

Computing @ Michigan Tech



Michigan Technological University
College of Computing

Dennis R. Livesay, Dave House Dean of Computing

Michigan Technological University



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Michigan Tech is located on Michigan's most beautiful playground—the Upper Peninsula—and borders the Keweenaw Waterway which connects to Lake Superior.

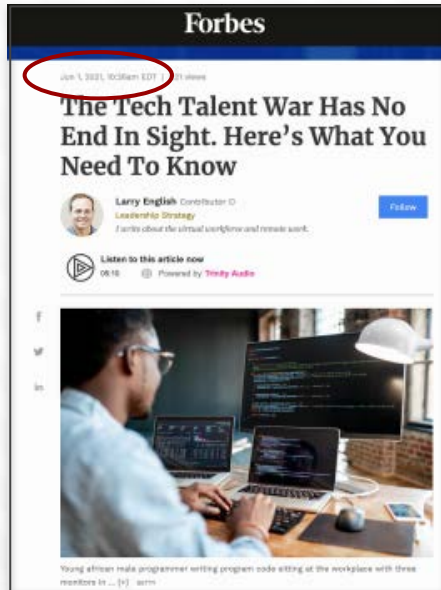
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The Digital Future



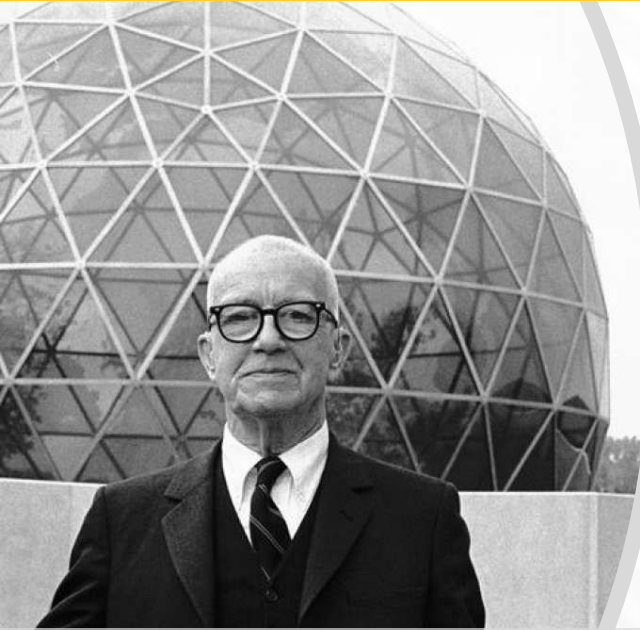
Michigan Tech has a long history of evolving to meet the needs of the time



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"The institution...shall seek to promote the industries of the state."

Tomorrow Needs Michigan Tech



You never change things by
fighting the existing reality.
To change something, build a
new model that makes the
existing model obsolete.

Buckminster Fuller



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It's hard to overstate how profound and important
creation of the College of Computing will be for MTU's future.

The College of Computing @ MTU



2 Departments

Computer Science and Applied Computing

6 Bachelor's Programs

Computer Science, Software Engineering, Cybersecurity, Computer Network & System Administration, Electrical Engineering Technology, and Mechatronics

6 Graduate Programs

MS and PhD in Computer Science, MS in Cybersecurity, MS in Data Science, MS in Health Informatics, and MS in Mechatronics

Existing and emerging research strengths in:

Systems, AI/ML, Cybersecurity, Software Engineering, and Industrial Automation



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Michigan's only academic college exclusively focused on computing

Brag Sheet

Michigan Tech

97% Employment rate

#1 Safest college campus in the nation
College Magazine, 2017

#2 Public colleges where grads make six figures
Money Magazine, 2017

#8 Public universities that pay off the most
CNBC, 2019

#18 30-year net ROI *BestColleges.com, 2016*

#34 Best value public universities
(#3 in Michigan) *Niche, 2021*

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#3 National Cyber League *Spring, 2021*

#3 Best colleges for CS in MI *Niche.com, 2019*

#5 MS in Health Informatics *Intelligent.com*

#5 BS in Software Engineering *Intelligent.com*

#9 BS in Software Engineering *College Rank*

#9 BS in Information Technology *Niche.com*

CyberCorps Scholarship for Service Award
NSF, 2021



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Michigan Tech is broadly recognized for its ROI.

Digital Transformation



COMPUTING & DATA SCIENCE

Software Engineering; Cybersecurity;
Data Science/AI/ML; Cloud Computing



CYBERPHYSICAL & INFRASTRUCTURE

Robotics; Industrial Automation; IoT; Process
Twinning; Edge Computing; Networking



DISRUPTION IN OTHER DOMAINS

Manufacturing; Healthcare; Biomedical
Sciences; Business; Social Sciences; Etc.

← World-class programs in **COMPUTER SCIENCE** are the foundation →



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Making digital transformation happen for you, not to you!

Growth



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The future is computing and data science.
We are growing aggressively to meet that demand.

Diversity and Inclusion



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Computing is for everyone!

Student Success



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Connective support systems for every College of Computing student foster knowledge discovery, technological expertise, and lifelong achievement.

Applied Computing Programs

- Computer Network & System Adm (BS)
- Electrical Engineering Technology (BS)
- Cybersecurity (BS) *shared with CS*
- Mechatronics (BS/MS)
- Health Informatics (MS)
- Data Science (MS) *interdisciplinary program*

FUN FACT: We use a lot of virtual machines in our CNSA and cybersecurity courses, and actually have access to 5x more VMs than students.

www.mtu.edu/computing/applied-computing/



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Department of Applied Computing



Computer Science Programs

- Computer Science (BS/MS/PhD)
- Software Engineering (BS)
- Cybersecurity (BS) *shared with AC*
- Cybersecurity (MS)
- Data Science (MS) *interdisciplinary program*
- Applied CS (MS) *in development*

FUN FACT: Over the years, CS has had labs and/or the department office in 5 different buildings (Fisher Hall, Dow, ChemSci, EERC, and now Rekhi).

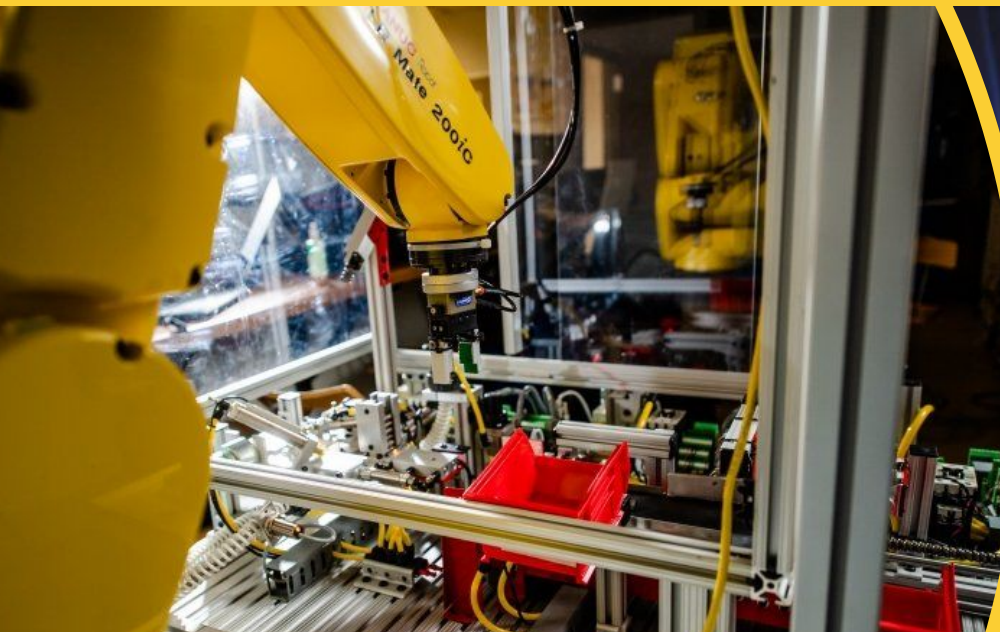
www.mtu.edu/cs/



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Department of Computer Science

Applied Computing vs. Computer Science

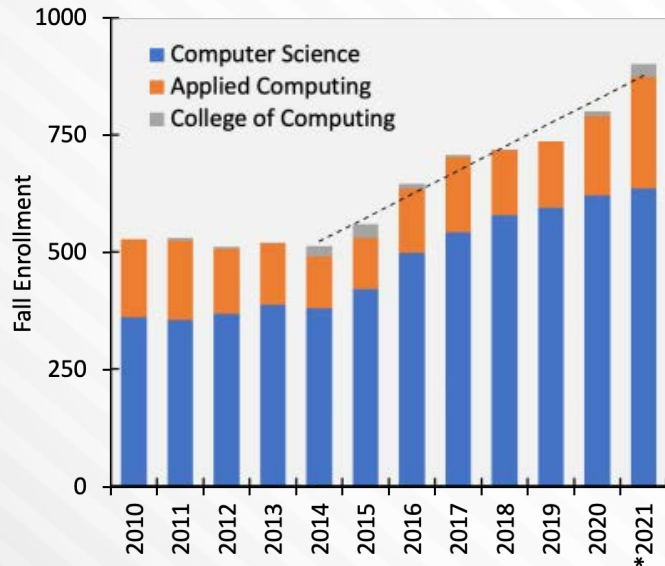


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A convenient way to differentiate out departments...
AC is focused on computing infrastructure, whereas CS is focused on software.

Enrollment

We have grown 58% between 2014 and 2020!

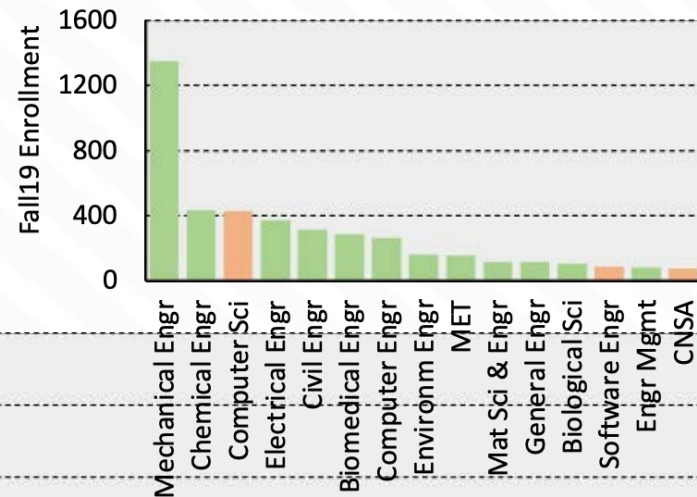
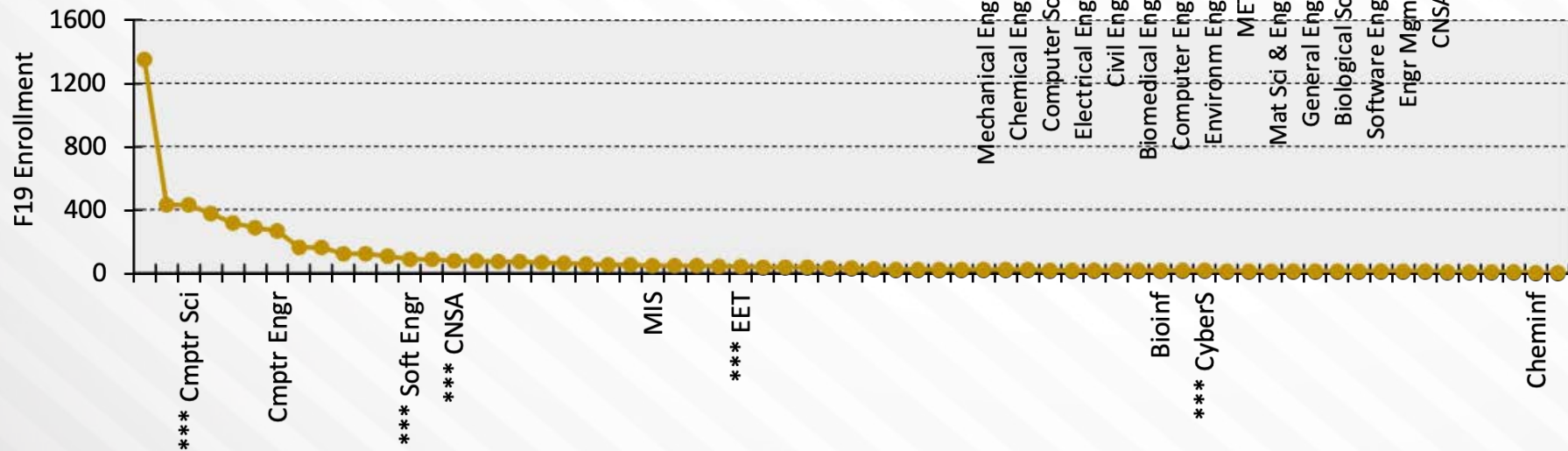


F20 DEMOGRAPHICS		
Level		
Undergraduate	689	(88.4%)
Graduate	90	(11.6%)
Gender		
Male	649	(83.3%)
Female	120	(16.7%)
Ethnic Code		
White	616	(79.1%)
International	54	(6.9%)
Asian	36	(4.5%)
Multiracial	28	(3.6%)
Hispanic	19	(2.4%)
African American	9	(1.2%)

F20 ENROLLMENT %		
Computer Science		75.6%
Computer Science	63.4%	
Software Engineering	12.2%	
Applied Computing		14.6%
CNSA	8.4%	
EET	4.2%	
Health Informatics	0.6%	
Mechatronics*		1.4%
College of Computing (other)		9.7%
Cybersecurity	5.8%	
Data Science	2.2%	
General Computing	1.1%	
CSE PhD	0.6%	



Context...



The Student Experience



Computing Learning Center Advising

- A pair of advisors dedicated to computing

Enterprise:

- Husky Game Development
- Humane Interface Design

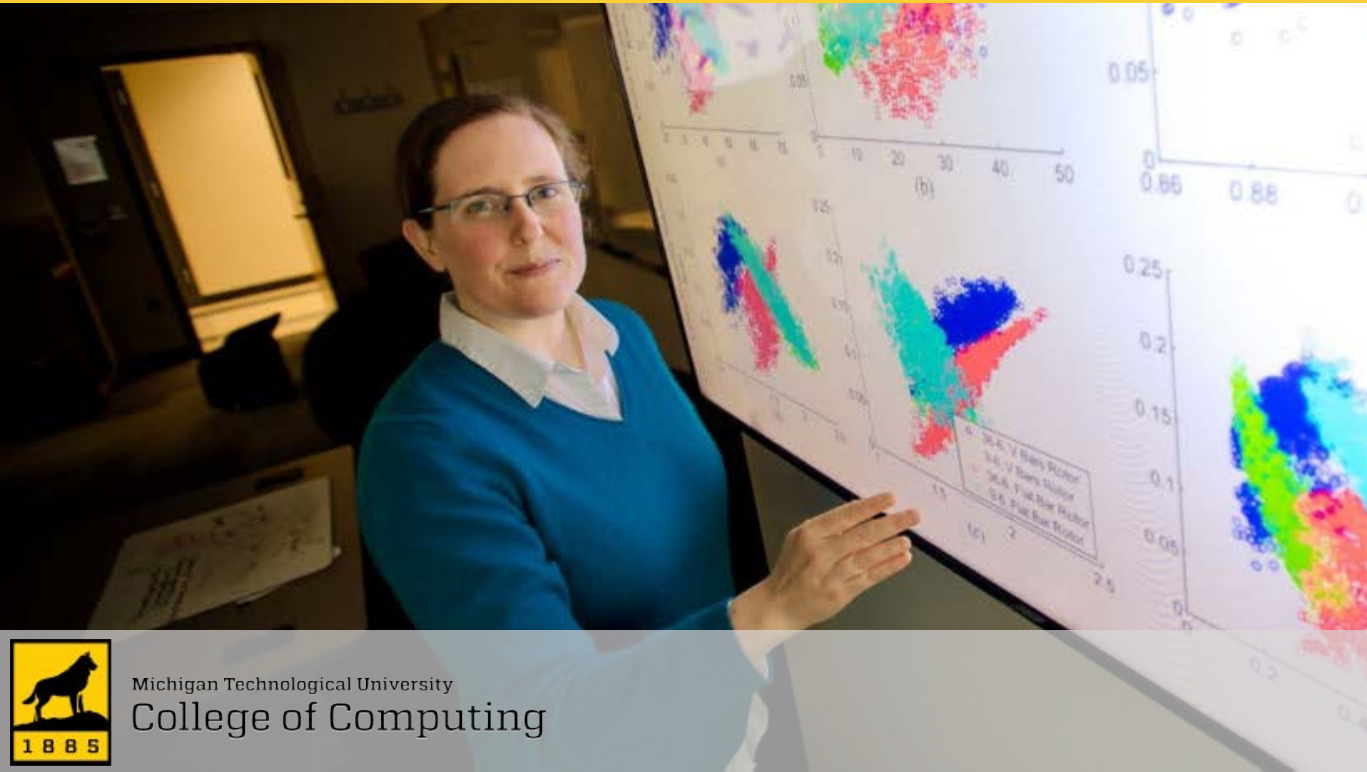
Student Clubs:

- Copper Country Coders
- DevOps Club
- Esports @ Michigan Tech
- Mind Trekkers
- Red Team
- Women in Computing Sciences



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Research in the College of Computing



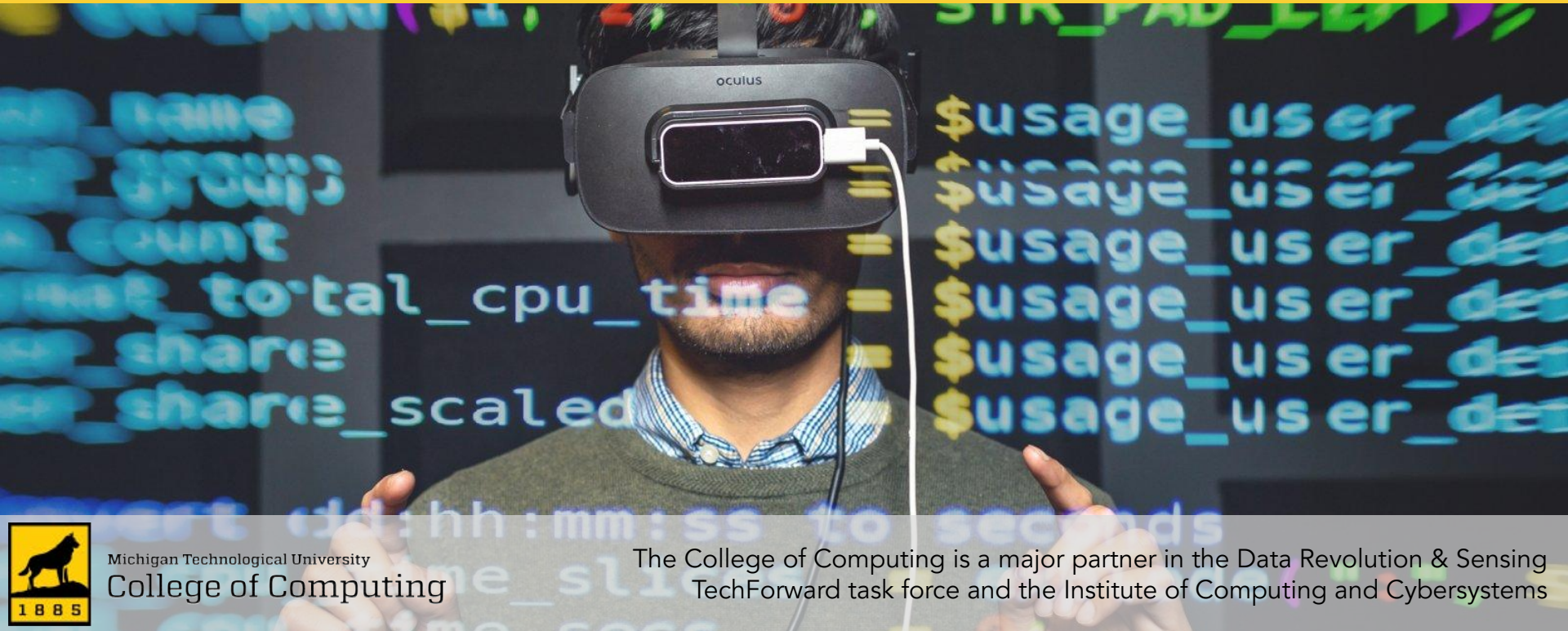
Focus Areas:

- AI and Machine Learning
- Bio-Computing and Health Informatics
- Computing Education
- Cyberphysical Systems
- Cybersecurity
- Data Science
- Human-Centered Computing
- Programming Languages
- Scalable Architectures and Systems
- Software Engineering



Convergence

...because every discipline is a computing discipline



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The College of Computing is a major partner in the Data Revolution & Sensing
TechForward task force and the Institute of Computing and Cybersystems



There is still a lot to do:

- Plan for sustainable growth, especially wrt near- and long-term physical space needs
- Diversity & Inclusion strategic plan
- Retention plan - we must do better ensuring our students are successful
- Expand our portfolio of programs in Data Science and Cybersecurity
- Build our brand and refine our messaging



Questions?



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Thank you for your attention.