



**Board of Regents
Committee on Economic Development and Technology Commercialization**

**June 12, 2019
Universities at Shady Grove
Building II, Multipurpose Room
9630 Gudelsky Dr, Rockville, MD 20850**

Public Session Agenda

- (1) **Featured Start-Up: Mindstand Technologies** – Michael Ogunsanya, CEO and Eric Solender, CTO (Information Item)
- (2) **UMBC Training Centers** – Kent Malwitz, President, UMBC Training Centers (Information Item)
- (3) **Proposed Amendment to USM Intellectual Property Policy** – Lindsay D’Ambrosio, USM Venture Development Director (Action Item)
- (4) **USM Office of Economic Development Update** – Tom Sadowski, Vice Chancellor for Economic Development (Information Item)
 - a. Momentum Fund
 - b. Venture Development and Innovation Metrics
 - c. Workforce and Talent Development
 - d. USM Economic Development Strategy for FY 2020



BOARD OF REGENTS

**SUMMARY OF ITEM FOR
INFORMATION**

TOPIC: Featured Startup – Mindstand Technologies

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Wednesday, June 12, 2019

SUMMARY: Michael Ogunsanya, CEO and Eric Solender, CTO, of Mindstand Technologies will present the progress of their startup to date. Mindstand uses artificial intelligence to monitor online communities for harassing language, hate speech and indicators of potential/planned destructive behavior. Michael and Eric are undergraduate students at UMBC and officially formed the company in September of 2018.

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

FISCAL IMPACT: There is no fiscal impact

CHANCELLOR’S RECOMMENDATION: n/a

COMMITTEE RECOMMENDATION:

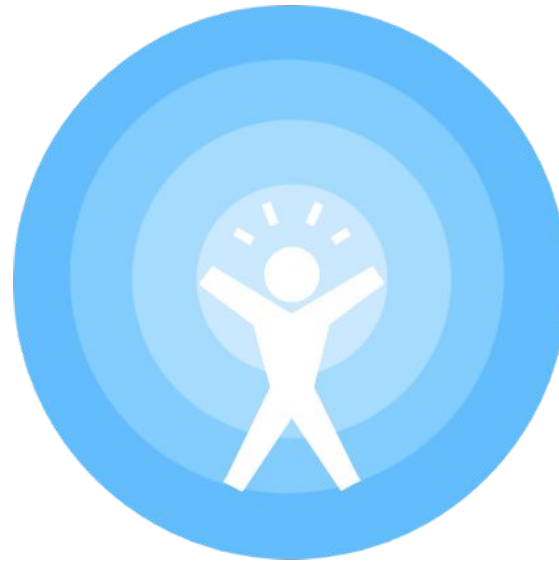
DATE:

BOARD ACTION:

DATE:

SUBMITTED BY: Tom Sadowski (410) 576-5742

MindStand



Technologies

Fostering a healthy online community, one post at a time.

The Problem



Harassment in the workplace can lead to:

- Lost productivity
- High turnover rate
- Lawsuits

This can cost companies **\$50,000-\$250,000+** in damages.



MindStand provides an **Artificial Intelligence platform** trained by **Clinical Psychologists**.

Threat Detection

- Verbal Harassment
- Sexual Misconduct
- Emotional Distress
- Hate Speech

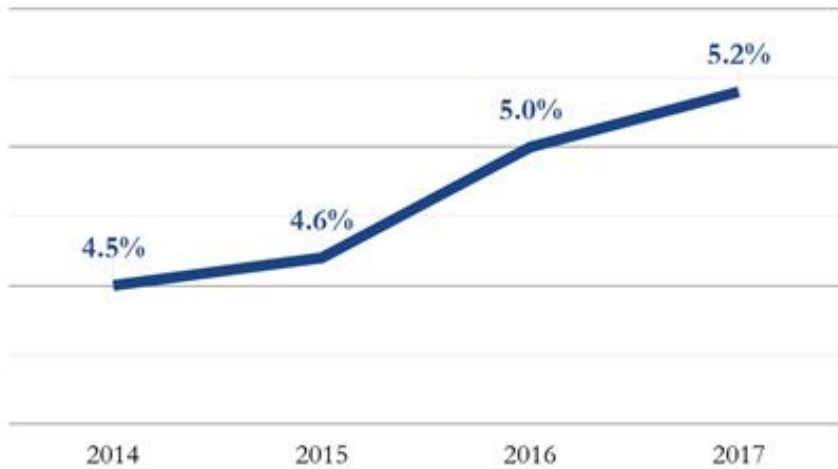
Organizational Trends

- “At Risk” Members
- Weekly Breakdowns
- Personalized Reporting
- Company-wide Anomalies



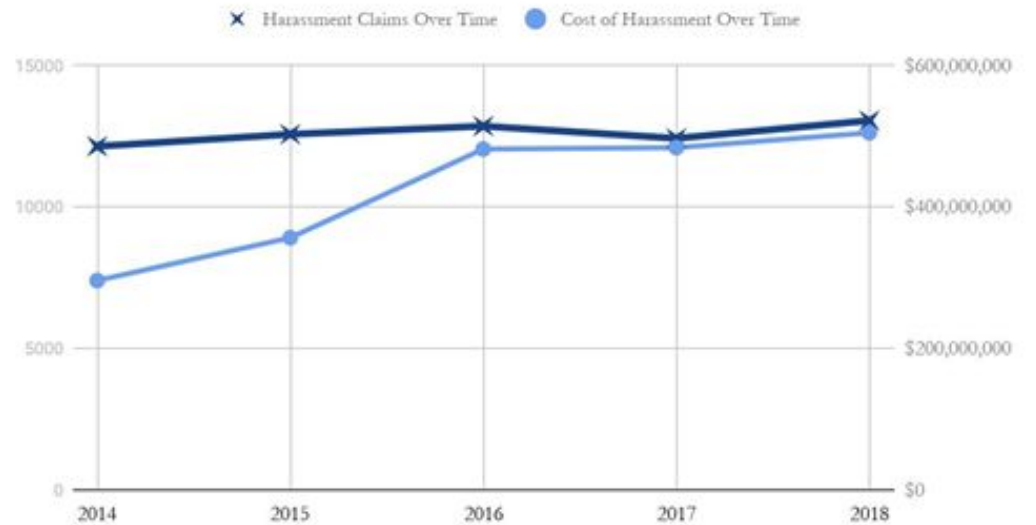
Why Now?

% Americans who Work Remotely/Online



US Census (2018)

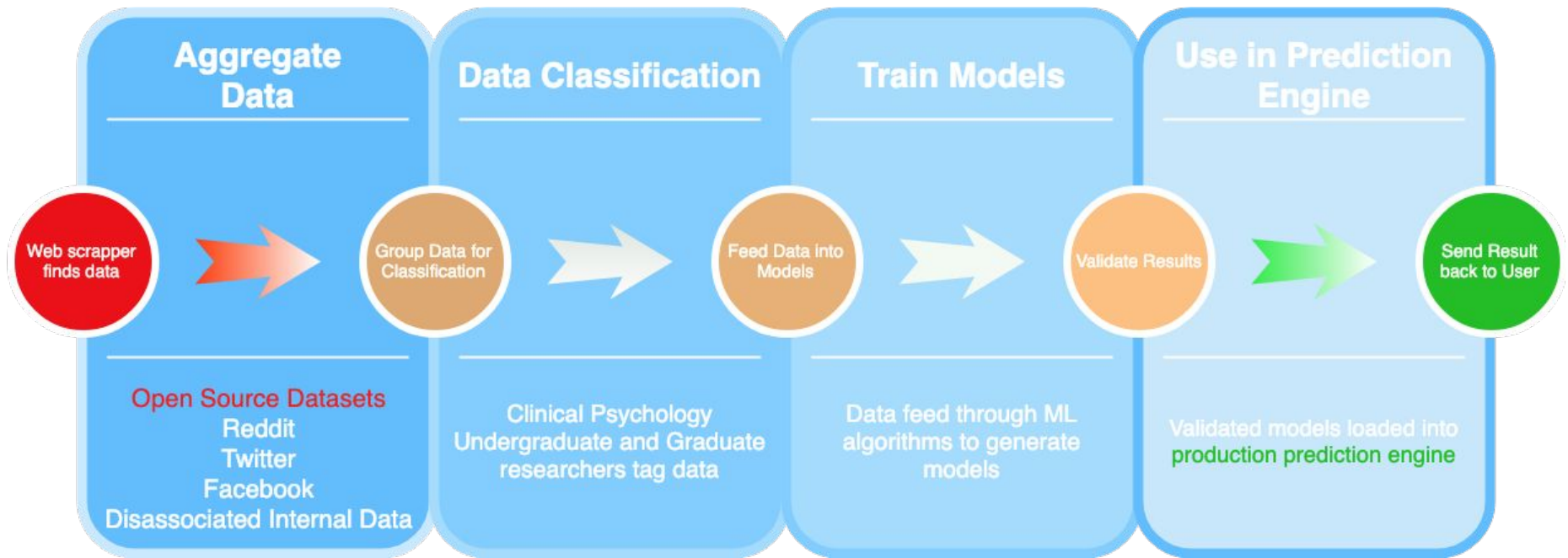
Harassment over time



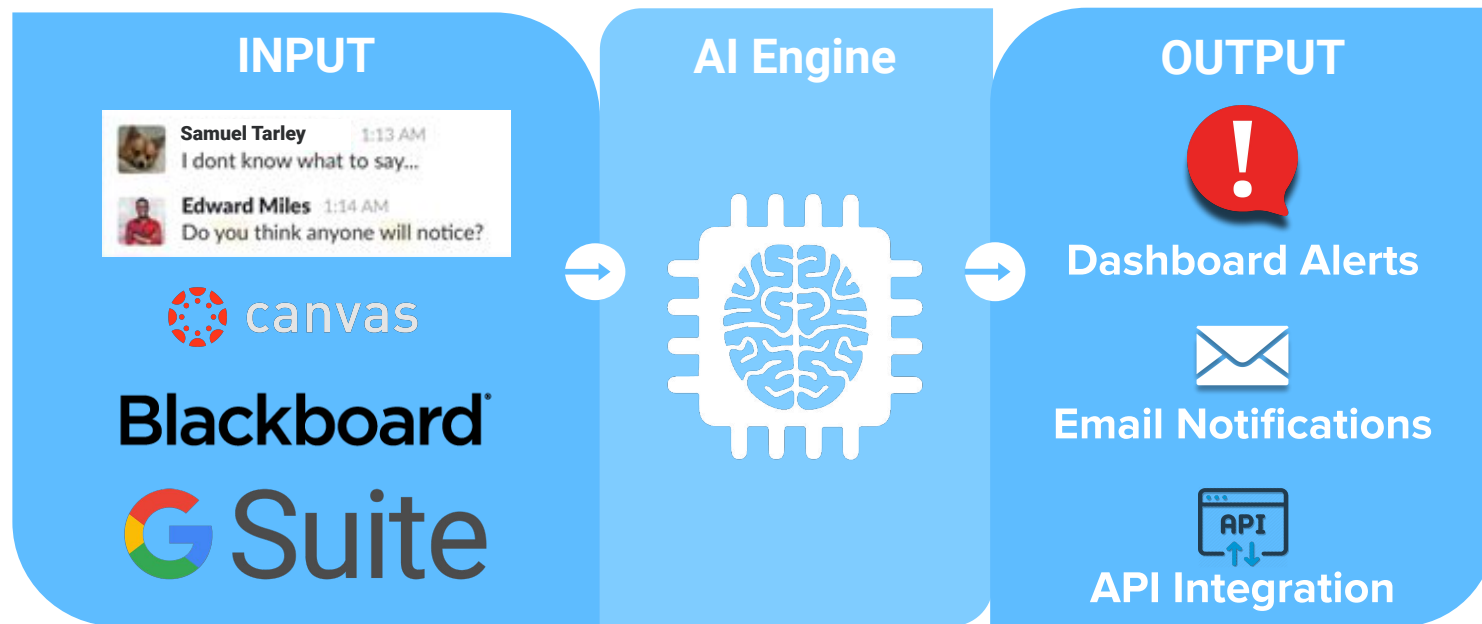
Equal Employment Opportunity Committee (2009)



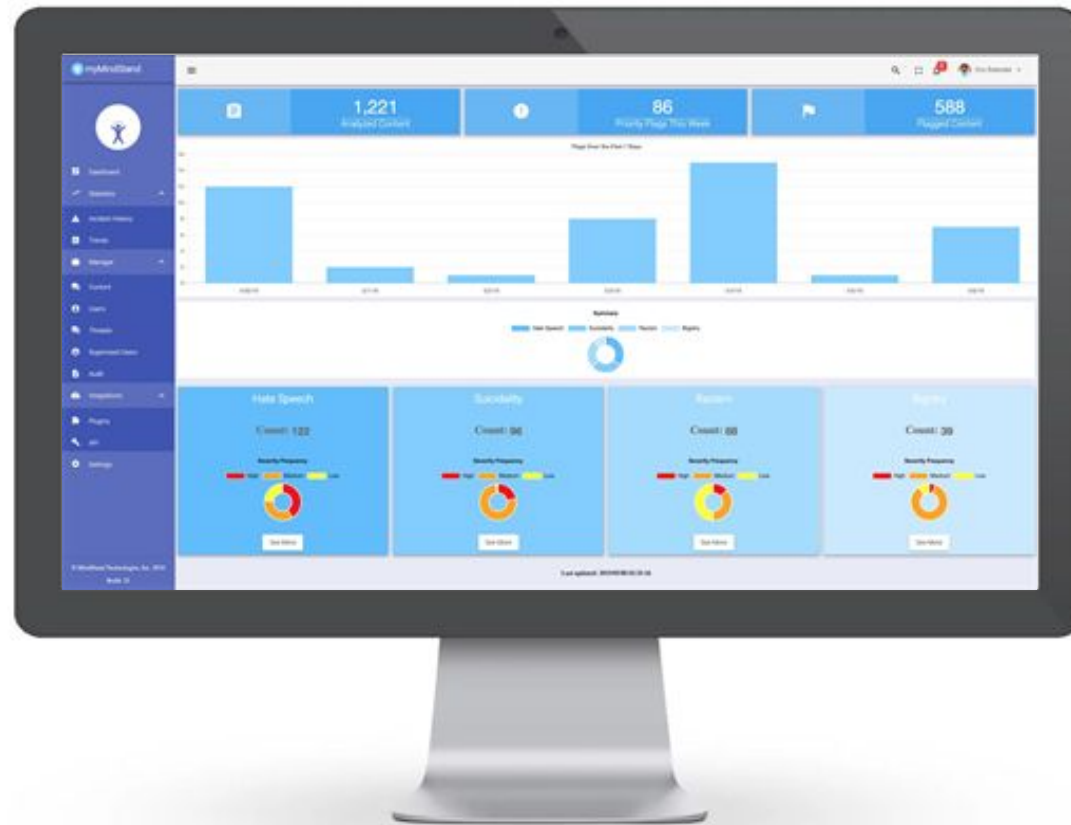
Ensuring Data Quality



AI In Action



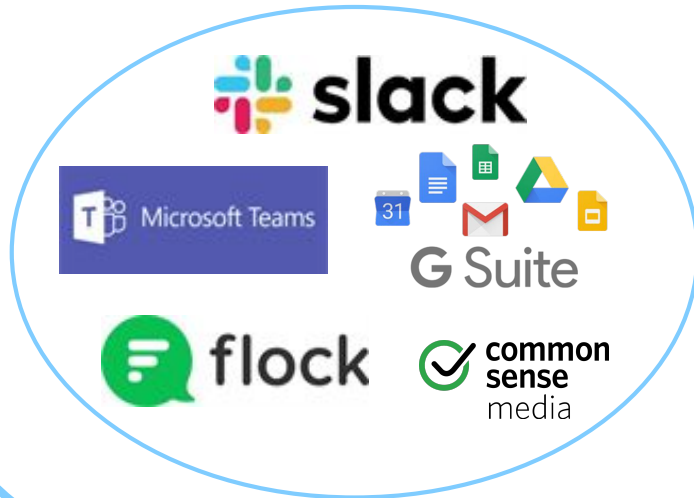
MindStand Dashboard



Market Segmentation

TAM: \$2 Billion

Primary Market: B2B/HR



A collection of logos for B2B/HR software, enclosed in a solid blue oval. The logos include Slack, Microsoft Teams, G Suite, flock, and common sense media.

Secondary Market: Ed Tech



A collection of logos for Ed Tech, enclosed in a dashed blue oval. The logos include Moodle, Blackboard learn., UMBC, Pearson, and canvas.



















Future Market: Social Media



A collection of social media logos, enclosed in a dotted blue oval. The logos include Facebook, Instagram, Snapchat, and Twitter.



Competition

| |  |  |  |  |
|---------------------------------------|--|---|---|---|
| Identifies Troubling Online Behaviors |  |  |  |  |
| Detects Suicidal Language | |  | |  |
| Historical Trend Reporting | | |  |  |
| On-Premises + Unlimited Plugins |  | | |  |
| Markets |  Gaming |  K-12 Institutions |  B2B |  B2B K-12 Institutions University & Higher Ed. |



Know When It Happens Today

| | | |
|--|--|--|
| <h2>\$60</h2> <p><i>Yearly per User</i></p> <p>1-250 users</p> | <h2>\$48</h2> <p><i>Yearly per User</i></p> <p>251-999 users</p> | <h2>Fee Negotiable</h2> <p>1000+ users</p> |
| <p>Which includes:</p> <ul style="list-style-type: none">• Weekly and Monthly Reports• Customizable Audit System• Oauth2/SAML Integration• Real Time Analytics• Unlimited Plugin Integrations• CSV Exports <p><i>24/7 Customer Support</i></p> | | |



Who is MindStand?



Michael Ogunsanya
Chief Executive Officer

*Successful \$1.9m proposal for
GE Aviation*



Eric Solender
Chief Technology Officer

*Gained global recognition
for ML concussion
research*



Jason Schiffman PhD
Chief Clinical Psychologist

*200+ Publications
\$7 million Research Funding raised*



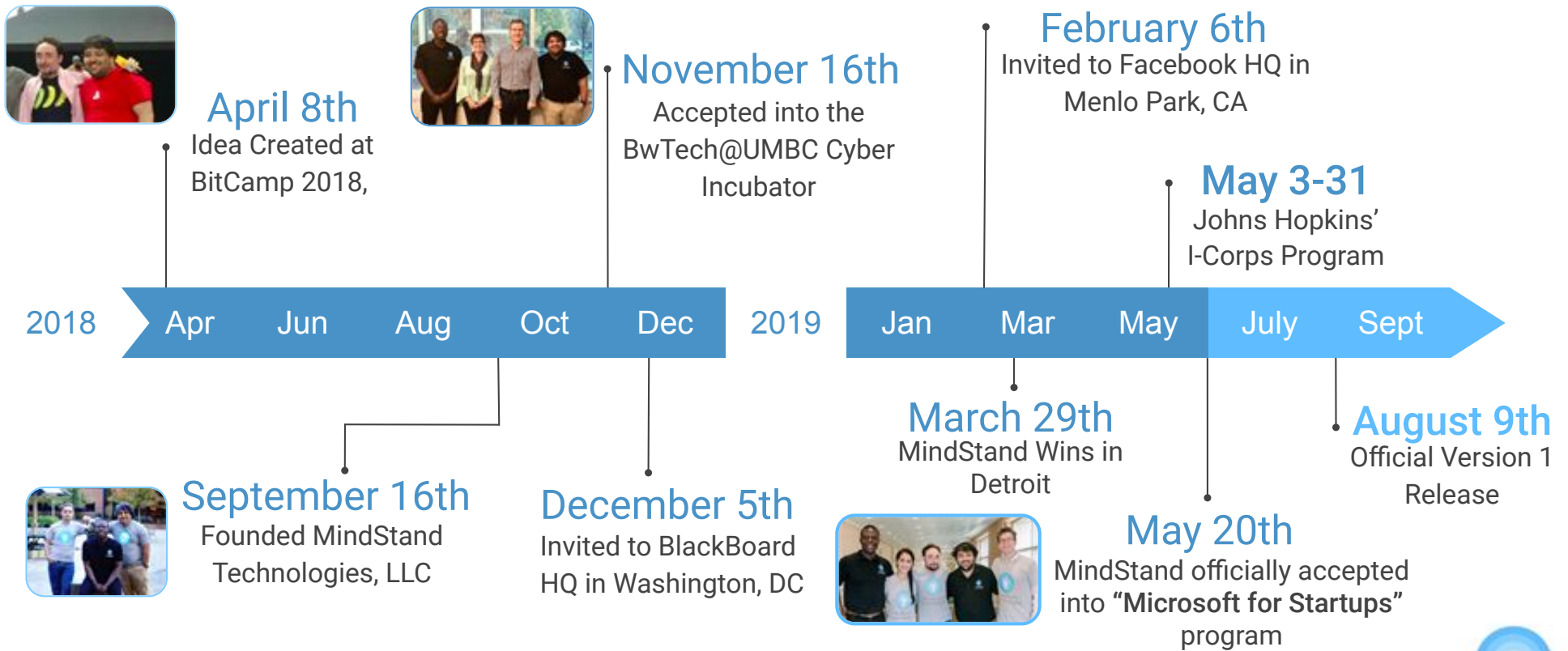
Nikita Wootten
Chief Data Scientist

AI Researcher



MindStand Technologies

What we've **done** and where we're **going**



Our Partners





MindStand Technologies

Michael Ogunsanya
Co-Founder and CEO
E: michael@mindstand.com
P: (301) 448-5439

Eric Solender
Co-Founder and CTO
E: eric@mindstand.com
P: (301) 704-0405

Security

Endpoints are protected against:

- Denial of Service Attacks
- “Man in the Middle” Attacks
- Cross Site Scripting Attacks
- Drive by Attack
- Cypher Injection Attacks

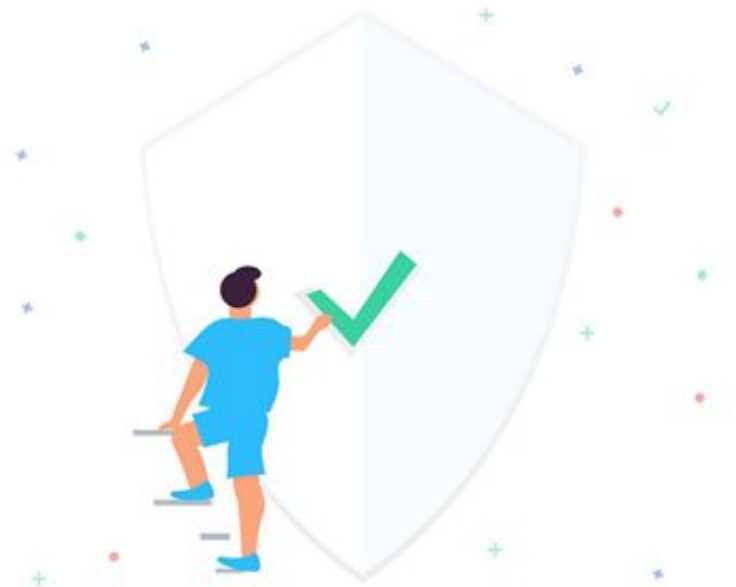
Communications secured with TLS and SSL

Data is encrypted and stored behind multiple firewall layers

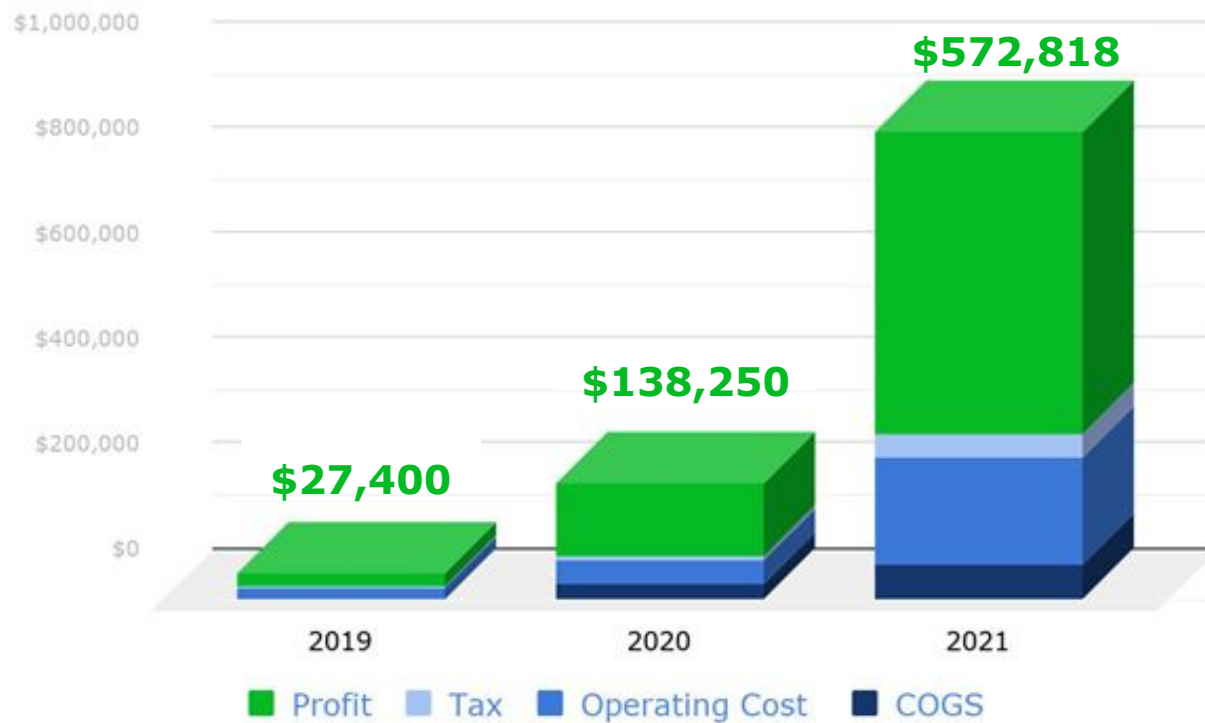
Authentication

- Native Oauth 2.0 support
- SAML integrations

For a comprehensive break down, email
info@mindstandtech.com



Profit Projections





BOARD OF REGENTS

SUMMARY OF ITEM FOR
INFORMATION

TOPIC: UMBC Training Centers

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Wednesday, June 12, 2019

SUMMARY: Kent Malwitz, President of UMBC Training Centers, will provide an overview of their innovative approaches to workforce training and development, including cyber/ IT and software development certification and apprenticeships. Presentation will focus on both current activities and plans for scaling global, training program delivery.

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



UMBC
Training Centers

The logo is set against a black background. To the right of the text is a decorative pattern of yellow and black diagonal stripes, and further right is a red background with a white stylized 'T' shape.

UMBC
Training Centers

The text is centered on a white background. 'UMBC' is in a large, red, serif font, and 'Training Centers' is in a smaller, black, serif font below it.



Purpose of UMBC Training Centers

Mission - To improve the lives of our students and the performance of organizations through the delivery of high quality professional and technical training.

Strategy - Combine the academic rigor of the university with the nimble LLC platform to focus on filling current talent gaps and providing new career opportunities for “non-traditional” students.

UMBC

Training Centers

Background

- Established in 2000 as a Limited Liability Company (LLC) in Maryland
- Initially funded via venture capital (\$1M)
- 100% owned by UMBC Training Enterprises, Inc., a non-profit 509(a)(3) corporation
- Focused on professional development and “non-traditional” workforce development in strategic talent areas such as information technology and cybersecurity

UMBC

Training Centers

Offerings

- Customized professional development training programs for organizations
- Accelerated workforce development programs for career starters and career changers
- Talent from “alternative” pathways
- All programs can be delivered as classroom-based or live online (synchronous) and some are available as self-paced online (asynchronous)

UMBC

Training Centers

Program Areas

- Big Data/Data Analytics
- Cloud Computing & DevOps
- Computer & Network Administration
- Cybersecurity
- Red Hat Linux Certification
- Programming & Software Development
- Project Management & Agile
- Human Resources
- Management, Leadership and Innovation
- Allied Health

UMBC

Training Centers

Recent Accomplishments

- Established our Certified Cyber Analyst/Operator (CCA/O) program as a Registered Apprenticeship in MD and as a transitioning military program at Fort Meade
- Awarded two large contracts with the Department of Defense to deliver technology training to DoD personnel in key CONUS and OCONUS military installations (\$5M+/year). Corresponding expansion to Georgia, Texas, Colorado and Hawaii.
- Delivered \$9M in training services to DoD, Federal Civilian and Commercial customers as well as individual students
- Established partnership with UMUC to combine the strengths of each organization to support its customers and students

UMBC

Training Centers

Outlook

- Revenues are expected to be \$12M in 2019
- Professional development and workforce development programs continue to be highly relevant to employer demands
- We are at the very beginning of the adoption of new strategies, such as apprenticeships, in the fields of information technology and cybersecurity
- The lack of talent in these areas is a growing statewide (and national) problem growing faster than our capacity to address it.
- Limited resources prevent us from being able to scale to adequately support other geographies (ex. Southern MD, Aberdeen, Baltimore City)

The logo for UMBC Training Centers is displayed in white text on a black background. The background of the slide features a decorative pattern of yellow and black diagonal stripes, and a red section with a white graphic element on the right side.

UMBC

Training Centers

Contact

Kent Malwitz

President, UMBC Training Centers

(443) 692-6600 x7149

kmalwitz@umbctraining.com

www.umbctraining.com



SUMMARY OF ITEM FOR ACTION

TOPIC: Change to USM Policy IV - 3.20 - INTELLECTUAL PROPERTY Based on Report in Response to Resolution to Study USM Institutional Patent Protection

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Wednesday, June 12, 2019

SUMMARY: Amend USM Policy IV - 3.20 - INTELLECTUAL PROPERTY - VI. PATENTS - C. Responsibilities of the University as follows:

3) Commercialization ~~by inventors~~. The University, at its discretion and consistent with the public interest, may license intellectual property to the inventors and other entities on an exclusive or non-exclusive basis. Potential licensees ~~inventors~~ must demonstrate technical and business capability to commercialize the intellectual property. Any license that allows the licensee to enforce patent rights against infringement should include terms to ensure a pathway to commercialization. Agreements with inventors shall be subject to USM Bylaws, Policies and Procedures of the Board of Regents review and approval of conflict of interest issues in accordance with applicable University policy.

Background: On November 9, 2017 a resolution was made by the Committee to review current practices that monitor and protect USM Institutional patents in an aim to ensure that USM is not vulnerable to patent trolling by unrelated third parties. On December 7, 2018, the Committee accepted a report and its recommendations and further recommended the development of an official USM policy. The proposed language solidifies the best practice (and for federally-funded research, the Bayh-Doyle requirement) of promoting commercialization of university technology by licensees.

ALTERNATIVE(S): Reject the proposed changes or recommend revision.

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 Bylaws, Policies and Procedures of the Board of Regents



IV - 3.20 - UNIVERSITY SYSTEM OF MARYLAND POLICY ON INTELLECTUAL PROPERTY

(Approved by the Board of Regents, February 8, 2002; Amended by the Chancellor, July 7, 2004; Amended by the Board of Regents, February 13, 2009, Amended December 15, 2017)

I. INTRODUCTION

The primary mission of universities is to create, preserve, and disseminate knowledge. When that knowledge takes the form of intellectual property, a university must establish a clear and explicit policy that will protect the interests of both its creators and the university while ensuring that society benefits from the fair and full dissemination of that knowledge.

II. EFFECTIVE DATE

This policy will be effective on July 1, 2002 ("Effective Date"). It will apply to all intellectual property disclosed to the University on or after July 1, 2002. Intellectual property disclosed to the University prior to the Effective Date will remain subject to the USM Policy on Patents effective May 31, 1990 or the USM Policy on Copyrights effective May 31, 1990, unless otherwise agreed by the University and all creators of the intellectual property (or the heir or assignee of any creator's share of Revenue).

III. DEFINITIONS

The terms defined in this section are given special meanings in this policy and appear capitalized throughout.

- A. **Personnel.** All University employees, full-time and part-time, including Student Employees acting within their Scope of Employment; non-employee consultants; visitors; and others using University resources.
- B. **Resources Usually and Customarily Provided.** All resources provided unless specified otherwise, in advance and in writing, as a condition of using the resource.
- C. **Revenue.** Consideration paid in cash or equity by a third party in exchange for specific intellectual property rights. Revenue does not include research support in any form (e.g., sponsored research agreements, restricted grants, unrestricted grants, or equity), tuition income, and contract income received by the University including contract income received in lieu of tuition.
- D. **Scope of Employment.** All activities, related to the field or discipline of the faculty member's appointment, including the general obligation of a faculty member to teach, to do creative work, and to conduct research, or related to the employment responsibilities of non-faculty Personnel, and for which Personnel receive compensation from the University, where compensation is any consideration, monetary or otherwise.
- E. **Sponsored Research Agreements.** Grants, contracts, cooperative agreements, and other agreements under which research or development activities will be carried out, or other

USM Bylaws, Policies and Procedures of the Board of Regents

agreements administered by the University that relate to intellectual property created under the agreement.

F. Students. Persons enrolled in a University, acting within the course of their academic work, including, but not limited to, undergraduates, graduate and professional students, non-degree students, and not-for-credit students.

G. Student Employee. A Student who is also a University employee, acting within the Scope of Employment.

H. University. One of the following: a constituent institution of the University System of Maryland, the University of Maryland Center for Environmental Science, or the University System of Maryland Office.

IV. GENERAL PROVISIONS

A. Purpose. The purpose of this policy is to set forth the terms, conditions, and procedures whereby the University System of Maryland, Personnel and Students establish and maintain their interests in intellectual property created by or used at USM institutions, taking into account intellectual property laws governing patents, copyrights, trademarks, and other forms of intellectual property. This policy governs the ownership and protection of such property at the University.

B. Scope of Application. All Personnel and Students shall comply with this policy, as amended from time to time. This policy shall be included in the faculty handbook, as directed in Board of Regents Policy II - 1.00, Section I. B.2.

C. Protecting University Interests. Personnel and Students may not (1) sign agreements or take any action on behalf of the University unless they are authorized agents of the University, or (2) make unauthorized use of the name of the University. In cases where Personnel or Students take such actions, the University is not bound to honor those actions or agreements.

D. Acquisition. The University may acquire ownership or use of intellectual property by assignment, license, gift, bequest, or any other legal means. The University shall administer such intellectual property in accordance with this policy unless otherwise required by the terms of the acquisition.

E. Administration of Intellectual Property which is not University-owned. At the request of the owner, intellectual property not owned by the University may be administered by the University. In such cases this policy shall govern that administration unless the University agrees otherwise in writing.

F. Sponsored Research

1) Ownership. Sponsored research agreements shall provide that all intellectual property developed by Personnel or Students under such agreements shall belong to the University; however, the University, on a case-by-case basis (as circumstances warrant, and consistent with applicable private use restrictions e.g., under bond covenants), may agree to assign ownership or licensing rights to the sponsor, subject to the University's right to use and reproduce the intellectual property for research and educational purposes. The University's president or designee shall approve any such agreement.

USM Bylaws, Policies and Procedures of the Board of Regents

2) Federal Sponsorship. Any research project that is funded, in whole or in part, by a federal agency is subject to specific federal statutes and regulations. Those regulations generally allow the University to elect title to any invention that is conceived of or first actually reduced to practice in the performance of federally-funded research with the purpose of commercializing the invention, subject to the government's rights which include reservation of a nonexclusive license to use the invention world-wide for government purposes.

G. Implementation Authority. The Chancellor shall have the authority and responsibility for implementation and coordination of this policy. Each president shall have the authority and responsibility to implement and coordinate this policy within the president's University. Subject to the other provisions of this policy and applicable law, the presidents may enter into agreements with respect to ownership, licensure, disposition of intellectual property, disposition of royalty income, resolution of disputes, and other matters related to intellectual property in which that University has an interest under this policy, and may register intellectual property; seek protection under copyright, trademark, and/or patent laws; and enforce, defend, manage, and take any action relevant to the institution's intellectual property rights that is necessary for the proper administration of this policy.

V. COPYRIGHTS

A. Ownership by Creator. Personnel and Students shall have all rights in copyrights of their work, subject to section V.B. below, with the following exceptions.

- 1) Scope of Employment. The University owns all rights in copyright for work produced by non-faculty Personnel within the Scope of Employment.
- 2) Sponsored Research Agreements. The University owns all rights in copyright for work produced by Personnel or Students under Sponsored Research Agreements.
- 3) Signed agreements. The University owns all rights in copyright for all work as stated in written agreements.
- 4) Computer Programs and Software. Ownership of copyrighted software and computer programs is addressed in Section VII.
- 5) Technology-mediated Instructional Materials. Ownership and use of technology-mediated instructional materials is addressed in Section VIII.

B. Right of Use

- 1) University rights. The University shall have the right to use and reproduce for research and educational purposes scholarly and original works, whether owned by the University, Personnel, or Students, for which it has provided resources.
- 2) Additional Rights. If the University wishes to secure additional rights in copyrighted work, it shall so specify in writing at the time it provides resources beyond Resources Usually and Customarily Provided or other consideration.

C. Responsibilities of Personnel and Students

USM Bylaws, Policies and Procedures of the Board of Regents

- 1) Assignment. For work to which the University has or had rights of ownership or use under this policy, Personnel and Students shall, upon request, execute all legal documents designed to assist the University, or its assignees, in proving or benefiting from such rights, as deemed appropriate by the University.
- 2) External Collaborations. See Section IV.C and the Policy on Professional Commitment of Faculty, BOR 41.0 II-3.10.
- 3) Use of Copyrighted Materials. All Personnel and Students are responsible for complying with University guidelines on the fair use of copyrighted material and for complying with the requirements of copyright law, including obtaining required permissions to use copyrighted material.

D. Responsibilities of the University

- 1) Agreement Regarding Use of Resources Beyond Resources Usually and Customarily Provided. When the University authorizes or directs efforts to create a work or works using University resources beyond Resources Usually and Customarily Provided, it shall enter into a written agreement addressing the extent of use of resources, the schedule for the project (if appropriate), control over the work and its revisions, and ownership of the work. When the work done by Personnel routinely involves resources beyond Resources Usually and Customarily Provided, compliance with this section may be accomplished by including the required terms in an employment agreement.
- 2) Sharing of Revenue. The University shall remit to creators or their assignees or heirs, their share of Revenue from copyrights as specified in Section XI.A. of this policy.
- 3) Use of Copyrighted Materials. The University shall develop and disseminate guidelines for the use of copyrighted materials. These guidelines should address library and educational fair use as well as fair use exceptions for research and scholarly work.

VI. PATENTS

A. Ownership

- 1) University Ownership
 - a) Within Scope of Employment. The University owns inventions created by Personnel within the Scope of Employment.
 - b) Use of University Resources. The University owns inventions created by Personnel, Graduate Students, or Professional Students with the use of University resources.
 - c) Signed Agreements. The University owns all inventions made by Personnel or Students under Sponsored Research Agreements and as stated in written agreements.
- 2) Creator Ownership
 - a) Outside Scope of Employment. Personnel, Graduate Students, and Professional Students own patent rights to inventions conceived and first reduced to practice outside the Scope of Employment and without the use of University

USM Bylaws, Policies and Procedures of the Board of Regents

resources and not subject to Sponsored Research Agreements or other written agreements

b) Student Ownership. Undergraduate, non-degree, and not-for-credit Students own inventions they create unless the invention is subject to another provision of this section.

B. Responsibilities of Personnel and Students

1) Disclosure. Personnel and Students shall disclose inventions which are subject to University ownership to the president or designee in a timely manner, fully, and in writing. When uncertain about the University's rights, Personnel and Students shall disclose.

2) External Collaborations. In accord with Section IV.C., Personnel and Students may not: (a) sign patent agreements or other documents (e.g., invention reports, licenses, assignments, Material Transfer Agreements, or Confidential Disclosure Agreements) which abrogate the University's rights; (b) make unauthorized use of the name of the University; or (c) transfer material relating to intellectual property outside the University, except pursuant to a properly authorized Material Transfer Agreement. See also the Policy on Professional Commitment of Faculty, BOR II-3.10.

3) Assignment. As to an invention in which the University has a right to ownership or use, the inventor, upon request, shall execute promptly all contracts, assignments, waivers or other legal documents necessary to vest in the University, or its assignees, any or all rights to the invention, including assignment of any patents or patent applications relating to the invention.

C. Responsibilities of University

1) Timely Evaluation. The University shall evaluate inventions disclosed in accordance with Section VI.B.1) and shall do so with reasonable promptness and in good faith. The University shall decide whether to seek legal protection of its ownership rights, such as filing for patent protection; the scope of patent protection; and whether and how to pursue, limit, or abandon commercialization. The University may at any time decide not to pursue or to abandon the pursuit of patenting and/or commercialization of any invention in which it has an interest.

2) Timely Information. The University shall inform inventors in a timely manner about substantive decisions regarding protection, commercialization and/or disposition of inventions disclosed in accordance with Section VI.B.1. Terms of agreements which constitute proprietary business information may be treated as confidential by the University in accordance with applicable law. The University shall notify inventors promptly when it decides either not to pursue, or to abandon pursuit of, all efforts to commercialize an invention.

3) Commercialization ~~by Inventors~~. The University, at its discretion and consistent with the public interest, may license intellectual property to the inventors and other entities on an exclusive or non-exclusive basis. Potential licensees ~~Inventors~~ must demonstrate technical and business capability to commercialize the intellectual property. Any license that allows the licensee to enforce patent rights against infringement should include terms to ensure a pathway to commercialization. Agreements with inventors shall be subject to

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review and approval of conflict of interest issues in accordance with applicable University policy.

4) **Assignment of Ownership.** The University may assign ownership to the inventors as allowed by law, subject to the rights of sponsors and to the retention by the University of a license which at a minimum shall grant the University the right to use intellectual property in its internally administered programs of teaching, research, and public service on a perpetual, royalty-free, non-exclusive basis. The University may retain more than the minimum license rights, and assignment or license may be subject to additional terms and conditions, such as Revenue sharing with the University or reimbursement of the costs of legal protection. The University shall negotiate promptly, upon written request by the inventors, the transfer to the inventors of the University's interest in any invention that it has chosen not to protect or commercialize, subject to any legal obligation to offer its interest to a sponsor, licensee, or another institution with rights to the invention before it can agree to negotiate the transfer of the University's interest in an invention to the inventors.

5) **Sharing of Revenue.** The University shall remit to the inventors or their assignees or heirs, their share of Revenue from inventions as specified in Section XI.B. of this policy.

VII. COMPUTER PROGRAMS AND SOFTWARE

A. Ownership

1) University Ownership

a) **Within the Scope of Employment.** The University owns computer programs and software created by Personnel within the Scope of Employment.

b) **Use of University Resources.** The University owns computer programs and software created by Personnel, graduate Students, or professional Students with the use of University resources.

c) **Signed Agreements.** The University owns all computer programs and software created or made by Personnel or Students under Sponsored Research Agreements and as stated in written agreement

2) Personnel Ownership

a) **Outside Scope of Employment.** Personnel, graduate Students, and professional Students own software and computer programs conceived and first reduced to practice, and/or authored, outside the Scope of Employment and without the use of University resources and not subject to Sponsored Research Agreements or other written agreements.

b) **Student Ownership.** Undergraduate, non-degree, and not-for-credit Students own computer programs and software they create unless the computer program or software is subject to another provision of this section.

USM Bylaws, Policies and Procedures of the Board of Regents

B. Responsibilities of Personnel and Students

- 1) Disclosure. Personnel and Students shall disclose computer programs and software that are subject to University ownership to the president or designee in a timely manner, fully, and in writing. When uncertain about the University's rights, Personnel and Students shall disclose. Disclosure may include deposit of a digital-time-stamped copy of the software program, with appropriate annotations.
- 2) External Collaborations. See Section IV.C. See also the Policy on Professional Commitment of Faculty, BOR II-3.10.
- 3) Assignment. As to a computer program or software in which the University has a right to ownership or use, the creator, upon request, shall execute promptly all contracts, assignments, waivers or other legal documents necessary to vest in the University, or its assignees, any or all rights to the computer program or software, including assignment of any patents, copyrights, patent applications, or copyright applications, relating to the work.

C. Responsibilities of University

- 1) Timely Evaluation. The University shall evaluate computer programs and software disclosed in accordance with Section VII.B.1. and shall do so with reasonable promptness and in good faith. The University shall decide whether to seek legal protection of its ownership rights, such as filing for patent protection, the scope of patent protection, and whether and how to pursue, limit, or abandon commercialization. The University may at any time decide not to pursue or to abandon the pursuit of patenting and/or commercialization of any computer program or software in which it has an interest.
- 2) Timely Information. The University shall inform creators in a timely manner about substantive decisions regarding protection, commercialization and/or disposition of computer programs or software disclosed in accordance with Section VII.B.1). Terms of agreements which constitute proprietary business information may be treated as confidential by the University in accordance with applicable law. The University shall notify creators promptly when it decides either not to pursue, or to abandon pursuit of, all efforts to commercialize computer programs or software.
- 3) Commercialization by Creators. The University, at its discretion and consistent with the public interest, may license intellectual property to the creators on an exclusive or non-exclusive basis. Creators must demonstrate technical and business capability to commercialize the intellectual property. Agreements with creators shall be subject to review and approval of conflict of interest issues in accordance with applicable University policy.
- 4) Assignment of Ownership. The University may assign ownership to the creators as allowed by law, subject to the rights of sponsors and to the retention by the University of a license which at a minimum shall grant the University the right to use intellectual property in its internally administered programs of teaching, research, and public service on a perpetual, royalty-free, non-exclusive basis. The University may retain more than the minimum license rights, and assignment or license may be subject to additional terms and conditions, such as Revenue sharing with the University or reimbursement of the

USM Bylaws, Policies and Procedures of the Board of Regents

costs of legal protection. The University shall negotiate promptly, upon written request by the creators, the transfer to the creators of the University's interest in any computer program or software that it has chosen not to protect or commercialize, subject to any legal obligation to offer its interest to a sponsor, licensee, or another institution with rights to the intellectual property before it can agree to negotiate the transfer of the University's interest in intellectual property to the creators.

5) Sharing of Revenue. The University shall remit to the creators or their assignees or heirs, their share of Revenue from computer programs or software as specified in Section XI.B. of this policy.

VIII. TECHNOLOGY-MEDIATED INSTRUCTIONAL MATERIALS.

If the University determines that Section VII is inadequate to cover technology-mediated instructional materials, in whole or in part, the University shall insert its own policy statement in this section. This policy must be consistent with the provisions of Section VII above and must be based on the University's mission and must define technology-mediated instruction and technology-mediated instructional materials, specify ownership rights and responsibilities for reporting by Personnel and Students, describe how materials may be protected and commercialized, specify how costs and Revenue will be allocated, and describe conditions attached to use of work prepared for technology-mediated instruction by Personnel and Students. If the University elects not to have a separate policy statement, this section will say explicitly that Section VII applies to technology-mediated instructional materials. If a University has adopted its own policy on intellectual property which modifies this Policy IV—3.20, as permitted by XII. herein, then technology-mediated instructional materials may, without specific reference, be treated consistently with other intellectual property under the University's approved policy.

IX. OTHER TYPES OF INTELLECTUAL PROPERTY

A. Tangible Research Property. The principles in Section VI that apply to inventions and patents also apply to tangible research property.

B. Mask Works. The principles in Section VI that apply to inventions and patents also apply to mask works.

C. Plant Varieties. The University owns and may protect or commercialize plant varieties according to the principles of Section VI.

D. Trademarks, Service Marks, and Trade Dress. Trademarks, service marks, and trade dress may be created in association with an underlying license for another form of intellectual property, such as a patent or a plant variety ("associated with other intellectual property"), or independently, such as a university logo or symbol ("independently created").

1) Associated with Other Intellectual Property. The University owns a trademark, service mark or trade dress if it is associated with other intellectual property owned by the University.

2) Independently Created. The University owns trademarks, service marks, and trade dress that are independently created by Personnel within the Scope of Employment unless the University agrees otherwise in writing.

3) Commercialization. The University may commercialize or license its trademarks, service marks, and trade dress.

USM Bylaws, Policies and Procedures of the Board of Regents

- 4) Registration. The president or designee shall approve registration of trademarks or service marks, at the state or federal level.

X. INTERINSTITUTIONAL AGREEMENTS

A. Joint Appointments and Affiliations. This section applies when an individual has an appointment in and receives support for research or creative work from two or more Universities and when a Student or Student Employee is earning a degree in one University but doing research or creative work in another.

- 1) Ownership. When more than one University can claim ownership to intellectual property under this policy, they own it jointly.
- 2) Management Agreements. Universities that are or may become joint owners of intellectual property shall enter into agreements stating which University will be responsible for management of the intellectual property. Universities are encouraged to negotiate standard agreements whenever possible.
 - a) Terms to be Addressed. The agreements shall state which institution will be responsible for prosecution of patent applications or other forms of intellectual property protection, which institution will license the intellectual property, how expenses and deductions from Revenue will be allocated, and how institutional net revenue will be shared. The distribution of each University's share of Net Revenue, Project Specific Costs, and General Costs shall be addressed in the management agreement.
 - b) Student Requirements. With regard to Students and Student Employees, agreements shall specify whether the degree-granting University or the supporting University will be responsible for managing intellectual property they create when that property is subject to University ownership.
- 3) Responsibilities of Managing University. The University managing intellectual property under an agreement shall promptly inform the other University or Universities about steps taken with regard to ownership. Such information shall include, at minimum, copies of the invention disclosure form, documents associated with filing for statutory protection, assignment of rights, and license agreements. If the managing University decides not to proceed, the other owning University or Universities shall have the right to assume responsibility as the managing University.
- 4) Distribution of Revenue. The managing University shall distribute Revenue to the creators and share net revenue in all cases according to Section XI.
- 5) Disputes. A president may ask the Chancellor to intercede if the Universities are unable to reach agreement or differ in their interpretation of an agreement. The Chancellor's decision shall be final and binding on all parties.

B. Joint Creators. This section applies when Personnel or Students from two or more Universities collaborate.

- 1) Early Notification. As soon as collaborators from different Universities recognize that their efforts have resulted in, or are likely to result in, the creation of intellectual

USM Bylaws, Policies and Procedures of the Board of Regents

property subject to this policy, they shall inform their respective Universities that an agreement is needed.

2) Agreements Govern. Signed agreements between Universities shall determine ownership of intellectual property, responsibility for managing it, and distribution of expenses and Revenue resulting from its development. Universities whose Personnel or Students are engaged in frequent collaboration are encouraged to negotiate standard agreements within the framework of this policy.

3) Disputes. A president may ask the Chancellor to intercede if the Universities are unable to reach agreement or differ in their interpretation of the agreement. The Chancellor's decision shall be final and binding on all parties.

XI. REVENUE SHARING

Unless otherwise agreed to in writing by the creators of a work or inventors of an invention, each named creator or inventor shall receive equal shares of net Revenue.

A. Copyrights. The University shall share with creators Revenue it receives from copyrights of their work, subject to certain exceptions.

1) Exceptions

a) Scope of Employment. Revenue generated from work produced by non-faculty Personnel within the Scope of Employment is excluded from sharing. However, the University may elect, by written agreement or University policy, to pay up to fifty percent of net Revenue to such non-faculty Personnel.

b) Contract. When a third party contract dictates apportionment of Revenue different from that specified in this policy, the terms of the contract govern.

c) Equity. Equity shall be distributed in accord with Section XI.G.

d) Technology-mediated Instructional Materials. University policy adopted to fulfill Section VIII may exclude some or all Revenue from sharing.

2) Deductions from Revenue. The University shall make the following deductions from Revenue before distributing net Revenue (Section XI.A.3).

a) Creators' Share. First, ten percent of Revenue shall be distributed among the creators of the work until the cumulative total reaches the limit set pursuant to this paragraph that was in effect during the fiscal year in which the University first received Revenue. The limit in FY2004 is \$10,300 to be shared among the inventors. The Chancellor shall establish a new limit for each succeeding fiscal year by adjusting the previous year's limit by an amount reflecting the change in the Consumer Price Index during the last calendar year completed, rounded to the nearest \$100.

b) General Costs. Second, the University will deduct 30% of Revenue to cover the general cost of developing, obtaining, managing, and defending creative works, unless otherwise agreed to by the University and creators, in writing.

USM Bylaws, Policies and Procedures of the Board of Regents

- c) Project Specific Costs. Third, the remaining 60% of the Revenue received from a work shall be applied to reimburse any specific, incremental expenses incurred by the University in obtaining and maintaining the copyright, and in developing, marketing, licensing, and defending the work. After reimbursement of the University's expenses, Revenue may be used to reimburse costs incurred by creators on behalf of their own works but only if the University had authorized such expenses in advance in writing.
- d) Residual Creators' Share. Fourth, after project specific costs have been paid in full, any remaining Revenue shall go to the creators until the threshold dollar amount has been paid, as specified above in Section XI.A.2.a.

3) Distribution of Net Revenue. Net Revenue is the revenue remaining after deductions under XI.A.2.

- a) Creators' Share. The University shall distribute among the creators fifty percent (50%) of the net Revenue it receives from their creative work unless applicable laws, regulations, provisions of grants or contracts, or signed agreements with creators provide otherwise.
- b) University's Share. The University shall receive 50% of the net Revenue. Each University shall establish guidelines for the use of its share of the net Revenue. Net Revenue received on account of copyrighted work shall be dedicated to research, scholarship, creative work, and related academic activities.

4) Timely Distribution. The University shall distribute accrued Revenue due creators under this policy at least annually. Distribution will be made along with a statement of related income and expenses.

B. Patents and Computer Programs and Software. The University shall share with inventors or creators Revenue it receives from their inventions or creations as provided in this section.

1) Exceptions

- a) Contract. When a third party contract dictates apportionment of Revenue different from that specified in this policy, the terms of the agreement govern.
- b) Equity. Equity shall be distributed in accord with Section XI.G.

2) Deductions from Revenue. The University shall make the following deductions from Revenue before distributing net Revenue (Section XI.B.3).

- a) Creators' or Inventors' Share. First, ten percent of Revenue shall be distributed among the creators or inventors until the cumulative total reaches the limit set pursuant to this paragraph that was in effect during the fiscal year in which the University first received Revenue. The limit in FY2003 is \$10,000 to be shared among the inventors or creators. The Chancellor shall establish a new limit for each succeeding fiscal year by adjusting the previous year's limit by an amount reflecting the change in the Consumer Price Index during the last calendar year completed, rounded to the nearest \$100.

USM Bylaws, Policies and Procedures of the Board of Regents

b) General Costs. Second, the University shall deduct 30% of Revenue to cover the general cost of developing, obtaining, managing, and defending inventions or creative work, unless otherwise agreed to by inventors or creators and the University, in writing.

c) Project Specific Costs. Third, the remaining 60% of Revenue received from a creative work, patent, or invention shall be applied to reimburse any specific, incremental expenses incurred by the University in obtaining and maintaining the patent and in developing, marketing, licensing, and defending the patent or licensable invention or creative work. After reimbursement of the University's expenses, Revenue may be used to reimburse costs incurred by inventors or creators on behalf of their own works but only if the University had authorized such expenses in advance in writing.

d) Residual Creators' Share. Fourth, after project specific costs have been paid in full, any remaining Revenue shall go to the creators until the threshold dollar amount has been paid, as specified above in Section XI.B.2.a.

3) Distribution of Net Revenue. Net Revenue is the Revenue remaining after deductions under XI.B.2.

a) Creators' Share. The University shall distribute among the inventors or creators fifty percent (50%) of the net Revenue it receives from their inventions or creations unless applicable laws, regulations, provisions of grants or contracts, or signed agreements with inventors or creators provide otherwise.

b) University's Share. The University shall receive 50% of the net Revenue. Each University shall establish guidelines for the use of its share of the net Revenue. Net Revenue received on account of an invention shall be dedicated to research and to the promotion of patenting and patents.

4) Timely Distribution. The University shall distribute Revenue due creators under this policy at least annually. Distribution will be made along with a statement of related income and expenses.

C. Tangible Research Property, Mask Works, and Plant Varieties. When tangible research property, mask works, or plant varieties are licensed, Revenue shall be distributed in the same manner that Revenue is distributed under Section XI.B.

D. Trademarks, Service Marks, and Trade Dress

1) Creators' Share

a) Associated with Other Intellectual Property. Revenue received from commercialization of a trademark, service mark, or trade dress that is related to an intellectual property license shall be shared with creators of the trademark, service mark, or trade dress, as specified in Section XI.B.

b) Independently-created trademark, service mark, or trade dress. Except as provided herein or unless subject to prior written agreement between the creators and the University, the University will not share the Revenue from

USM Bylaws, Policies and Procedures of the Board of Regents

commercialization of a trademark, service mark, or trade dress with the individuals who created the trademark, service mark, or trade dress.

2) University Ownership. Revenue received from commercialization of a trademark, service mark, or trade dress licensed independently and not directly related to another form of intellectual property license shall not be shared and shall belong to the University.

E. Joint Appointment. In situations covered by section X., the University's share of net Revenue shall be divided equally among the Universities or as otherwise provided by written agreement.

F. Joint Creators. If joint creators are from different Universities, the University's share of net Revenue shall be divided equally unless determined by signed agreements as provided in Section X.B.2.

G. Equity

1) Issuance of Shares. Equity may be issued separately to the University and the inventors or creators.

2) Distribution of Shares. Equity in a commercial venture received as consideration for intellectual property rights shall be shared equally between the University and the creators, unless a different distribution is negotiated in an agreement signed by the University and the creators of the relevant intellectual property.

3) Timely Distribution. When the University receives all shares directly, as soon as practicable after the University receives equity, and subject to the creators receiving any conflict of interest exemptions that must be granted and complying with any conditions for those exemptions, the University shall transfer equity shares to the creators. The University and creators shall have independence in their exercise of equity holder privileges within the constraints of law, policy, specific exemption under Maryland law from the State Ethics Law, and contractual agreements.

4) Unqualified Persons. Personnel or Students not qualified to hold the equity under applicable law shall designate a qualified person to receive the equity. If no designee is named within thirty days of a written request by the University to do so, the right to a share of the equity shall be forfeited to the University.

XII. ADMINISTRATION

A. Implementation Options. Each University shall elect one of the following options for implementing this policy:

- 1) Adoption. Adopt the USM policy including the requirements in XII.B., below;
- 2) Modification. Modify the USM policy, retaining the requirements in XII.B., below, to reflect the unique needs of the University based on its mission

B. University Implementation. Each University shall develop procedures for implementing this policy that:

USM Bylaws, Policies and Procedures of the Board of Regents

- 1) establish the University's policy on technology-mediated instructional materials, as required in Section VIII. with specific reference to technology-mediated instructional materials, or in the alternative, without specific reference to technology-mediated instructional materials required, the University's policy may treat technology-mediated instructional materials in the same manner as other intellectual property;
- 2) establish guidelines for use of materials protected by copyright, as required by Section V.C.3.;
- 3) establish guidelines for use of the University's share of net Revenue within the University, as required by Sections XI.A.3.b. and XI.B.3.b.;
- 4) designate an initial point of contact for intellectual property issues;
- 5) publicize and make available the University policy and implementation procedures;
- 6) provide the Chancellor with a copy of the University's policy for approval prior to initial adoption as well as prior to any subsequent revision (Until such time as the Chancellor provides written approval of the initial University document, this USM document shall apply to the University. Subsequent revisions shall not go into effect until approved by the Chancellor in writing.);
- 7) provide the Chancellor with a copy of the University's implementation procedures for the record.

C. Authority to Subcontract. The University may enter into contracts with third parties in connection with the development, administration, and protection of its intellectual property.

D. Special Cases.

- 1) Issues not addressed. The Board of Regents recognizes that special cases will arise that are not specifically covered by this policy. In such cases, Presidents may make a decision on how to proceed and report that decision to the Chancellor. Alternatively, the President may submit such cases to the Chancellor or designee for resolution.
- 2) Policy waivers. Only the Chancellor may waive any provision of the USM Policy on Intellectual Property. If a University has its own policy on intellectual property which has been approved pursuant to this Article XII. and which includes an alternate process for the approval of waivers under such University policy, waivers may be granted only in compliance with the process provided in such University's approved policy on intellectual property.

XIII. REPORTING

Each University president shall report annually to the Chancellor and the Board of Regents on intellectual property activity at the University. The report, in a format to be determined by the Chancellor, shall include data for the preceding year on disclosures, patent applications, patent awards, licenses, and start-up companies, distinguishing when appropriate between Maryland-based companies and those outside of the State. The report shall also include data on revenue and expenditures associated with the University's technology transfer function.

USM Bylaws, Policies and Procedures of the Board of Regents

(This policy replaces USM IV-3.00 Policy on Patents and USM IV-3.10 Policy on Copyrights in their entirety.)

Glossary (This section is provided for information only. It is not part of the policy.)

Commercial venture - A start-up company, limited partnership, joint venture or any other entity that has obtained an option or a license to university technology.

Confidential Disclosure Agreement - An agreement or section of an agreement that prevents parties to the agreement from releasing knowledge or information without the other's permission.

Copyright - The intangible property right granted by statute for an original work fixed in a tangible means of expression. A copyright provides the owner with the following exclusive rights over a work: to reproduce, to prepare derivative works, to distribute, to perform publicly, and to display publicly. Copyright comes into existence immediately at the time the work is fixed in a tangible means of expression.

Creative works - "Original works of authorship" that are fixed in a tangible form of expression that may be protected by copyright. The fixation need not be directly perceptible so long as it may be communicated with the aid of a machine or device.

Copyrightable works include the following categories: (1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works.

Creator - Refers to an individual or group of individuals who make, conceive, reduce to practice, or otherwise make a substantive intellectual contribution to the creation of intellectual property. "Creator" follows the definition of "inventor" used in U.S. patent law and the definition of "author" used in the U.S. Copyright Act.

Disclose - Formally record the essence of a potentially patentable concept, the circumstances in which it was conceived, the persons participating in the invention, and the steps taken to reduce it to practice, if applicable, in accord with the requirements of U.S. patent law for establishing precedence Equity or equity shares - Shares of common or preferred stock, warrants, options, convertible instruments, units of a limited partnership, or any other instruments conveying ownership interest in a commercial venture, or options or rights to purchase an ownership interest.

First sale - The principle that gives the purchaser of a copyrighted work the right, among other things, to lend it to others.

Intellectual property - The intangible value developed by human creativity that is protected by the legal mechanisms of patents, trademarks, copyrights, service marks, trade secrets, mask works, and plant variety protection certificates. Rights derived from legislation include ownership and disposition, including commercialization. Intellectual property encompasses inventions, discoveries, know-how, show-how, processes, unique materials, copyrightable works, original data, and other creative or artistic works that have value. It also includes the physical embodiments of intellectual effort such as models,

USM Bylaws, Policies and Procedures of the Board of Regents

machines, devices, designs, apparatus, instrumentation, circuits, computer programs and visualizations, biological materials, chemicals, other compositions or matter, plants, and records of research.

Invention - Any discovery which is or may be patentable or which may be commercially licensable.

License - A contract in which an intellectual property owner grants permission to exercise one or more of the rights that an owner holds.

Mask work - A series of related images representing a predetermined, three-dimensional pattern of metallic, insulating, or semiconducting layers of a semiconductor chip product.

Material Transfer Agreement - A contract covering transfer of physical possession and use of tangible research property into or out of the university.

Patent (U.S. only) - The intangible property right to exclude others from making, using, offering for sale, or selling the invention in the United States or importing the invention into the United States. In order to obtain patent protection, an invention must be useful, novel and unobvious.

Plant variety protection certificate - Registration under the Plant Variety Act of 1970 that protects sexually propagated cultivars that are distinctive, uniform and true-breeding.

Royalty - Payment made to an owner of intellectual property for the privilege of practicing a right held by the owner of the intellectual property under applicable law.

Tangible research property - Includes the physical embodiments of intellectual effort such as models, machines, devices, designs, apparatus, instrumentation, circuits, computer programs and visualizations, biological materials, chemicals, other compositions of matter, plants, and records of research. Tangible research property is distinct from intangible properties such as patents, trademarks, copyrights, service marks, trade secrets, mask works, and plant variety protection certificates. Individual items of tangible research property may be associated with one or more intangible properties.

Trade dress - Distinctive and unique packaging, color combinations, building designs, product styles, and overall presentations identifying the source, product, producer, or distributor of goods and services where the appearance distinguishes the product or business from other similar products or businesses but is not distinctive or specific enough to be considered a trademark.

Trademarks and service marks - Distinctive words or graphic symbols identifying the source, product, producer, or distributor of goods and services.

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BOARD OF REGENTS

SUMMARY OF ITEM FOR
INFORMATION

TOPIC: USM Office of Economic Development Update

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: Wednesday, June 12, 2019

SUMMARY: Vice Chancellor Sadowski will provide an update on the Office of Economic Development, including the Momentum Fund, Venture Development Reporting, Workforce and Talent Development, and USM Economic Development Strategy for FY 2020.

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*

June 12, 2019



USM Board of Regents

Committee on Economic Development and Technology Commercialization

Presentation Summary:

- Board Membership
- History and Strategic Objectives
- Core Tenets
- Current Activities
 - Momentum Fund
 - Venture Development and Innovation
 - Workforce and Partnership Development
 - Post-Session Action
- Plan for FY 2020



USM Board of Regents

Committee on Economic Development and Technology Commercialization

Isiah Leggett (*chair*)

Robert Rauch (*vice chair*)

Katrina Dennis

Ellen Fish

Barry Gossett

Robert Wallace

Langston Frazier

Linda Gooden (*ex officio*)

Staff: Tom Sadowski, Vice Chancellor for Economic Development

Lindsay D'Ambrosio, Venture Development Director



USM Board of Regents

Committee on Economic Development and Technology Commercialization

The University System of Maryland (USM) created the Board of Regents Committee on Economic Development and Technology Commercialization in July 2011 in recognition of the increasing importance of translational research, entrepreneurship and innovation, and the supply of skilled workers in STEM fields for the State of Maryland. The Committee, working with the Vice Chancellor for Economic Development, provides strategic leadership for the USM's economic development and technology commercialization, innovation and entrepreneurial initiatives.



USM Board of Regents

Committee on Economic Development and Technology Commercialization

Strategic Objectives:

- Strengthen the USM entrepreneurial ecosystem
- Align resources with market demand
- Leverage USM resources through collaborations
- Engage the investment community and enhance access to capital for USM affiliated startups and innovators
- Enhance partnerships with industry, state and federal entities



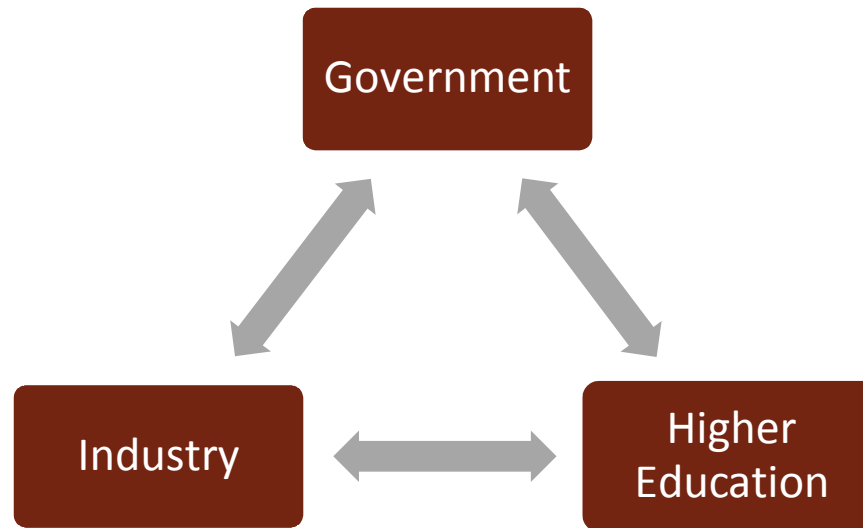
**Core tenets of USM Economic Development
Program, validated by EXCEL MD Task Force as
keys factors driving Maryland's
innovation economy ...**

Talent, Culture, Capital, Place



Innovation Equation

How it happens... How it is funded



USM Momentum Fund: Background

- **Establishment** BOR approved in June 2016 as \$25MM venture fund focused on USM-affiliated companies. USM would invest \$10MM over 4 years, and an additional \$15MM would be raised from non-USM entities, with a goal of a 1:1 match for investments.
- **Precedent** UM Ventures investments and loans in 2015 of \$400,000 total in 5 startup companies, which had early success but was limited to those licensing USM intellectual property.
- **Goals**
 - Accelerating the success of USM start-ups
 - Expanding economic development in the State of Maryland
 - Recruiting and retaining innovative students and faculty
 - Keeping recent graduates in the State of Maryland
 - Generating long-term financial returns which will be reinvested in future start-ups



USM Momentum Fund

Current state

In developing the MMF investment approach, strategic focus was placed on the fundamental soundness of each investment and prospect for generating returns. Venture capital industry recommended adopting of a co-investment model as opposed to pooling USM and external investor resources. It was also determined that each institution, with which each company is affiliated, have the option of co-investing along with the USM to take advantage of prospective return event.

Presently, a full-time **MMF Managing Director** manages the Fund, a **Steering Committee** comprised of representatives from UMCP, UMBC, and UMB guides the policy and direction, and an **External Advisory Board** composed of investors and entrepreneurs advises on funding decisions.



USM Momentum Fund

Investment Activity

To date, the MMF has committed **\$1.8 million** matched by **\$4.9 million** from external co-investors (a 2.7 to1 match).

14 companies have presented to the Advisory Board, more than **160** companies counseled to date:

- **6** have been invested in by Momentum
- **1** in process of closing
- **1** pending, seeking co-investment with Momentum Fund staff help
 - 2 recently considered by Advisory Committee on May 29, 2019 and undergoing further evaluation
- **3** closed or are closing funding rounds without Momentum;
 - 2 were cyber companies with out-of-state VC commitments
- **1** was rejected by the Board; recommending pursuit of federal funding which was ultimately secured

USM Momentum Fund

Investments to Date

MF Fire (UMCP IP, Alum) \$193k invested, \$1.2MM round
World's most advanced wood burning stove

Next Step Robotics (UMB IP) \$250k invested, \$1.140MM round
Exoskeleton robot to reverse foot drop for stroke victims
Raised \$600,000 in follow-on round

NAWEC (UMCP IP, Alum) \$350k invested, \$1.51MM round
Advanced pulse jet engine

Zest Tea (UMCP Alum) \$300k invested, \$1.035MM round
High Caffeine Tea, Energy drink product

PaverGuide (UMCP IP) \$300k invested, \$650k round
Advanced semipermeable pavement system

Retrium (UMCP Alum) \$400k invested, \$1.6MM round
Agile software development management product

Co-Investors (sample): RW Deutsch Foundation, Bunting Foundation, Abell Foundation, Lord Baltimore Fund, Angel investors, high net worth individuals, Chesapeake Bay Seed Capital Fund, Dingman Angels



Momentum Fund: *Rounds in Process*

Gemstone Therapeutics (UMBC Alum, UMCP Alum)

Tissue regeneration stem cell company

ARMR (UMB BioPark/GRID)

Medical device to care for traumatic wounds

Veralox (UMB IP) \$500k MMF commitment to \$4.5MM round; closing

Therapeutics for rare blood disorders

Airgility (UMCP IP, Faculty) \$300k MMF commitment to \$1.0MM round

Unmanned aircraft systems, drone platform design and manufacturing

Potential and Committed Co-Investors: TEDCO, University of Vermont Life Sciences Fund, Middleland Capital, Hatteras, Major International Industry VC (TBA), various angels



Momentum Fund: Management and Investor Outreach

- Co-investor and Venture Community Networking Event at Hidden Waters May 14th
- Further defined reporting and due diligence structure
- New Fund Investment Manager search closed; offer made
- Investigating possible options for earlier-stage investment

Venture Development and Innovation Metrics

USM Venture Development Report

- Originally worked with RESI group at Towson to survey USM institutions venture creation activity and programming
- Collected first round of data for revised Venture Development Report. Data used and report formatted based on input from institutions.
- Next round/report will include the entrepreneurship resources available at each institution and related measures. For example, number of Entrepreneurs In Residence and total advising hours.
- Proceeding with historic economic impact analysis of USM startup activity



Venture Development and Innovation Metrics

Venture Development Report

- **80 companies** were newly affiliated with the **USM** during the period from June 2018 to December 2018.
- **31 companies** were assisted by Small Business Development Centers (SBDCs), and **11 companies** participated in the MIPS program. More information on both is forthcoming.
- Many were affiliated in more than one way.

Type of Resource Used # Companies

| | |
|------------------------------|-----------|
| CULTURE | 63 |
| SBDC, MIPS | 31, 11 |
| Program/Competition | 21 |
| CAPITAL | 9 |
| Grants/Prizes | 5 |
| Investments | 4 |
| TALENT | 20 |
| Alum | 8 |
| Graduate Student or Post Doc | 5 |
| Undergrad | 4 |
| Faculty | 7 |
| Interns/Employees | 2 |
| INTELLECTUAL PROP. | 9 |
| PLACE | 17 |
| In-State (Retained) | 15 |
| Out-of-State (Attracted) | 2 |



Venture Development and Innovation Metrics

Venture Development Report, Cont'd

- Eighty companies were newly affiliated with the USM during the period from June 2018 to December 2018.
- Of the 38 companies for which we have detailed information, **about 70% utilized more than one type of USM resource.**

| Type of Resource Used | Companies | |
|--|-----------|------------|
| CULTURE | 21 | 55% |
| Program, mentoring (excludes SBDC, MIPS) | | |
| CAPITAL | 9 | 24% |
| Grants or investments directly from the USM | | |
| TALENT | 20 | 53% |
| A founder is affiliated with a USM institution. | | |
| INTELLECTUAL PROP. | 9 | 24% |
| PLACE | 17 | 45% |
| USM research park or incubator | | |



Venture Development and Innovation Metrics

Venture Development Report, Cont'd

Company Characteristics *June to December 2018 USM Portfolio*

| | % of Known | |
|-----------------|------------|-----|
| Minority-owned | 8 | 33% |
| Woman-owned | 7 | 25% |
| Veteran-owned | 1 | |
| | | |
| Avg Employees | 3.6 | |
| Avg Company Age | 3 | |

USM-Affiliated Capital Deployed *Only to June to December 2018 Portfolio**

| | |
|--------------------------------|------------|
| Equity Investments (\$) | \$ 230,000 |
| Average | \$ 57,500 |
| Companies | 4 |
| Grants/Prizes (\$) | \$ 108,500 |
| Average | \$ 21,000 |
| Companies | 5 |

*Does not include \$300,000 investment in ZestTea

Venture Development and Innovation Metrics

Example Companies

- **Neoprogen** – Advancing cardiac stem cells, Phase 1 clinical trial to begin in 2019. Based on UMB intellectual property.
- **RunSafe Security** – Unique cyberhardening technology for vulnerable embedded systems and devices. Northern VA firm recruited for the Northrop Grumman CyberCync Program and has a presence at bwtech @UMBC.
- **InventWood** – Cellulose-based nanotechnologies for superior, more natural goods. UMCP founder and intellectual property.
- **AlgenAir** – Functional and attractive algal decor to improve public health. UMCP/UMCES and UMB co-founders who have participated in UMCES entrepreneurship programming and the Salisbury Shore Hatchery and UMCP Pitch Dingman competitions.
- Featured startup today, **MindStand Technologies**, was mined out of the recent round of submissions.

Venture Development and Innovation Metrics

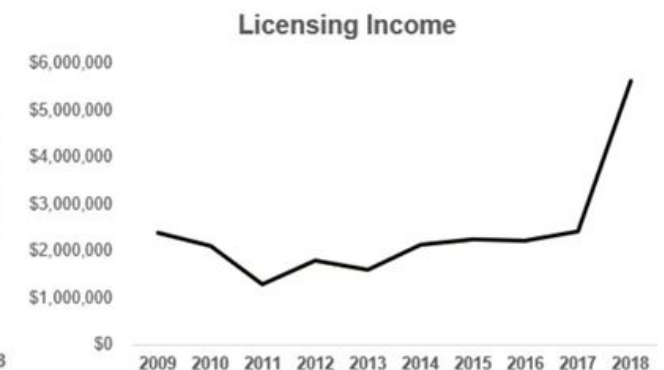
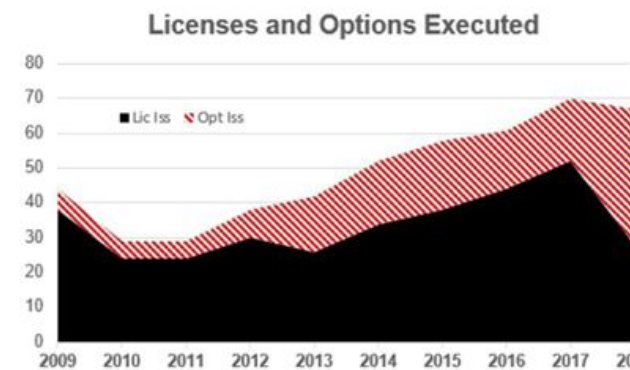
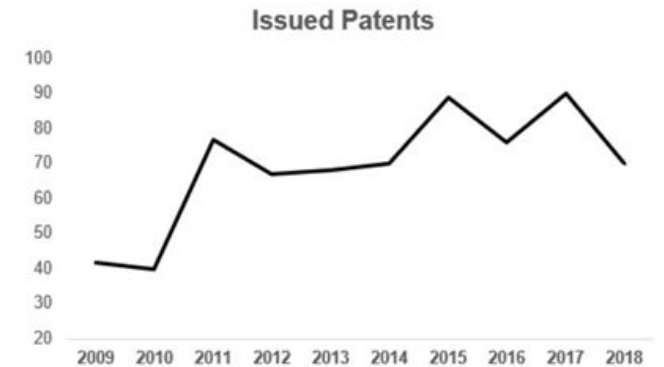
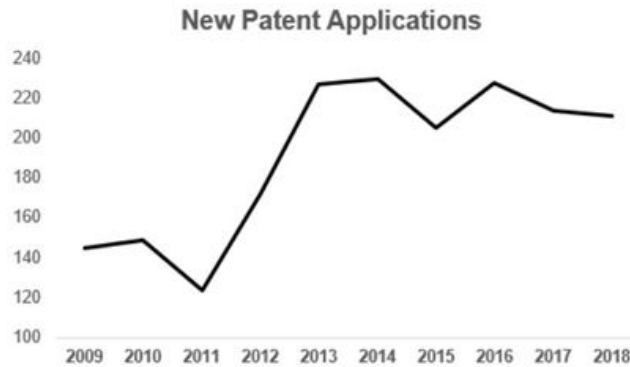
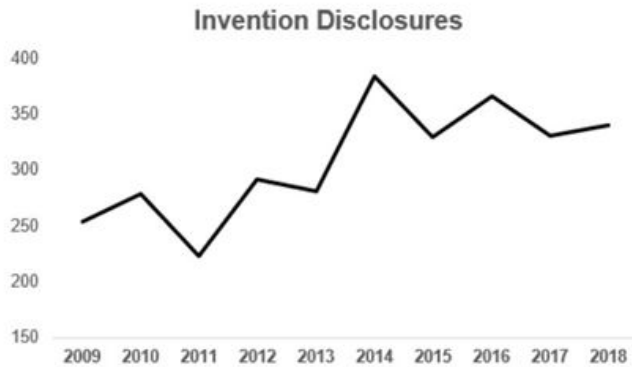
USM AUTM (Technology Transfer) Report

- **Report Background**
 - Survey is administered by the Association of University Technology Managers to universities across the country.
 - USM reports as a System.
 - Increasingly acknowledges and tracks the role of startups in this process.
- **USM Performance FY 2018**
 - Report just finalized. Can't reveal other intuitions' data.
 - In general, for the amount of the R&D that is performed, USM does moderately well, with an edge on startups and early metrics like invention disclosure and improvement needed in licensing.
 - UMB is performing well, with increased performance anticipated at UMCP due to recently hired new leadership.
 - Intellectual property protection for some emerging areas such as quantum computing is not yet standardized.



Venture Development and Innovation Metrics

USM AUTM (Technology Transfer) Report, 2009 - 2018





Workforce and Partnership Development

USM Workforce Initiative

- Governor has included year-two funding of \$20 million in FY '20 budget
- Working with business organizations and industry advocates to develop innovating credentialing and certification programming (enhance utilization of USM Edx platform)
- Evaluating opportunity for additional apprenticeship program to meet emerging industry demand /opportunity (cyber/aircraft maintenance and avionics)
- Amazon HQ2 response— Convening USM institutions to develop strategy for leveraging areas of strength for enhancement of 4-year programming and establishment of key Centers of Excellence (Quantum, Additive Manufacturing, AI/Machine learning, Augmented/Virtual Reality, Medical Devices, Cyber/Data Science)

Greater Washington Partnership CoLAB Initiative

- Working with regional employers and higher ed institutions on IT Generalist and IT Specialist credential
- Also leading effort to host Regional Technology Showcase:
 - Capital One taking lead on coordination and planning with GWP stakeholders. Plans to host event at their McClean, VA HQ
 - Hired Mullenlowe U.S. PR firm ... planning event for Fall 2019
 - Preview event for 250 VIPs; main event for 600-700 attendees

Workforce and Partnership Development *continued*

MD Tech Internship Program

- 65 employers from 9-counties participated
- 83% of employers initiated new internships with funding; 84% were small businesses with less than 150 employees
- 65 students from 15 institutions participated (3.4 avg GPA)
- 80% of students reported increased exposure to tech careers; 90% stated they plan to stay in MD to pursue their career
- Recent bill lowered GPA requirement to expand access; ***more funding will be requested next session***

Industry Partnership Initiative

- Examining current partnerships, market opportunities and industry needs while identifying best practices aimed at increasing sponsored R&D and associated tech commercialization activity
- Goal is to identify key areas of intersection matching USM strengths/capabilities with industry needs (e.g., workforce, research, centers of excellence/innovation)

Post-Legislative Session

MD Technology Infrastructure Fund (formerly EXCEL Maryland)

- \$16 million included in Governor's budget to initiate program
- Governor's Office proposed enhancement of TEDCO authority
- Industry targeted for funding match 3x/4x proposed state funding
- Legislature rejected bill

USM using Excel MD report recommendations to support existing/proposed Economic Development initiatives

Post-Legislative Session ...cont.

More Opportunity for Marylanders Act – Federal Opportunity Zone Program

- Hogan Administration has keen interest in this federal program, allocating \$56 million in budget to support real estate investment, business creation/growth and workforce training
- Zones impact/benefit all but two, possibly three USM locations state-wide
- USM has seat on Governor's Task Force to help develop strategy and incentive policy to encourage real estate and venture investment – first regional community input meeting held March 14th in Salisbury, MD

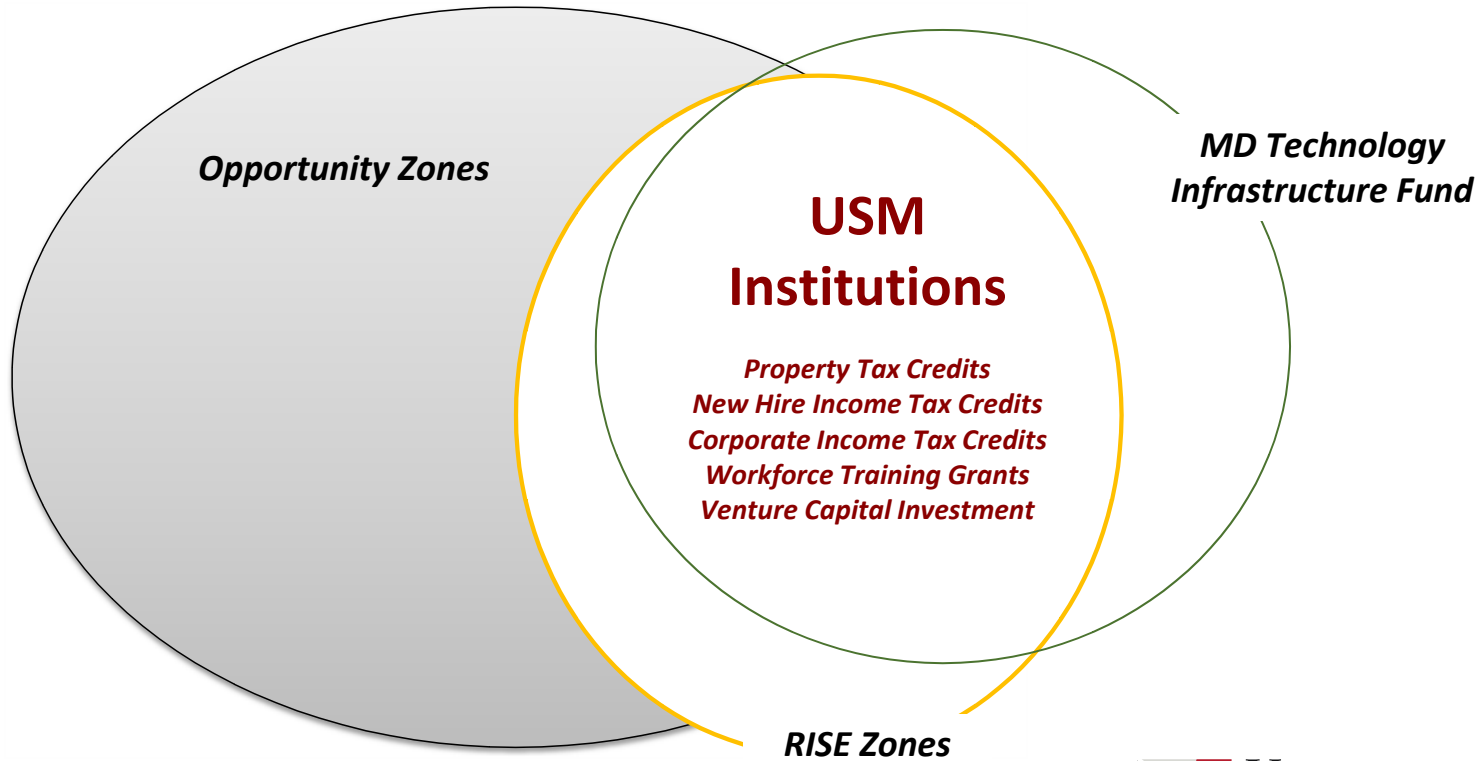
Exploration of USM Opportunity Zone Investment Fund to compliment Momentum Fund and later-stage opportunities

Regional Institution Strategic Enterprise (RISE) Zone Amendment

- Dept of Legislative Services issued report recommending enhancement to RISE Program to best meet local jurisdiction interests – from property tax credits to corporate income tax incentives to startups and small business tenants
- No public hearing was scheduled this session, however as Senate and House focus centered on Opportunity Zone program

Amend MD Opportunity Zone bill next session, to include RISE Zone; RISE would serve as strategic layer to federal program and to incent attraction/retention and growth of USM startups and catalyze collaborations with industry and government partners

Growing Maryland's Innovation Ecosystem



USM Economic Development: 2020 Strategy

CULTURE

Expand and Leverage Government Partnerships

Strategic Focus on Industry Partnerships

- Talent Needs
- Sponsored Research Opportunities
- Tech Commercialization Collaborations
- Connections to Philanthropy

Policy

- UMB IP Policy
- Momentum Fund Governance and potential SEED/Accelerator Program

Tell USM Story and Connect to Broader Community

- Collect Stories and identify “Ambassadors”
- Cultivate and Expand USM network
- Revision of USM Economic Impact Study

Further Develop Economic Development Partners

- Help Institutions Conceive, Articulate and Pursue Economic Development and Technology Commercialization Objectives
- Develop “Community of Practice” for USM EcoDev Professionals; share best practices and foster connections/collaborations

USM Economic Development Strategy **CAPITAL**

Momentum Fund

- Hire new Momentum Fund Managing Director
- Establish System to Mentor and Assist Deferred /Rejected Applicants
- Expand Co-investor network

Establish USM Opportunity Zone Venture Fund

Establish Seed Stage Acceleration Fund Program

Expand USM Startup Customer Service Menu and Mentorship Network

USM Economic Development Strategy

TALENT

Expand Workforce Development Program offerings (via USM Workforce initiative and otherwise)

- Apprenticeships
- Credentialing
- Internship

Leverage External and Internal USM Capabilities and Broaden Access

UMBC Training Centers, USMx, UMUC Ventures



USM Economic Development Strategy ***PLACE***

**Market and Leverage Federal/State Opportunity Zone
Benefits**

**Amend RISE Zone Legislation to Enhance Incentives
for Startups, Small/Medium Size Tech Ventures and
foster greater industry and federal government
collaborations**