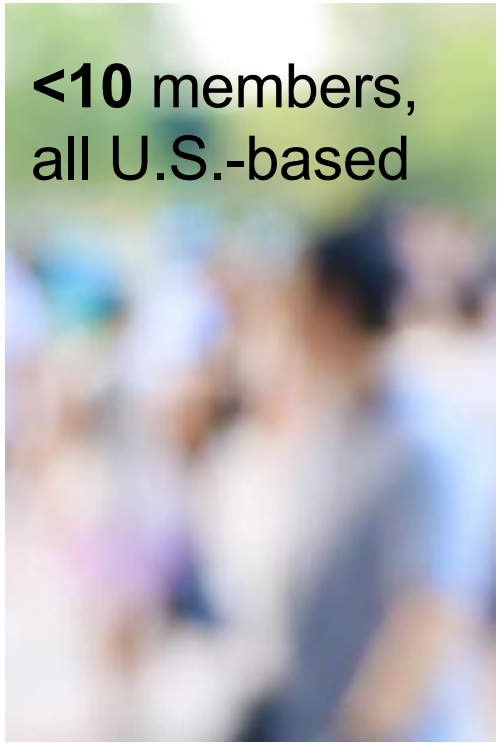
Semiconductor Manufacturing Cybersecurity Consortium

Andrew Seward
- SEMI SMCC Supply Chain Cybersecurity Co-Chair
- Marketing and Analytics Manager – TEL

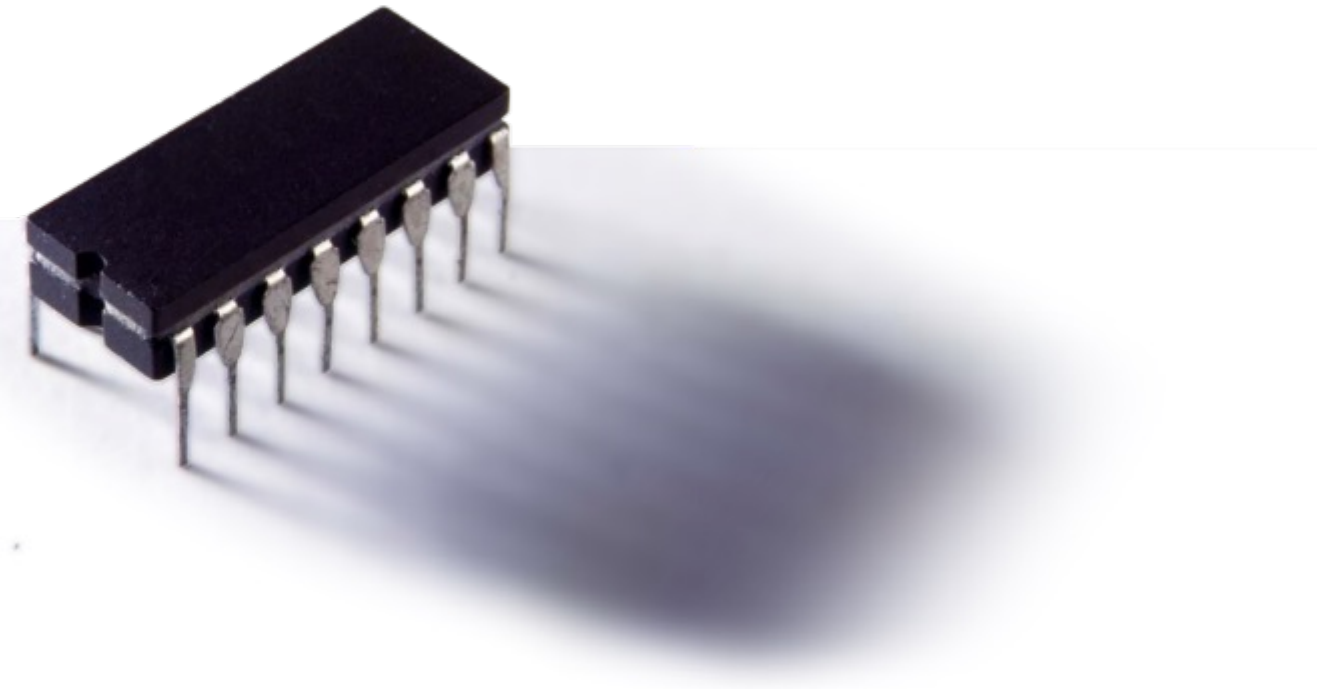
Jennifer Lynn
- SEMI SMCC Steering Committee Member
- SEMI SMCC Regulations and Standards Chair
- Cyber Defense Leader, IBM Semiconductors

NIST/National Cybersecurity Center of Excellence
Rockville, MD
27 Feb 2024

SEMI at Its Founding in 1970



- Thought Leadership
- Standards
- Expositions/ Conferences
- EHS

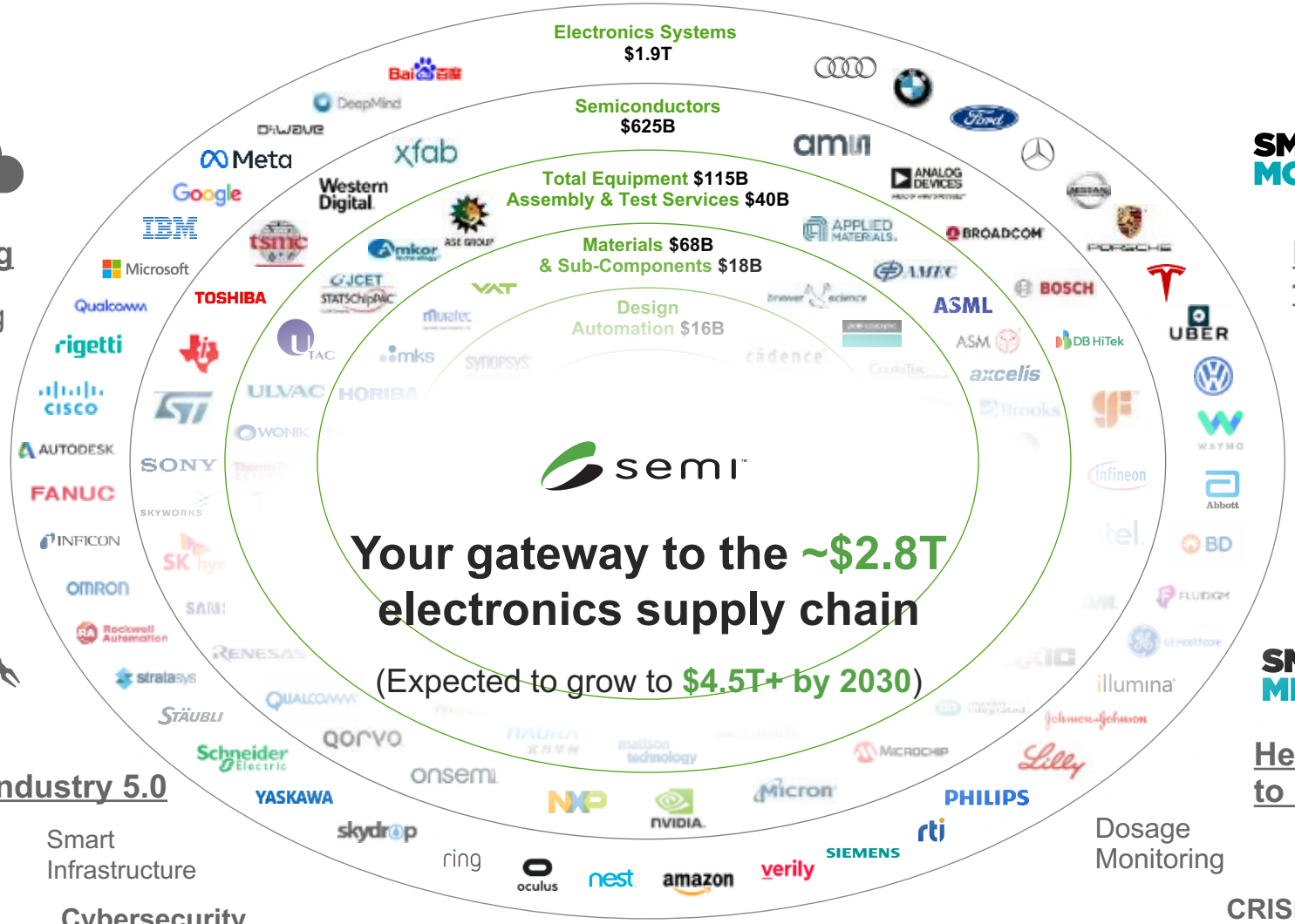


50+ Years Later: SEMI is More Than Ever and Growing!

Thought Leadership	Worldwide Offices	Market Intelligence Reports	Tech partners: imec, Fraunhofer, CEA-Leti, IEEE, ITRI, AIST	**Talent Development, DEI & e-learning**
1,000+ Standards	2,300+ Program Hours			**Global Advocacy**
Expositions/ Conferences	170+ Tech Programs	Strategic Tech Communities: ESDA, FOA, FlexTech, MSIG, SOIC	Smart Initiatives	**Supply Chain Management & Cybersecurity**
EHS/ESG	20+ Tech Communities		Think Tanks	**Sustainability**

2024 Top Priorities

Bringing the Supply Chain Together through Key SEMI Initiatives



SMART DATA-AI

AI

Quantum Computing

Machine Learning

5G to 6G

Bitcoin Mining

Blockchain

Digital Economy

SMART MOBILITY

Near-zero fatalities

Zero Emissions

Autonomous Vehicles

Electric Vehicles

Driver Assistance

Fleet

Trucking

Smart City

SMART MANUFACTURING

4th Industrial Revolution → Industry 5.0

Realtime Configuration

Robotics

Smart Infrastructure

3D Printing

Adaptive Manufacturing

Cybersecurity

SMART MEDTECH

Health Span to Life Span

Fitness Tracking

Biometrics

Human Performance Monitoring

Dosage Monitoring

CRISPR

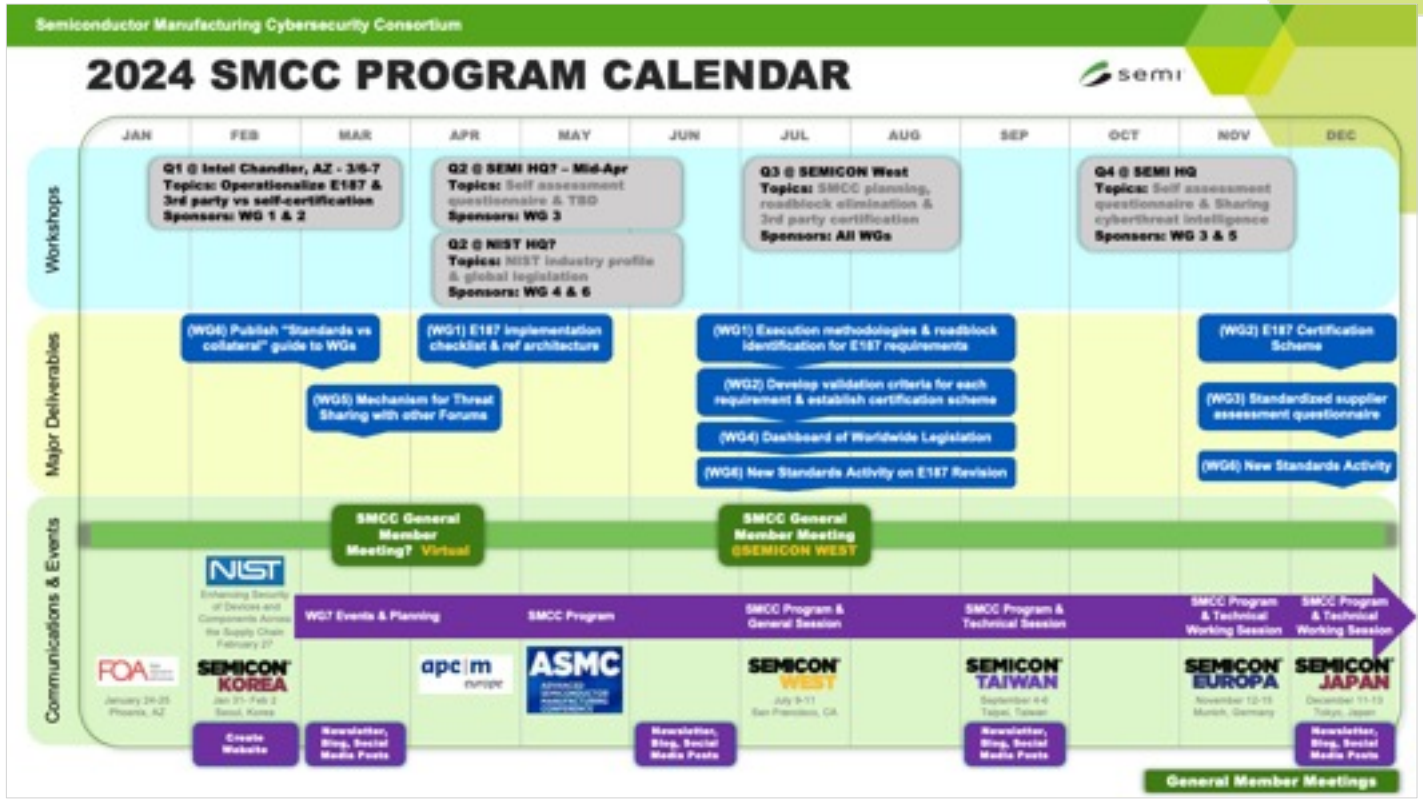
Wearables

2022 Market Data Estimates Sources: SEMI, IC Insights and TechInsights

Used with permission
Suerich, D – PeerGroup (2023, July). Getting to "Safe" [PowerPoint Presentation], Semicon West 2023

PEERGROUP

Evolution of the SMCC



Semiconductor Manufacturing Cybersecurity Consortium

Problem Statement

The **incidence of cyber threats** is surging at an alarming rate year over year, leading to a **continuous escalation of cybersecurity risks** and their consequential impacts, all while implementation of **solutions lag behind**

Objectives

- Establish a broad methodology for cybersecurity for manufacturing that incorporates **lessons learned** and embraces **open collaboration**
- Develop and promote a **standards-based, semiconductor industry-specific** framework to improve cybersecurity and accelerate implementation of **actionable solutions** for the entire **supply chain**
- Incorporate **best practices** from industries such as automotive and medical with the aim to **modernize factory security** protocols

SMCC Philosophy - Coordinated Global Effort

- Cybersecurity risks are **solvable** problems
- Time is **now** to fully protect our industry's **ability to function**
- Don’t let “perfect” be the enemy of “good enough”
  - **Constraints** like efficiencies, cost effectiveness and utilizing the best solution **can & will come later**
- Collaborative & creative forums are the fastest method to **identify solutions**

Approach

- Formation of a **SEMI Technology Community** to collaborate with our member companies, leveraging expertise and best practices from within any industry

Optimal Member Profile

- Mix of **DMs & OEMs** representing **large and small** companies
- Active participation in **non-competitive** environment with focus on **problem-solving**

Est: 1/26/2024 – Founded from industry consensus to accelerate addressing CyS risks through collaboration

SMCC Members – 30+ Corporations/Orgs

As of 12/31/23

DMs
5

OEMs
14

Solution Providers
16

Govt & NGOs
6

SMCC Members – ~50 Corporations/Orgs

As of 1/31/24

DMs 7

OEMs 16

Solution Providers 19

Govt & NGOs 9

SMCC Members – ~50 Corporations/Orgs

As of 2/20/24

DMs 7

OEMs 16

Solution Providers 19

Govt & NGOs 9

2024 SMCC PROGRAM CALENDAR

semi

JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC

Workshops

Q1 @ Intel Chandler, AZ - 3/6-7
Topics: Operationalize E187 & 3rd party vs self-certification
Sponsors: WG 1 & 2

Q2 @ SEMI HQ? – Mid-Apr
Topics: Self assessment questionnaire & TBD
Sponsors: WG 3

Q2 @ NIST HQ?
Topics: NIST industry profile & global legislation
Sponsors: WG 4 & 6

Q3 @ SEMICON West
Topics: SMCC planning, roadblock elimination & 3rd party certification
Sponsors: All WGs

Q4 @ SEMI HQ
Topics: Self assessment questionnaire & Sharing cyberthreat intelligence
Sponsors: WG 3 & 5

Major Deliverables

- (WG6) Publish "Standards vs collateral guide to WGs
- (WG1) E187 implementation checklist & ref architecture
- (WG5) Mechanism for Threat Sharing with other Forums
- (WG1) Execution methodologies & roadblock identification for E187 requirements
- (WG2) Develop validation criteria for each requirement & establish certification scheme
- (WG4) Dashboard of Worldwide Legislation
- (WG6) New Standards Activity on E187 Revision
- (WG2) E187 Certification Scheme
- (WG3) Standardized supplier assessment questionnaire
- (WG6) New Standards Activity

Communications & Events

SMCC General Member Meeting? Virtual

SMCC General Member Meeting @SEMICON WEST

NIST — Enhancing Security of Devices and Components Across the Supply Chain February 27

WG7 Events & Planning | SMCC Program | SMCC Program & General Session | SMCC Program & Technical Session | SMCC Program & Technical Working Session | SMCC Program & Technical Working Session

- FOA — January 24-25 Phoenix, AZ
- SEMICON KOREA — Jan 31- Feb 2 Seoul, Korea
- apc|m europe
- ASMC — Advanced Semiconductor Manufacturing Conference
- SEMICON WEST — July 9-11 San Francisco, CA
- SEMICON TAIWAN — September 4-6 Taipei, Taiwan
- SEMICON EUROPA — November 12-15 Munich, Germany
- SEMICON JAPAN — December 11-13 Tokyo, Japan

Create Website

Newsletter, Blog, Social Media Posts (×5)

General Member Meetings

SMCC Working Groups

Execution Focused

Strategic Focused

Joining the SMCC will help us all secure our industry

Core-team members:
1 hour weekly or bi-weekly as aligned in WG

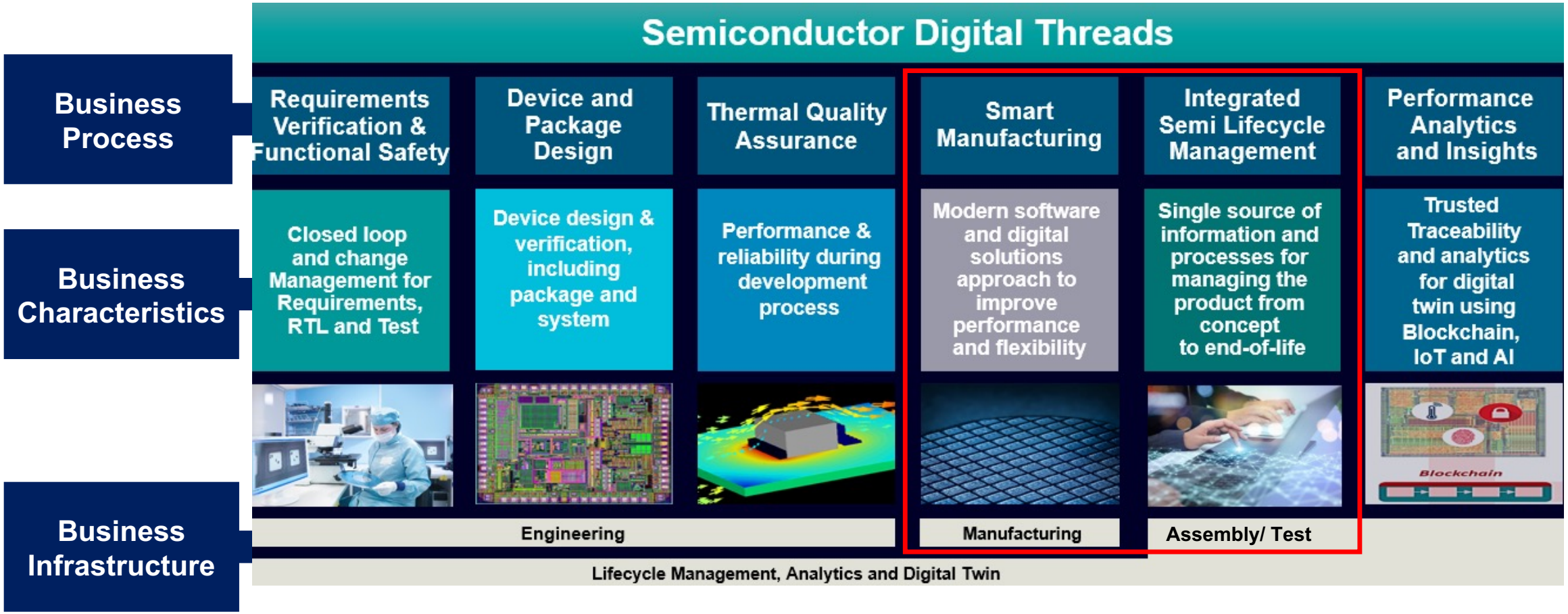
WG1: Factory Cybersecurity Implementation	Operationalize cybersecurity specs for factory tools & ID roadblocks Starting with SEMI E187
WG2: Compliance Readiness	How to ensure tools are compliant with standards including 3rd party and self certification
WG3: Supply Chain Cybersecurity	Establish methods for ecosystem (supply chain) security implementation & management
WG4: Regulation & Other Specs	Develop strategy for pending legislation & global standards ex. NIST CSF, EU Regulations, DFARS, ISA/IEC 62443
WG5: Threat Sharing	Implement methods for cyber threat intelligence sharing
WG6: CyS Pre-Standards Engineering	Architect comprehensive strategy for new & updated SEMI standards
WG7: Outreach, Comms & Events	Execute cybersecurity education and awareness campaign for semiconductor manufacturing & supply chain

SEMI WG4 Ambition to Co-Author NIST CSF Semiconductor Industry Community and Target Profiles

- NIST Cybersecurity Framework
  - Current version Cybersecurity Framework V1.1 (April 2018)
  - Cybersecurity Framework v2.0 (anticipated 1H 2024)
    - Public Draft Released and Comments Period Closed November 2023
- (External) Community Profiles / Target Profiles
  - Manufacturing Profile https://www.nist.gov/cyberframework/examples-framework-profiles
  - No standard template for a profile from NIST – this is a positive
  - Target Profile can address a specific use-case or technology and can be used to address gaps
    - Target Profile could address our legacy systems and provide additional OT guidance
- Consult with NIST CSF Team for final publication online informative repository (OLIR)

Securing the digital threads of the semiconductor industry

Product Manufacturing: Design➔End of Life (Semiconductors / Process/ Metrology Tools)



Questions for our Hardware Security Audience Today

- How do you see integrating SEMI and the SMCC integrating into your HW security efforts?
- How can NIST and others outside of semiconductors help support this effort and avoid duplicating the wheel?
- How does EDA fit into this overall initiative?

SMCC Contacts

Have questions?

SEMI Team

- Primary contact via Cybersecurity@semi.org
- Paul Trio Ptrio@semi.org
  - Director, Standards
- Mayura Padmanabhan Mpadmanabhan@semi.org
  - SMCC Project Manager

SMCC Startup Team

- Brian Korn Brian.D.Korn@intel.com
  - Staff Technologist – Manufacturing Equipment Automation and Cybersecurity – Intel
- Doug Suerich Doug.Suerich@peergroup.com
  - Director of Marketing - PEER Group
- Kannan Perumal Kannan_Perumal@amat.com
  - VP & Chief Information Security Officer - Applied Materials

SMCC Governing Council

- Aernout Reijmer Aernout.Reijmer@asml.com
  - Chief Security Officer – ASML
- James Tu 屠震 ZTU@TSMC.COM
  - Head of Corporate Information Security - TSMC
- Kannan Perumal Kannan_Perumal@amat.com
  - VP & Chief Information Security Officer - Applied Materials
- Wes Sparks Thomas.W.Sparks@intel.com
  - Director - Manufacturing Equipment Automation and Cybersecurity - Intel
- Doug Suerich Doug.Suerich@peergroup.com
  - Director of Marketing - PEER Group

Want to shape how we protect our industry? Please email us:


semi™


NIST
NATIONAL INSTITUTE OF
STANDARDS AND TECHNOLOGY
U.S. DEPARTMENT OF COMMERCE

BACK UP SLIDES

SEMI is a catalyst for **connection, collaboration,** and **innovation**, helping the semiconductor industry to deploy lifechanging tech worldwide.

- Company Neutral
- Geolocation Neutral
- 3000 Member Companies and Organizations
- 50+ Years of uniting and advancing the microelectronics industry
- Through its programs, communities, initiatives, products, and advocacy, SEMI informs its members, cultivates industry collaboration, drives action, and synchronizes innovation.
- Passionate volunteers driving the SEMI Manufacturing Cybersecurity Consortium (SMCC)

SEMI Advances a Global Industry

SEMI Vision

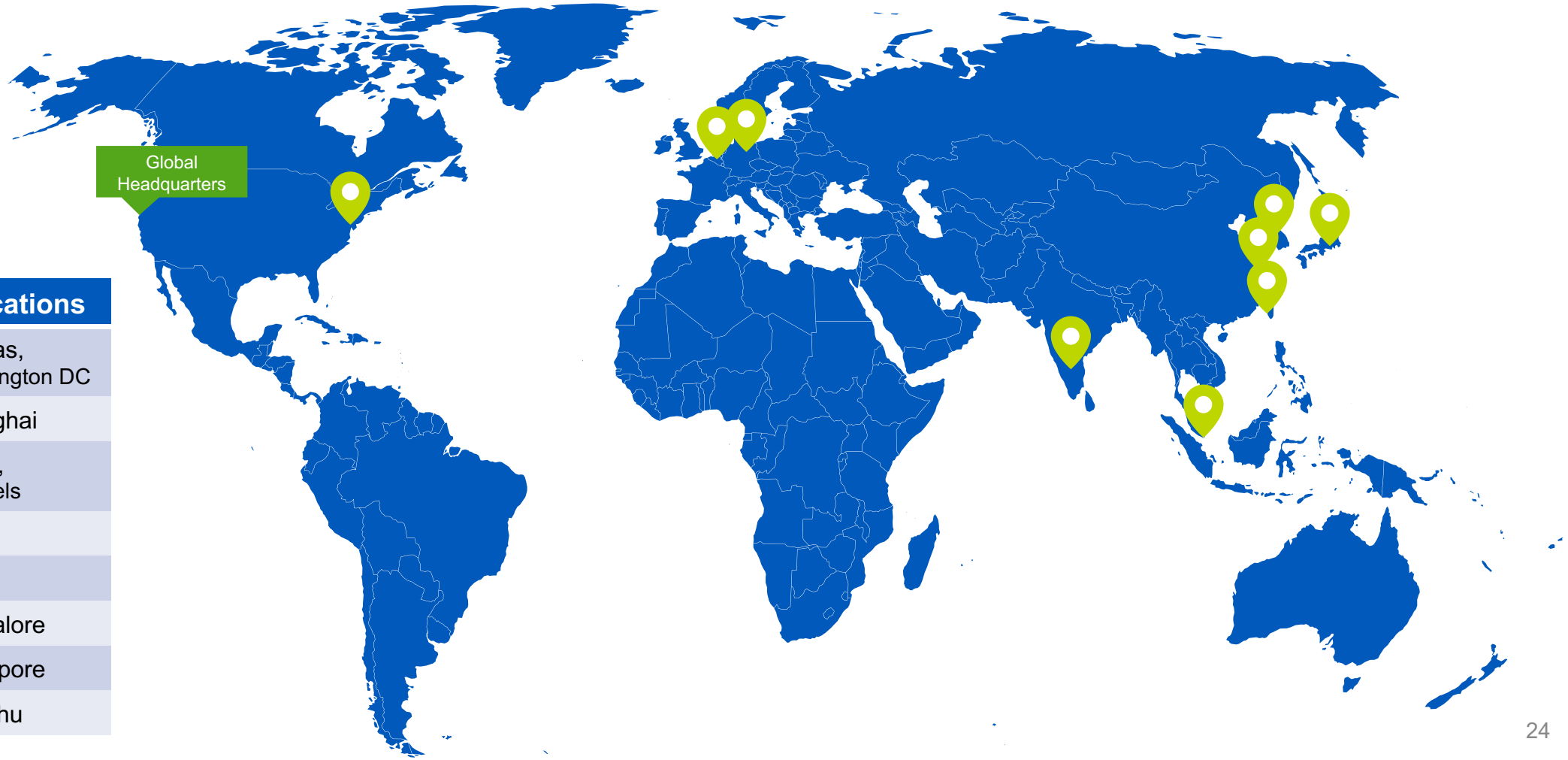
Be the preeminent industry association for the ever-expanding global electronics design and manufacturing supply chain, serving as the empowering catalyst for the sustainable growth of SEMI members to enable diverse technology innovations that universally enhance societal and economic benefits.

SEMI Mission

To advance the growth and prosperity of our member companies' ecosystems by constantly conceptualizing, developing and providing high-value products, services and solutions. SEMI advocates for a free and open global marketplace, leads workforce development efforts, connects members to new business opportunities in high-growth markets, nurtures pre-competitive collaboration, and helps accelerate innovation.

SEMI – A Global Scope for a Global Industry

Delivering a World of New Business Opportunities



Regions	Locations
Americas	Milpitas, Washington DC
China	Shanghai
Europe	Berlin, Brussels
Japan	Tokyo
Korea	Seoul
India	Bangalore
Southeast Asia	Singapore
Taiwan	Hsinchu

Validate dates/times

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Execution Focused

Strategic Focused

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Core-team members:
1 hour weekly or bi-weekly as aligned in WG

WG1: Factory Cybersecurity Implementation	Operationalize cybersecurity specs for factory tools & ID roadblocks Starting with SEMI E187	Tues @ 4:30pm PST
WG2: Compliance Readiness	How to ensure tools are compliant with standards including 3rd party and self certification	Wed @ 4:30pm PST
WG3: Supply Chain Cybersecurity	Establish methods for ecosystem (supply chain) security implementation & management	Mon @ 3:30pm PST
WG4: Regulation & Other Specs	Develop strategy for pending legislation & global standards eg. NIST CSF, EU Regulations, DFARS, ISA/IEC 62443	?? @ 4:30pm PST
WG5: Threat Sharing	Implement methods for cyber threat intelligence sharing	?? @ 4:30pm PST
WG6: CyS Pre-Standards Engineering	Architect comprehensive strategy for new & updated SEMI standards	Mon @ 3:00pm PST
WG7: Outreach, Comms & Events	Execute cybersecurity education and awareness campaign for semiconductor manufacturing & supply chain	Tues @ 11am PST

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January 2023

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Feb 6 2024

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Founded through industry consensus to urgently address CyS risks through a collaborative methodology

Draft

2024 SMCC PROGRAM CALENDAR

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Education & Awareness	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog	Monthly Newsletter & Blog
SMCC Workshops		Q1 @ SEMI HQ Topics: E187 Expectations & CyS KPI Measurements WG! & 2 Sponsor		Q2 @ ASMC Albany Topics: WG4 & WG6			Q3 @ SEMICON West Topics: SMCC planning, roadblock elimination & 3rd party certification			Q4 @ SEMI HQ Topics: Self assessment questionnaire & TBD		
							TBD					
SEMI Conferences	@FOA January 25 Phoenix, AZ	@SEMICON KOREA January 31 Seoul, Korea	No CyS Request @SEMICON China June ? Shanghai, China		No CyS Request @SEMICON SEA May ? Penang, Malaysia		2-day SMCC @SEMICON WEST July ? San Francisco, CA		1-day SMCC & TW @SEMICON TAIWAN September ? Taipei, Taiwan		1-day SMCC @SEMICON EUROPA November ? Munich, Germany	@SEMICON JAPAN December ? Tokyo, Japan
	FOA fab owners alliance Collaborative Forum January 24-25 Phoenix, AZ	SEMICON KOREA Jan 31- Feb 2 Seoul, Korea	SEMICON CHINA FPDCHINA June 20-22 Shanghai, China		SEMICON SOUTHEAST ASIA May 28-30 Penang, Malaysia		SEMICON WEST July 9-11 San Francisco, CA		SEMICON TAIWAN September 4-6 Taipei, Taiwan		SEMICON EUROPA November 12-15 Munich, Germany	SEMICON JAPAN December 11-13 Tokyo, Japan
	St					2Q			3Q			4Q

Semiconductor Manufacturing Cybersecurity Consortium

SMCC - Governing Council
Councilmembers:
DMs: Intel (Wes), TSMC (James)
OEMs: AMAT (Kannan), ASML (Aernout)
SP: PEER (Doug)

Removes roadblocks & sets priorities
Goals & Ambition Setting

SMCC - Steering Committee
WG Chairs: Intel (Brian), TSMC (Leon)
AMAT (Lori), TEL (Hagio-san)
IBM (Jennifer), ASML (Bill)

GC Sponsors: PEER (Doug) & AMAT (Kannan)

Validate Direction, Agenda, Objectives, Baselining, Roadmaps & Support of WGs

SMCC – Administration & SEMI Support
Outreach, Communications & Events

Staff: Paul & Mayura (SEMI)

1. Cybersecurity Implementation

Scope:
- Operationalize specs
- Identify & eliminate roadblocks

Chair - Intel: Brian K.
Vice-chair - TSMC: Leon
Vice-chair - AMAT: Dave D.

Core team: (DMs)
- SK Hynix: Seung
- TI: Jared
- Intel: Omar
- AMAT: Manas
- LAM: Bharat/Chen/John W.
- TEL: Matsuda-san
- PEER: TBD
- SCREEN: Motoyasu
- TXOne: Dr. Liu

2. Compliance Readiness

Scope:
- Risk & Gap ID
- 3rd party certification

Chair - AMAT: Dave D.
Vice-chair - TSMC: Leon
Vice-chair - Intel: Brian K.

Core team:
- DM –
- Intel: Berto
- AMAT: Manas
- Teradyne: Dan
- Onto: Tim
- Siemens: Laurent
- TEL: Matsuda-san/Andy
- ITRI: Dr. Zuo

3. Supply Chain Cybersecurity

Scope:
- Ecosystem security implementation & measures

Chair - TEL: Hagio-san
Vice-Chair - AMAT: Lori
Vice-Chair - ASML: Bill

Core team:
- Skyworks: Madan
- Intel: Tiffany & Brian K.
- TEL: Kohriyama-san/Andy
- AMAT: Sanjay, Ramu & Anusha
- Onto: Tim
- SCREEN: Motoyasu
- CISCO: Steven
- LAM: Pradeep

4. Regulation & Other Specs

Scope:
- Education & awareness
- Pending legislation
- Non-SEMI standards

Chair - IBM: Jennifer
Vice-Chair – AMAT: Raj
Vice-Chair - ASML: Wilco

Core team:
- TI: Jared
- AMAT: Raj P.
- LAM: Chen/John W
- Siemens: TBD
- PEER: Albert
- Deloitte: Hideyuki
- TEL: Katsuki-san

5. Threat Sharing

Scope:
- Cyber threat intelligence
- Incident response

Chair - ASML: Bill
Vice-Chair - IBM: Jennifer
Vice-Chair – Polaris: Chet

Core team:
- DM –
- Intel: Mike T & William Long
- AMAT: Raj P.
- TEL: Suzuki-san
- Onto: Tim
- NYCU: Dr. Shieh
- LAM: Brian S.

6. CyS Pre-Standards Engineering

Scope:
- SEMI branded spec
- Comprehensive global standards strategy

Chair - TSMC: Leon
Vice-Chair - Intel: Ryan
Vice-Chair - PEER: Albert

Core team:
- DM –
- AMAT: Dave D.
- LAM: Chen/John W
- Oxford: Rhys
- Agileo: Fahad
- TEL: Fujikawa-san & Mochizuki-san