



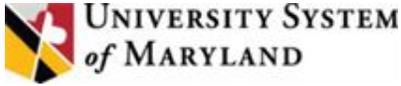
**Board of Regents
Committee on Economic Development and Technology Commercialization
1:30pm on May 5, 2020**

**Zoom Details to Be Provided to Committee Members
Public Listen-Only Access available at Dial in number - 1-443-353-0686, Conference ID - 276 090 512**

Public Session Agenda

USM Office of Economic Development Update – Tom Sadowski, Vice Chancellor for Economic Development (Information Item)

- a. COVID-19 Updates and Activities
 - i. COVID Research & Innovation Task Force
 - ii. Task Force Website
- b. Momentum Fund – Managing Director, Claire Broido Johnson (Information Item)
 - i. Investment update
 - ii. Operating principles overview
- c. Legislative Priorities
 - i. Tech Infrastructure Fund
 - ii. SBIR Matching Grants and Tech Assistance
 - iii. Others
- d. USM Competitiveness Effort
 - i. Key Partnerships
 - ii. Staff and Potential Funding Resources
- e. Venture Development Report – Venture Development Director, Lindsay Ryan
 - i. Report for July to December 2019
 - ii. Venture Outreach



BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION
INFORMATION OR DISCUSSION

TOPIC: USM Office of Economic Development Update

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Tuesday, May 5, 2020

SUMMARY: Vice Chancellor Sadowski will provide an update on COVID-19 activities, including the USM COVID Research & Innovation Task Force, which the Office of Economic Development is helping to lead; legislative priorities; and the USM Competitiveness Effort. Finally, Venture Development Director Lindsay Ryan will provide the Venture Development Activity Report. This item contains and adds upon information that was to be presented at the Committee meeting originally scheduled for March 26, which was rescheduled to May 5 due to COVID-19-related issues.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: There is no fiscal impact

CHANCELLOR'S RECOMMENDATION: n/a

COMMITTEE RECOMMENDATION:

DATE:

BOARD ACTION:

DATE:

SUBMITTED BY: Tom Sadowski (410) 576-5742

USM Economic Development

*Briefing for Regents Committee for Economic
Development Tech Commercialization*

May 5, 2020



USM Economic Development *Agenda*

- **COVID-19 Updates and Activities**
- **Momentum Fund** - Investments to date, Operating Principles, Status (*presented by Managing Director*).
- **Legislative Priorities** - Tech Infrastructure Fund, SBIR, E-nnovation, Etc.
- **USM Competitiveness Effort** - Key Partnerships, Staff and Potential Funding Resources
- **Venture Development Activity Report**



USM Office of Economic Development COVID-19 Updates

- Amplify USM-wide efforts!
- Latest news and outlook
- [Consolidating resource information](#) and COVID-19-related relief, transmission and treatment activities/opportunities developed thus far
- Role of Office of Economic Development
 - Convene, leverage and amplify capabilities
 - Identify and pursue new and enhanced/emerging opportunities

Resource/Capability	Details and Current Efforts	Application
Center for Advanced Sensor Technology	Development of a low-cost, simple ventilat...	Treatment
Department of Chemistry & Biochemistry	Working with biological collaborators and ...	Treatment
The Hilltop Institute	Medical system data analysis and operatio...	Policy and Administration
School of Medicine, Center for Vaccine Develop...	UMB's Center for Vaccine Development an...	Treatment
Institute for Genome Sciences	UMB's Institute for Genome Sciences and ...	Diagnosis
BSL3 Facility at the University of Maryland Scho...	Ongoing COVID-19-related research	Diagnosis Treatment
TechPort Incubator	3D printing and general machine shop tec...	PPE & Supplies
Schools and Departments of Public Health	Experts are helping to inform the public an...	Policy and Administration
Department of Cell Biology and Molecular Gene...	Jonathan Dinman, professor and chair of t...	Treatment
School of Architecture, Planning, and Preservati...	Ming Hu, assistant professor of architectur...	Treatment
Institute for Systems Research	Professor Jeffrey W. Herrmann (Mechanical...	Policy and Administration
Department of Computer Science	Funded by a \$10 million grant from the Na...	Policy and Administration
Cross-Disciplinary	University of Maryland researchers with th...	Policy and Administration

Projects already underway are advancing the discovery and development of solutions: medical interventions and protocols; virology and vaccine research; engineering solutions; and IT, informatics, and artificial intelligence projects that can inform and accelerate the state's public health strategy.



USM COVID-19 Research & Innovation Task Force

Mission

Leverage and mobilize systemwide research and innovations that will engage policymakers, business leaders, and the entrepreneurial community in addressing the COVID-19 pandemic

Steering Committee

UMB, UMCP, UMBC, USM and UMD School of Medicine

Four Pillars of COVID Response Effort

Convene and Connect

Coordinate –Leverage capabilities, note gaps, redundancies and present/emerging opportunities

Identify Resources –Seed Grants, State/Federal Assistance, Industry partnerships

Amplify –Tell comprehensive story in sustained and purposeful manner

Strategic Purpose/Objectives

Mobilize Resources for Positive Impact

Look Long-term and Best Prepare USM to Address Future Pandemics/Crisis

Build awareness of USM's research and development projects centered on COVID-19

Foster Collaboration, both internal and external to USM

2020 Legislative Session

Maryland Technology Infrastructure Fund / Partnership Program (SB 602/HB 1239) *

- Enhancement of TEDCO authority to manage fund and invest in innovation infrastructure projects
 - Target projects will offer 3x-4x external investment to match state funding
 - Working with Gov's Office, legislative leadership, TEDCO, MD Commerce and JHU
 - \$10 million allocated in Governor's supplemental budget contingent on passage of bill
- ❖ ***Bill was to be addressed in May Special session***

Maryland Tech Internship Program (HB 79) – HELD IN COMMITTEE

- Expanding definition of tech business to include non-profits
- Legislative and administrative options being explored to enhance funding

Small Business Innovation Research (SBIR) Grant Assistance – PASSED

- Authorizes TEDCO to provide State matching funds and provide technical assistance to companies pursuing federal grants to further develop and scale technologies
- Testimony offered House and Senate; passed by both chambers and sent to Governor

Maryland E-nnovation Initiative Fund (MEIF) – PASSED

- Reauthorization of program for 5-years at original \$8.5 million funding level



2020 Legislative Session – Other Bills of Interest

End Ineffective Business Subsidies Act of 2020 – *FAILED* **Business and Economic Development Tax Credits – *FAILED***

- Eliminates tax incentives, including the biotech investment tax credit
- Many business community and industry reps across Maryland testified against the bill
- HB 565 more restrictive and includes cyber tax credit and RISE Zone approval phase out = Passed Ways & Means and Referred to Senate Budget & Tax
- Met with key Delegates to submit opposition

Advanced Clean Energy and Clean Energy Innovation Investments and Initiatives (SB 739/HB 1426) – *HELD IN COMMITTEE*

- Establishes an accelerator program coordinated by the Maryland Energy Innovation Institute and requires the Maryland Energy Innovation Institute to coordinate with TEDCO and MIPS.
- Directs \$2.1M in annual funding from the Maryland Strategic Energy Investment Fund to the Maryland Energy Innovation Fund in support of the Maryland Clean Energy Center and Maryland Energy Innovation Institute.

Makerspace Initiative Pilot Program (SB 826/HB 1455) – *HELD IN COMMITTEE*

- Seeks to expand makerspaces in the state. Establishes a program by TEDCO and OpenWorks to provide technical assistance to non-profit entities seeking to establish makerspaces in the state.
- Provides funding for non-profit and local governments to establish or expand makerspaces.
- House version passed and sent on to Senate Budget & Tax Committee



Maryland's (and USM's) Competitiveness

Maryland's economic prosperity is driven by its innovation-led economic growth, harnessed by key **advanced industries**. These industries are anchored by world-class university system, federal research assets and sustained by a significant talent base. According to The Brookings Institution, "Advanced industries encompass the nation's highest-value economic activity ...and are the country's best shot at innovative, inclusive, and sustainable growth." (*Source: Brookings Institution, America's Advanced Industries—February 2015*)

These industries reshaping our global economy include —cyber security, life sciences, AI, quantum computing, robotics, medical devices and clean energy.

Key elements of innovation-led strategy:

- Advance strategic university and industry collaborations
- Incent place-making and/or innovation "ecosystem" development to retain/attract talent, foster collaboration and enable concentration of activity near federal labs and education/research institutions
- Address STEM talent and workforce needs through multi-institutional, industry inspired, traditional and non-traditional approaches
- Attract and leverage significant, long-term public/private investment
- Employ programmatic and opportunistic approach

USM Economic Development *Competitiveness Effort – Key Initiatives*

- Army Research Lab - Grace's Quarters @ Aberdeen Proving Ground (APG)
 - ARL/UMD Robotics Research Collaboration Campus (R2C2)
 - UM UAS Test Site / TechPort North
- Amazon (AWS) Partnership Agreement – Pending
- Industry Partnerships Director – Contract pending
- MD Quantum Alliance... IBM LOI
- NSA STEM Education Partnership Agreement – Pending
- U.S. Economic Development Admin Grant opportunity
 - Pursuing Federal funds to develop cyber business acceleration program
 - USM, UMBC, UB collaboration



ARL/UMD Robotics Research Collaboration Campus – R2C2

Advanced research, simulation and testing facility

- Robotics, autonomous systems, mixed augmented and virtual reality

Shared laboratories and research staff

- Challenge programs
- Connectivity with SoMD (UAS Test Site, Building 3)

Joint curriculum development and upskilling training

- Systems engineering
- Robotics

Student and entrepreneur engagement

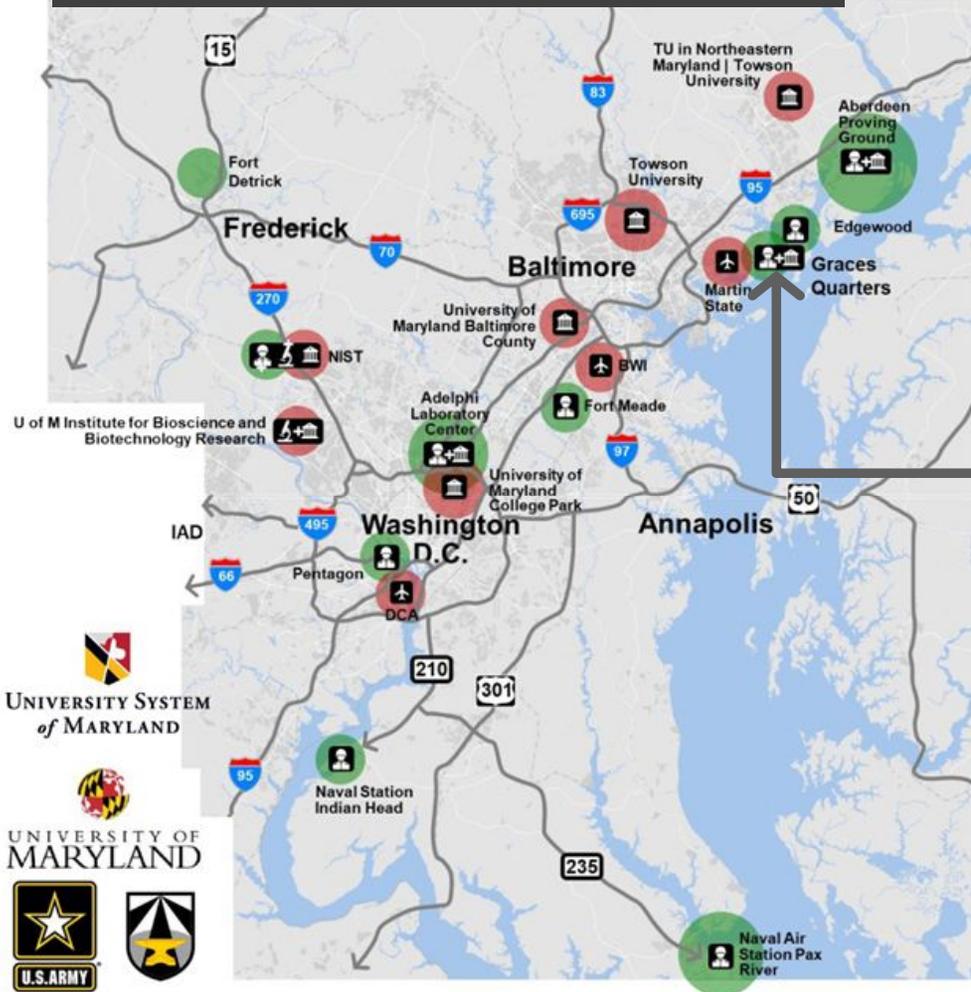
- Internships; class and student group projects
- Incubator/Accelerator programs; MIPS



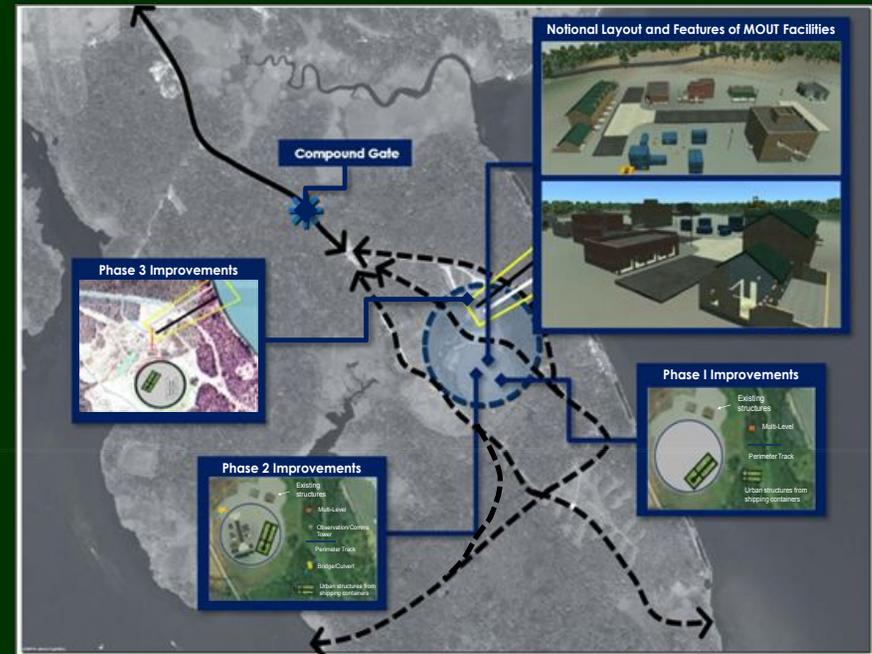
UNIVERSITY OF
MARYLAND



Regional Context



Advanced Robotic Research Collaboration Campus (R2C2) at Graces Quarters, MD



Partnership Plan:

- Link with Army Futures Command and Army Research Lab advanced autonomous maneuver RDT&E facility and program at Graces Quarters
- Leverage local synergies for vehicle and operational testing:
 - Aberdeen Proving Ground High Performance Computing and Additive Manufacturing
 - Air - Martin State Airport and Chesapeake/Atlantic Range (NAS Pax River)
 - Unmanned Aircraft Systems – UAS Chesapeake Corridor

Site Attributes



Overall Site

Main Testing Site Facilities



Key Research Capabilities

- Outdoor Robotics Testing
- Indoor Robotics Testing
- Maker Space
- High Performance Computing
- Multi-Domain Battlespace Features and Complexity
- Wooded and Urban Testing Environments





USM Venture Development Report

Company Characteristics

	2 nd Half 2018	1 st Half 2019	2 nd Half 2019
# Companies Added to USM Portfolio	45	53	45
Minority-Owned*	33%	33%	66%
Woman-Owned*	25%	26%	35%
USM Founder	24%	35%	40%
IP-Based	20%	22%	7%
# Current Portfolio Companies Re-Engaged	15	19	18

- Now includes:
- **Bowie State University**
 - **UMCP's Do Good**

**of percent known, between 70-75%*



USM Venture Development Report

2nd Half 2019: 45 Companies New to USM

Examples from June-December 2019

- **Probeo** – A non-invasive assessment of transplant kidney viability with IP out of UMCP and UMB and a UMCP faculty founder that received an MII Company Formation investment.
- **My Furrs Guitar** – Workshops and a future product kit where children build and customize their own simplified guitar, founded by a UB student.

Industries

Health / Life Science	33%
Cyber, IT, and Educational Technology	25%
Advanced Materials, Energy, and Environmental Technology	11%
Services/Consulting	3%
Retail / Consumer Product or Service	22%
Agricultural Technologies	3%
Others	3%

In their first six months of interacting with USM...

21 companies joined an incubator or other space

23 companies received capital

25 companies participated in a program



28 companies (62%) leveraged more than one type of USM resource!



USM Venture Development Report

2nd Half 2019: USM-Affiliated Capital Deployed

Source of Capital	Amount Deployed	# Companies
Momentum Fund	\$ 845,000	4
MII Investment	\$ 150,000	1
Other Equity Investment		0
MIPS Funding	\$ 1,680,500	18
Other Non-Dilutive Capital*	\$ 138,473	12
TOTAL CAPITAL DEPLOYED	\$ 2,813,973	35

Compare to previous period: \$ 3,178,393 46

**includes in-kind capital*



USM Venture Development Report

Venture Outreach

USM's Venture Development Director outreach goals:

- Complement great work at the institutions to foster startups and small businesses.
- Help startups and small businesses “spin into” the University System and leverage its resources.

In 2019, USM Venture Development Director fielded over 139 requests for assistance and completed over 100. Of the completed requests:

- 51% came from entrepreneurs affiliated with the USM
- 20% came from USM economic development partners
- 15% came from entrepreneurs NOT (yet) affiliated with USM

The nature of requests varies. Of the **67 requests served from 40 entrepreneurs in 2019**, approximately:

- 60% involved connecting an entrepreneur to a resource or person
- 40% seek advice from USM directly



BOARD OF REGENTS

SUMMARY OF ITEM FOR
INFORMATION

TOPIC: USM Maryland Momentum Fund Update

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Tuesday, May 5, 2020

SUMMARY: Ms. Broido Johnson, Managing Director, will present updates on the USM Maryland Momentum Fund. With the help of USM stakeholders and MMF Advisory Board, Ms. Broido Johnson has codified operating principles for the Fund, including the goals, governance, and investment criteria. The Fund has invested \$4.0M into 13 companies, \$2.7M of which came from the \$10M allotment from the USMO, and \$1.3M of which came from USM institutions co-investing alongside USMO as part of the Fund, furthering its impact. With other companies approved for funding contingent upon final match, the total committed funds are \$4.8M. Reserve funds will be required to provide additional investment to promising companies in the Momentum Fund portfolio, and Ms. Broido Johnson has developed a strategy for that, which will be particularly important due to the economic stress caused by COVID-19 disruptions. The Fund is assisting current portfolio companies as they navigate this new environment. The Fund is still investing during these strained economic times and is continuing to increase the top of the funnel, with the portfolio becoming more diverse with each investment.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: There is no fiscal impact

CHANCELLOR’S RECOMMENDATION: n/a

COMMITTEE RECOMMENDATION: _____ DATE: _____

BOARD ACTION: _____ DATE: _____

SUBMITTED BY: Tom Sadowski (410) 576-5742

USM Maryland Momentum Fund

*Briefing for USM Board of Regents Economic
Development and Technology Commercialization*

Claire Broido Johnson

May 5, 2020



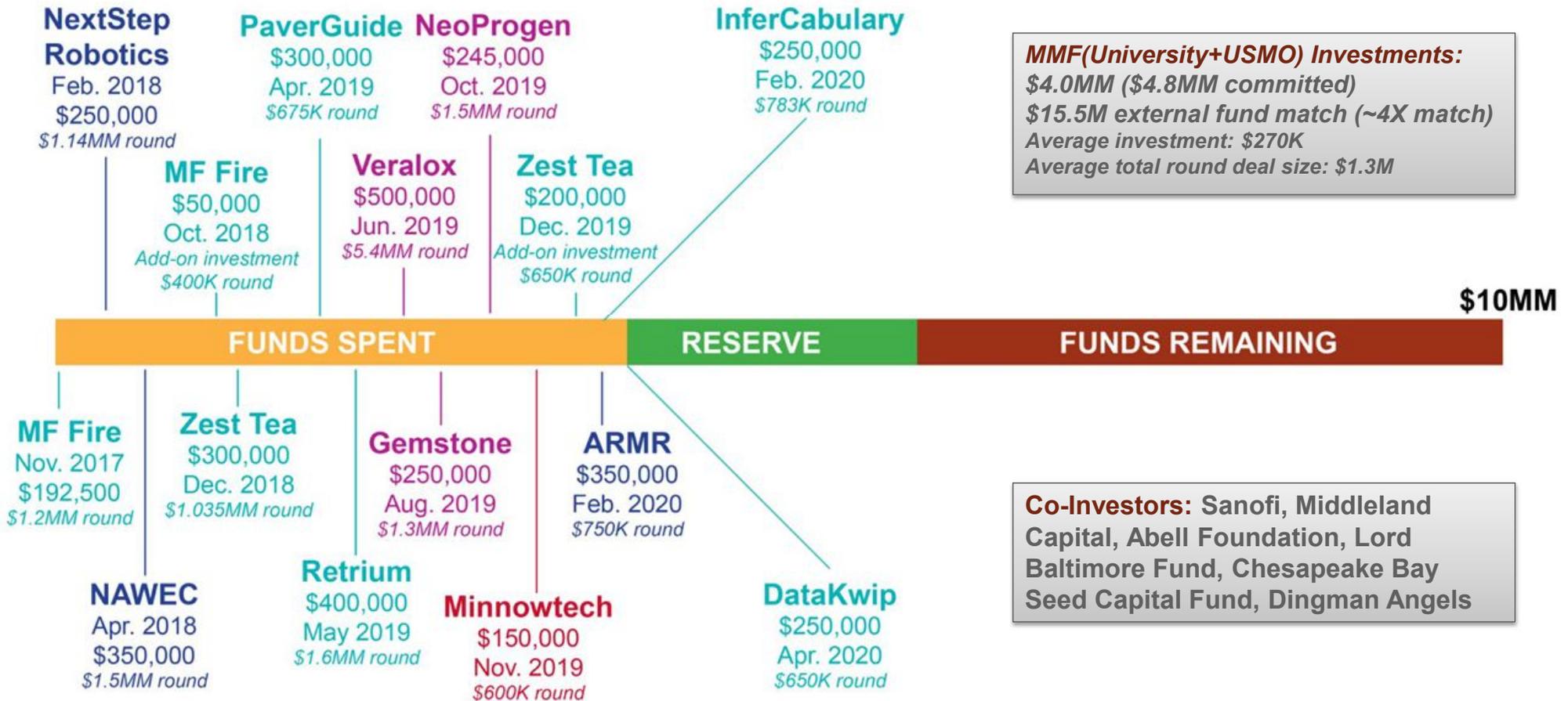


Momentum Fund: Overview

- **\$10MM University System of Maryland investment fund**
 - Established by USM Board of Regents June 2016. Investments started mid-2017
 - Funds from USM Fund Balance, allocated over four-year period
 - MMF Executive Committee recently affirmed that \$10 Million comes from USMO and is not inclusive of USM Institutions' "matching investment"
 - Goal of attracting "co-investment" from non-USM entities at 1:1 rate
- **Investing in the most promising USM-affiliated technologies and people**
- **Organization**
 - Private investment community serves on Advisory Board to help us make the best decisions
 - Operating Principles and Guidelines, plus Executive Committee to ensure good processes
- **Eligibility criteria**
 - Located in Maryland and Affiliated with a USM institution:
 - University-owned intellectual property
 - Founded by University faculty, staff, student, or alum
 - Located in a University-affiliated research park or incubator



Investments





Portfolio Companies



UMCP IP and Alum
World's most advanced wood burning stove



UMB IP, Towson Alum
Exoskeleton robot to reverse foot drop for stroke victims.



UMCP IP, Alum
Advanced pulse jet engine



UMCP Alum
High caffeine tea, energy drink product



UMCP IP
Advanced semipermeable pavement system



UMCP Alum
Agile software development management product



UMBC and UMCP Alums
Tissue regeneration via stem cells



UMB IP and Alum
Anticoagulant drug, therapeutics for rare blood disorders



UMB IP and Faculty
Cell-based therapy for cardiovascular disease



UMCES Alum
Sonar to measure shrimp biomass



BioPark Tenant
Next-gen tourniquet



Towson Alum, TU Incubator startup
Ed-tech vocabulary app



UMCP Alum
Software platform to manage energy across buildings



Operating Principles: Goals & Governance

Goals

- Catalyzing investment in early stage start-ups in Maryland and providing funding alongside other sources of private capital
- Generating financial returns which will be reinvested in future start-ups
- Accelerating the success of USM start-ups and providing a bridge to larger financings
- Expanding economic development in the State of Maryland
- Recruiting and retaining innovative students and faculty in the State of Maryland
- Supporting the development of the innovation ecosystem in key sectors and USM centers of excellence

Governance

- Advisory Board - provides non-binding advice and recommendations to MMF on funding decisions
- Executive Committee - guides the policy and direction of the MMF and it also makes all final funding and non-funding decisions.
- Managing Director - performs due diligence, gathers expert panels, provides due diligence to the **Advisory Board** and the **Executive Committee**, assists when needed to raise co-investment, manages the closing process on behalf of USM

Operating Principles: Investment Criteria

1. Ability to attract follow-on investment
2. Significant market validation (note: life sciences may not have this criteria met)
3. A strong coachable management team
4. Clear, actionable milestones
5. A planned or projected exit in an industry appropriate time frame
6. A valuation or valuation cap of less than \$10 MM
7. Evidence of solid operating principles and practices
8. Sustainable, defensible competitive advantage
9. If a scientific investment, evidence of receipt of non-dilutive grant funding