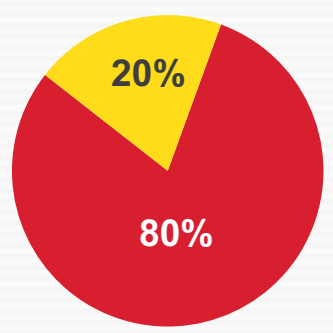
What is the likely degree of long-term job creation in Maryland resulting from the proposed R&D project?

Minimum Company Cash Contribution

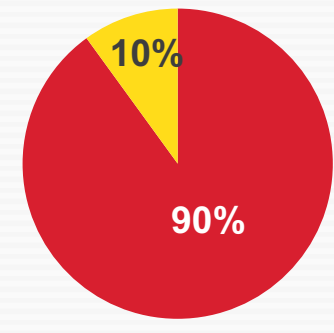
Large Company
>100 full-time
employees



Small Company
21-100 full-time
employees





Startup Company*
1-20 full-time
employees



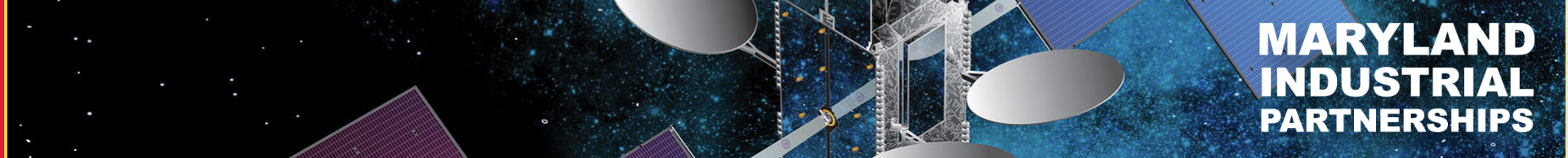
MIPS offers up to \$100K/year in funding for projects for up to two years. With minimum company cash contributions, total project value can be:

- \$200K for startups
- \$250K for small companies
- \$400K for large companies

 Company Share

 MIPS Share

** Plus other requirements*



Proposal Evaluation Process

- 60-day turnaround from application to award
- 2 funding cycles per year, May and October deadlines
- Proposals due: **May 1 and October 15**

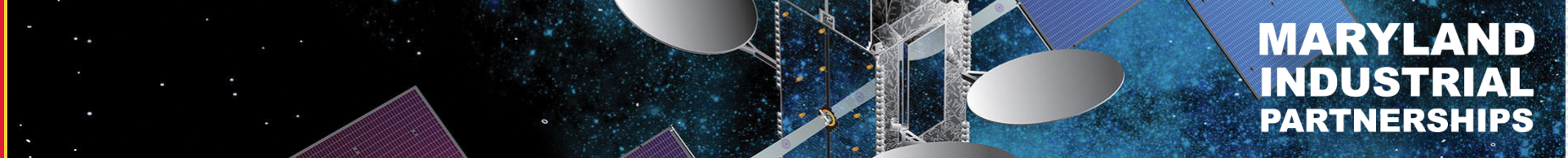


Benefits to Companies

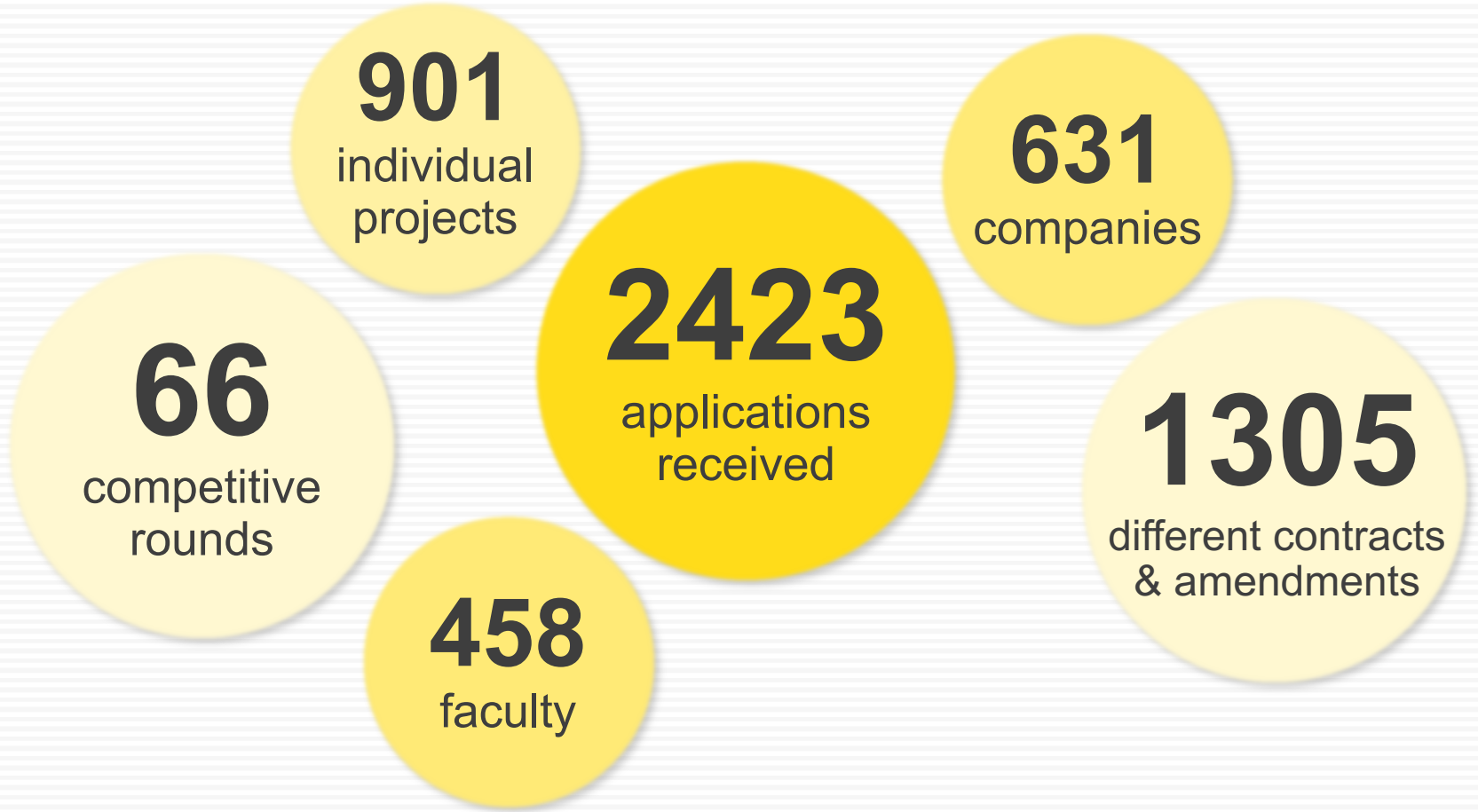
- Financial support for commercially applicable research
- Leveraging assets/outourcing R&D
- Access to university
 - ❖ faculty & student expertise
 - ❖ facilities
- Companies can establish lasting relationships with faculty experts, hire students

Intellectual Property

- Company has option to an exclusive license if new IP is created by the university research team during the MIPS project
- Terms negotiated with campus after the invention
- Projects can further develop company-owned IP, not only university-owned IP
- Confidentiality during project, but not for application



Program Summary



Round 65 – MIPS Projects

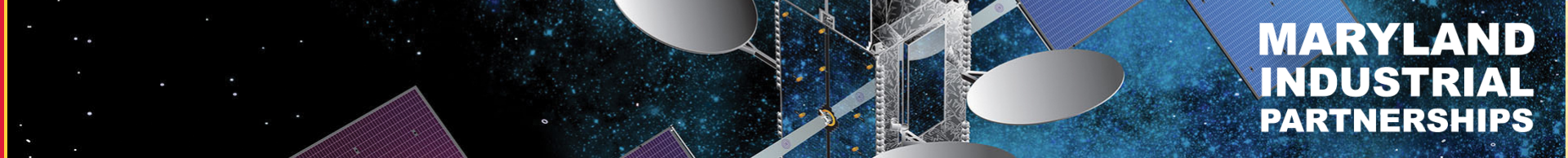
Phase 1 – New Project

- AlgaBT LLC In situ astaxanthin production in microalgae
- BondTrue BondTrue 2.0 pressure applying wound dressing
- BrainCool IQool fever prevention in the neuro-ICU
- Clear-Sips LLC Stainless lids
- FishProGrow Extracting collagen from fish scraps
- GreatAlga Algae in livestock and aqua feed
- HY-TEK Bio* Microbial dynamics in anaerobic digesters
- Intelligent Fusion Tech LIDAR performance assessment in autonomous vehicle
- Native Plant Co. Hemp micropropagation for clean plant production
- Next Step Robotics Instrumented bilateral arm trainer with actuation
- Optimal Solutions Group Government procurement decision support tool
- Pathotrak Inc. Rapid detection of salmonella in poultry
- Protein BioSolutions Multiplexed pH and conductivity monitors
- Rasio Therapeutics Next generation 2-carbon-linked Artemisinin dimers
- SeeTrue Technology Capillary integration for 3D printed microneedles

Phase II – Continuing Projects

- Cykloburn Technologies* Pilot-scale space heating system for poultry house
- Liatris Industrial insulation using low-cost nanopore foam
- Oyster Master* Oyster Master

* Indicates DNR Award



MIPS Impact Data (1987-2020)

Performance of the Top Products MIPS
Research has Contributed to:

Company	MIPS-Related Product	Revenue/Sales
MedImmune	Synagis	\$18.0 billion
Martek Biosciences	Nutritional oils, primarily DHA, added to infant formula and other foods	\$2.9 billion
Hughes Communications	DirecWAY, now called HughesNet	\$20.6 billion
Total:		\$41.4 billion

Maryland Industrial Partnerships (MIPS)

Matching grants for collaborative R&D projects between Maryland companies and University System of Maryland faculty to accelerate product commercialization

63%

Of ALL MIPS-funded startups still in business since 1987

87%

MIPS-funded startups still in business five years later

\$125M

Annual tax revenues to counties from MIPS companies

\$166M

Annual tax revenues to the state from MIPS companies

\$42B

Revenue from top MIPS-supported products

631

Maryland companies have used MIPS to develop products through 901 projects

7,150

Current, direct jobs created

23,000

Total jobs supported

38 to 1

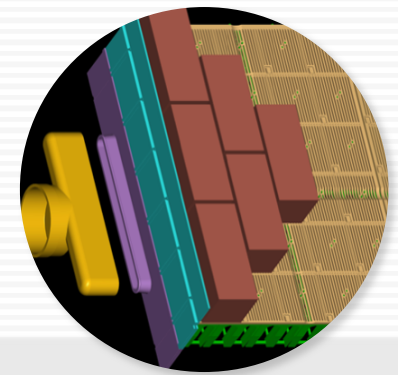
Return on investment, per dollar, to the state

MIPS-DNR Partnership

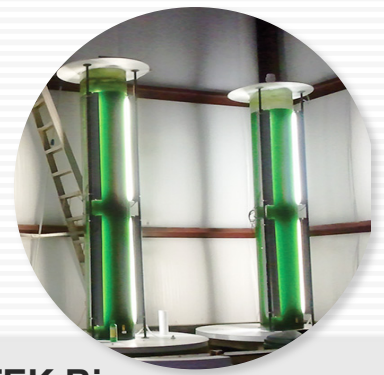
- Maryland Department of Natural Resources (DNR) grants through MIPS for past 10 years
- DNR funded-projects that reduce sediment and nutrient run-off into the Chesapeake Bay are available
- 17 DNR projects are currently underway

MIPS Partnership with Maryland DNR

- Maryland DNR funds MIPS projects targeted at Chesapeake Bay sediment & nutrient reduction
- MIPS receives proposals, DNR & MIPS both do full reviews, DNR selects projects to fund
- Funds 6 to 8 Projects each year



PaverGuide:
phosphorous removal in permeable paving



HY-TEK Bio:
manure to energy process combined with algae-based system removes green-house gases from fossil fuels



Johnny Oysterseed:
longline system for farmed oysters

Keys to MIPS Success

- Engaging university faculty, students, and laboratory facilities in R&D of near-term interest to a company's future
- Requiring the companies involved to pay part of the project costs upfront
- Non-dilutive, non-debt funding for R&D
- Allowing projects to further develop company-owned intellectual property (IP), not only university-owned IP

Synagis

MedImmune/AstraZeneca: Gaithersburg, MD

- Now the among the best-selling biotech drugs in the world (past sales approx. \$18B)
- Used to prevent Respiratory Syncytial Virus (RSV) in infants
- 3100 employees in Maryland



Formulaid

Martek: Columbia, MD

- Patented blend of nutritional oils Docosahexaenoic Acid (DHA) and Arachidonic Acid (ARA), produced from microalgae
- Aids in the development of the eyes and central nervous system in newborns
- Martek has licensed to 13 infant formula manufacturers, representing more than 2/3 of the world's wholesale infant formula market
- Company acquired in 2010
- 95% of US kids under 5 have consumed this product
- \$352M annual revenue, 100 employees in MD

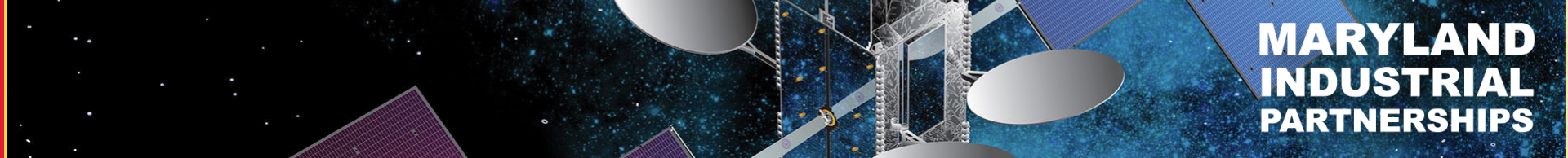


HughesNet

Hughes Network Systems: Germantown, MD

- HughesNet is the world's leading broadband by satellite service. Formerly called DirecWAY, DirectPC.
- Acquired by EchoStar for \$2B
- More than 2.2 million systems ordered or shipped to customers in 100 countries
- System based on design by Dr. John Baras, Professor of Electrical and Computer Engineering at UMD
- \$1.8B annual revenue (as of 2019), 1300 employees in Maryland - 400 attributed to MIPS





Revolutionary Mobile Health System for Chronic Diseases

WellDoc Communications: Baltimore, MD



- FDA-approved diabetes manager system
- 31 employees in Baltimore city
 - ❖ Started with 3 employees at time of crucial first funding from MIPS in 2007
- MIPS sponsored initial pilot study/clinical trial of WellDoc's system
 - ❖ Trial showed major benefits for diabetes patients
- Company poised for further growth as leader in mobile/IT health management for diabetes and other chronic diseases

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