

Empowering Tomorrow's Precision MedTech with Sensor Solutions



Andrew Fung
Director of Business
Development

A. M. Fitzgerald & Associates

MAY 7, 2025
8am - 9am PT



- **SEMI & MSIG Introduction**
 - Paul Carey, MSIG Director
[~5 minutes]



- **A. M. Fitzgerald & Associates:**
 - Andrew Fung (+ live polling!)
[~40 minutes]



- **Q&A**
[5 minutes]

- **MSIG Closing [5 minutes]**



SEMI & MSIG Overview

Paul Carey, Ph.D.
Director SEMI MSIG


May 2025

SEMI

SEMI® connects 3,000+ member companies and 1.3 million professionals globally, driving advancements in the end-to-end electronics design and manufacturing supply chain.

SEMI members innovate in materials, equipment, software, devices, and end-market applications, enabling smarter, more affordable electronic products.

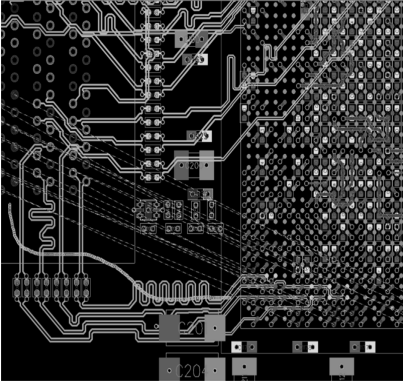
SEMI is Uniquely Qualified to Address the Industry's Top Challenges that Require Global Collaboration

	Foundational	Expanded Programs and Scope			2025 Top Priorities
<p>3,000+ members worldwide</p> <p>Spanning the Semiconductor and Electronics Design and Manufacturing Supply Chain</p> <p>Driving Global Programs</p>	Thought Leadership	Worldwide Offices	Market Intelligence Reports	Tech partners: imec, Fraunhofer, CEA-Leti, IEEE, ITRI, AIST	<p>Supply Chain Resilience</p> <p>Global Advocacy & SIPS Platform</p> <p>Workforce Development</p> <p>Sustainability - 3E's</p> <p>PFAS</p> <p>Cybersecurity & AI</p>
	Standards	2,300+ Program Hours			
	SEMICON® Expositions/Conferences	170+ Tech Programs	Smart Initiatives Think Tanks	Strategic Tech Communities: ESDA, IESA, FOA, FlexTech, MSIG, SOIC	
	EHS	20+ Tech Communities			

CONNECT - COLLABORATE - INNOVATE

Market Reports/Databases

Electronic Design



- Electronic Design Market Data

Fab/Foundry



- World Fab Forecast
- World Fab Watch
- FabView

- Foundry Fab Forecast Planned - H2 '25
- 300mm Outlook
- 200mm Outlook
- Power and Compound Semiconductor Outlook
- MEMS/Sensor Fab Outlook

Equipment Market



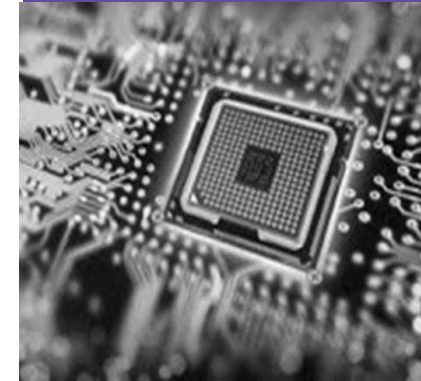
- Equipment Market Data Subscription (EMDS)
 - N.A. Billing Report
 - WWSEMS
 - Consensus Equipment Forecast
- Semiconductor Manufacturing Monitor

Materials Market



- Material Market Data Subscription (MMDS)
- Photomask Characterization Report
- Silicon Wafer Monitor

Specialty/Regional



- Global Semiconductor Packaging Materials Outlook 2024 Published
- WW Assembly & Test Facilities Next Update Q2 '25
- Mass Flow Controller



SEMI Technology Communities

PROVIDING TECHNOLOGY STEWARDSHIP & COLLABORATION ACROSS THE ECOSYSTEM

PARTICIPATE | CONNECT | CONTRIBUTE | LEARN | LEAD | ENGAGE | COLLABORATE | TEACH | NETWORK | DISCUSS | CHALLENGE

One SEMI Membership → Many Technology Communities!

SMART Initiatives

- SMART DATA-AI
- SMART MANUFACTURING
- SMART MOBILITY
- SMART MEDTECH

Strategic Initiatives

- SEMICONDUCTOR CLIMATE CONSORTIUM
- ENVIRONMENT, HEALTH, SAFETY (EHSS)
- SUPPLY CHAIN MANAGEMENT INITIATIVE

Technology Communities

- INFORMATION TECHNOLOGY LEADERSHIP (ITL)
- COLLABORATIVE ALLIANCE FOR SEMICONDUCTOR TEST (CAST)
- ADVANCED PACKAGING & HETEROGENEOUS INTEGRATION (APHI)
- Semiconductor Manufacturing Cybersecurity Consortium (SMCC)
- ELECTRONIC SYSTEM DESIGN ALLIANCE (ESDA)
- SOI+ CONSORTIUM
- Photronics (Coming soon)
- FAB OWNERS ALLIANCE (FOA)
- MEMS & SENSORS INDUSTRY GROUP (M)
- Flexible & Printed Electronics (FlexTech)
- NANO-BIO MATERIALS CONSORTIUM (nbmc)
- ELECTRONIC MATERIALS GROUP (EMG)
- SEMICONDUCTOR COMPONENTS, INSTRUMENTS & SUBSYSTEM (SCIS)
- Quality Community
- R&D: Position, Navigation, & Timing PNT
- R&D: Flexible Electronics & Wearables
- R&D: Healthcare & Medical Electronics
- Compound Semiconductors
- Silicon Manufacturers Group



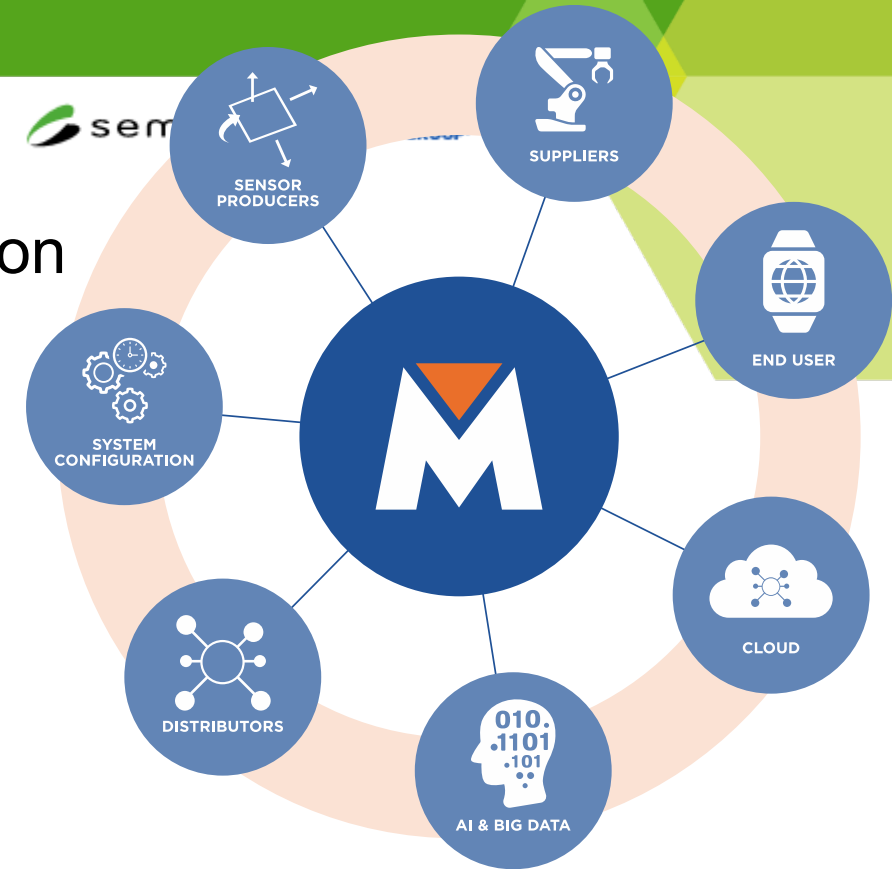
■ SEMI

- **The** premier global semiconductor trade organization
- 3000+ member companies
- Your gateway to the semiconductor supply chain



















■ MEMS and Sensors Industry Group (MSIG)

- Technical Community within SEMI
- 200+ member companies worldwide
 - *Members connected to the sensor supply chain*
- Mission - Support member company growth with:
 1. Education and Networking (*conference & events*)
 2. Promotional opportunities (*SEMI blogs, webinars, social media*)
 3. Collaborative problems solving (*industry task forces and workgroups*)
 4. R&D funds (*\$25M 2022-2027 in positioning, navigation, and timing sensors*)
 5. New opportunities and markets (*e.g. BusDev in Smart Cities*)



MSIG website: msig.org

2025 SEMI & MSIG Program Calendar

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MSIG GC		■			■			■			■	
Quarterly Newsletters			■			■			■			■
SEMI MSIG Webinars		■	■	■	■	■	■	■	■	■	■	
SEMI MSIG PNT R&D Program	<p>5 YEAR (2022-2027), \$25M Positioning, Navigation, and Timing (PNT) R&D Funding Program Activities: Gap Analysis Workshops, RFPs, Proposal Ranking, Awards, Quarterly Project Reviews</p>											
Monthly Working Group Meetings	Device – gas sensor calibration white paper #1				Device – gas sensor calibration white paper #2							
	Manufacturing – MS15 Standard			Manufacturing – New Topic (photonics in MEMS, MEMS tutorials, emerging materials education, HI/Advanced Packaging, etc ...)								
	Reliability – MEMS Mission profiles and white paper											
Outreach & Happy Hours	Member Outreach and Monthly Happy Hours											
MSIG Events			 March 26-27 Georgia Tech						 September 17-18 SEMI Headquarters (Milpitas, CA)	 MSIG SEMICON West Stage & Reception Oct 8 Phoenix, AZ	 Nov 19 Munich, Germany	
MSIG Outreach Events			 March 30 – April 2 Shenzhen			 June 24-26 Santa Clara	 ORLANDO, FLORIDA 29 JUNE - 3 JULY, 2025 June 29 – July 3 Orlando, FL			 October 20-24 Suzhou, China		
SEMICON Events	 Feb 19-21 Seoul, Korea	 Mar 26-28 Shanghai, China		 May 20-22 Singapore				 Sept. 10-12 Taipei, Taiwan	 October 7-9 Phoenix, AZ	 Nov 18-21 Munich, Germany	 Dec 10-12 Tokyo, Japan	
								 Sept 1-3 Greater Noida, Delhi, India				



Sensors
Converge

40
YEARS

Half-Day Workshop: Advancing MEMS: Cutting-Edge Sensor Technologies and Manufacturing Trends



BOSCH



MEMS



June 24, 2025 | Santa Clara Convention Center | Santa Clara, CA

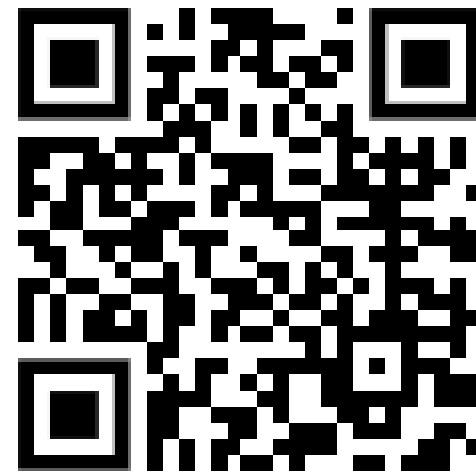


THE 23rd INTERNATIONAL CONFERENCE ON
SOLID-STATE SENSORS, ACTUATORS AND MICROSYSTEMS

TRANSDUCERS 2025

ORLANDO, FLORIDA ■ 29 JUNE – 3 JULY, 2025

**MSIG Contributing to
the Industry Session!**



More Information



MEMS & SENSORS
INDUSTRY GROUP®



MEMS & SENSORS® NEXTGEN

September 16-18, 2025 | SEMI Global Headquarters | Milpitas, CA

PARTICIPATING COMPANIES INCLUDE:



And Over 180 More Companies!

Join Us! Email to msig@semi.org



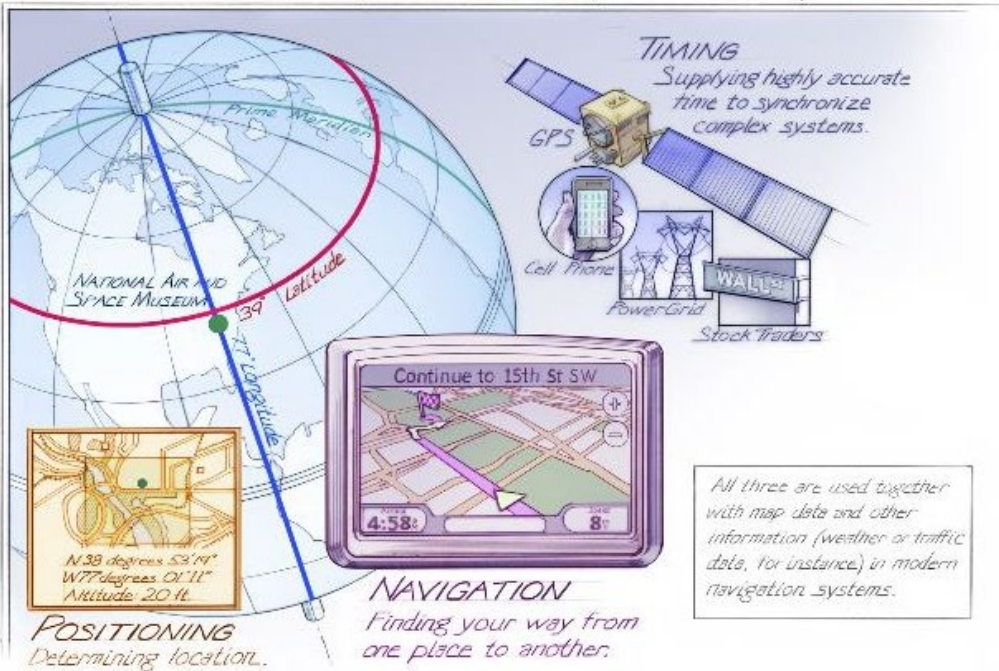
MSIG R&D Funding

SEMI MSIG PNT R&D Program: (Partner is ARL)



PNT: Positioning, Navigation, and Timing - dual use technology good for both private and public sectors

PNT (POSITIONING, NAVIGATION, AND TIMING)



PNT R&D Thrust Areas:

Thrust Area 1: Novel Materials, Fabrication, Testing, and Packaging Techniques for Low-SWaP Inertial and PNT Sensors

Thrust Area 2: Advanced Active and Passive Integrated Photonics for Low-SWaP Atomic Clocks, Quantum Systems, and PNT Sensors

Thrust Area 3: Advancements Towards Low-SWaP, GPS-Free PNT Technologies

PNT Program Overview:

- Key Program Dates:
 - Start: 2020
 - Current Contract: 2022-2027
- Total Funding to date:
 - SEMI: **\$14.1M**
 - SEMI + Cost Share: **\$32.5M**
- Total # Projects to date: **28**
- Total # Unique Subawardees:
 - Primes: **14**
 - Subrecipients: **9**
 - Subcontractors: **17**
- PNT Governing Council (GC) and Technical Advisory Council (TAC):
 - GC (5): ADI, NXP, Teledyne, Northrop Grumman, GE Aerospace
 - TAC (3): SoftMEMS, GE, PNI Sensor
- Total # PNT Consortium Members: **> 150**

SEMI-MSIG PNT Funded Institutions

Item	Phase I (2020-2022) - FT19			Phase II (2022-2027) - PNT22					
				YEAR 1 (RFP June 2022)			YEAR 2 (RFP October 2023)		
	Lead	Subrecipient	Subcontractor	Lead	Subrecipient	Subcontractor	Lead	Subrecipient	Subcontractor
1	GE Research		Axus, GE Aviation, Inertial Wave	PARC	EPFL		Forge Nano	GE	SoftMEMS
2	PARC	EPFL	AFRL	Honeywell (IMU Calibration)			Infleqtion	UCSB	ARL
3	Teledyne Scientific CSAC			Honeywell (3D Package)			Georgia Tech		Disco, II-VI, EVG, Plasma-Therm, Axus, SoftMEMS, StethX, ARL
4	Georgia Tech		Axus, Disco, EVG, II-VI, Semilab, SAMCO, SPTS, StethX	Nexus Photonics	Vapor Cell Technologies		Teledyne Scientific (Trimming)	Teledyne MEMS	
5	Analog Devices		Toyon, Asygn	ColdQuanta/Infleqtion	UCSB, Morton Photonics	ARL	SRI	EPFL, DRS Daylight Solutions	
6	SiTime		Bosch	Georgia Tech		Disco, II-VI, EVG, SPTS, Plasma-Therm, Axus, SoftMEMS, StethX, Uyemura	Honeywell		
7	Teledyne Scientific IMU		Inertial Wave	GE Research		SoftMEMS	Analog Devices		
8	Carnegie Mellon			Teledyne Scientific	Teledyne MEMS, InertialWave		Teledyne Scientific (CSAC)		
9	Twinleaf	Photodigm		Purdue	Anello Photonics		GE Research PDK		SoftMEMS
10	Honeywell								



Back to Today's Webinar

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- **Q&A**
[5 minutes]
- **MSIG Closing [5 minutes]**

Get Ready to do some polling! Enter your contact information so we can reach out to you!

Scan this QR code
to join →

**Enter your email and you're ready to do some polling!
Hit the "Join" button**





Questions?

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Sensors
Converge

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YEARS

Half-Day Workshop: Advancing MEMS: Cutting-Edge Sensor Technologies and Manufacturing Trends



BOSCH



MEMS

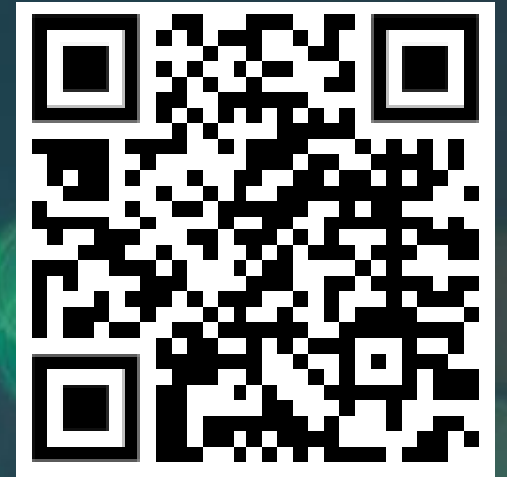


June 24, 2025 | Santa Clara Convention Center | Santa Clara, CA





MEMS & SENSORS
INDUSTRY GROUP®



MEMS & SENSORS® NEXTGEN

September 16-18, 2025 | SEMI Global Headquarters | Milpitas, CA

THANK YOU





Paul Carey
MSIG Director




Questions?
Email me:
pcarey@semi.org

2024 MSIG Global GOVERNING COUNCIL (Strategy)

 **BOSCH**
Invented for life

 **Chair**
Stefan Finkbeiner
Bosch Sensortec

 **Vice-Chair**
Lorie Burmood
NXP





 **Bassam Saadany**
Si-Ware Systems





 **David Kirsch**
EV Group



 **Mary Ann Maher**
SoftMEMS



 **Mark Ding**
United Pioneering
Services



 **Claude Jean**
Teledyne DALSA



**CalTexan
Tech**


 **Craig Ensley**
CalTexan
Technologies


 **Sean Ding**
Vanke



 **Anton Hofmeister**
STMicroelectronics



 **Jessica Gomez**
Rogue Valley
Microdevices



 **Len Sheynblat**
Qualcomm




 **Bernhard Straub**
Infineon



 **Terence Gan**
Institute of
Microelectronics



 **Becky Oh**
PNI Sensor
Corporation



 **Sean Kim**
LG Electronics



 **Sabah Sabah**
Analog Devices



Based in Asia

Based in Europe

Based in N. America

Advancing MEMS: Cutting-Edge Sensor Technologies and Manufacturing Trends



**Sensors
Converge** | 40
YEARS



June 24-26, 2025
Santa Clara Convention Center
Santa Clara, CA

Speakers:



Paul Carey

SEMI MEMS & Sensors Industry Group



Marcellino Gemelli

Bosch Sensortec GmbH



Eric Aguilar

Omnitron Sensors



Rodion Kononchuk, Ph.D.

A.M. Fitzgerald & Associates



Jan Mehner

i-ROM



Mike Housholder

xMEMS Labs



Hiroshi Miyajima, Ph.D.

MEMS Infinity, Sumitomo Precision Products
Co. Ltd.



Ardy Sidhwa, Ph.D.

Noel Technologies



Clyde Midelet

Yole Group



MSIG Workshop

Polling Results

Get Ready to do some polling! Enter your contact information so we can reach out to you!

Scan this QR code
to join →

**Enter your email and you're ready to do some polling!
Hit the "Join" button**



To join, go to: ahaslides.com/AMFMEDMEMS

 AhaSlides

Where in the world (or in the US, which state) are you tuning in from?

texas

california

canada

de

france
singapore

austin texas

 3  11  2/200

To join, go to: ahaslides.com/AMFMEDMEMS

 AhaSlides

AMFITZGERALD

Where are you on your MEMS development journey? (pick one)

INNOVATION CAPABILITIES PZT MEMS CLIENTS

Our MEMS innovation.
Your goals. Unstoppable.



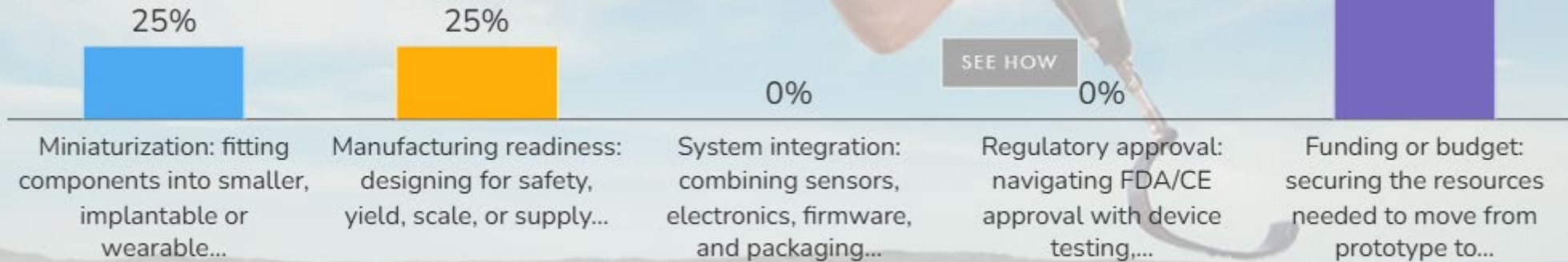
SEE HOW

To join, go to: ahaslides.com/AMFMEDMEMS

 AhaSlides

What is your biggest development challenge right now?

Our MEMS innovation.
Your goals. Unstoppable.



The AMFitzgerald Innovation Process

Which application area interests you most for future projects?



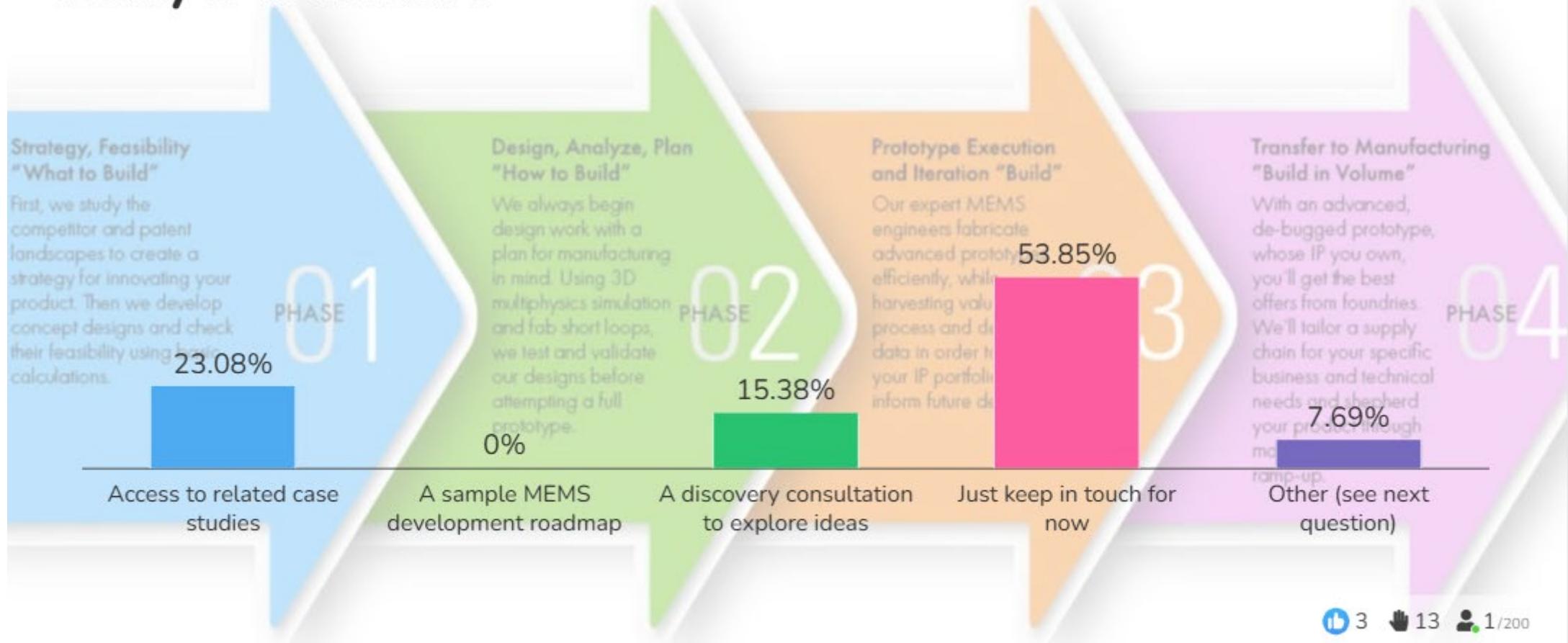
The AMFitzgerald Innovation Process

If you replied "Other" please write your interest for a future project



The AMFitzgerald Innovation Process

What would you find most helpful after hearing today's webinar?





Thank you!