

SkyWater Technology

A continuing legacy of semiconductor manufacturing excellence in Minnesota

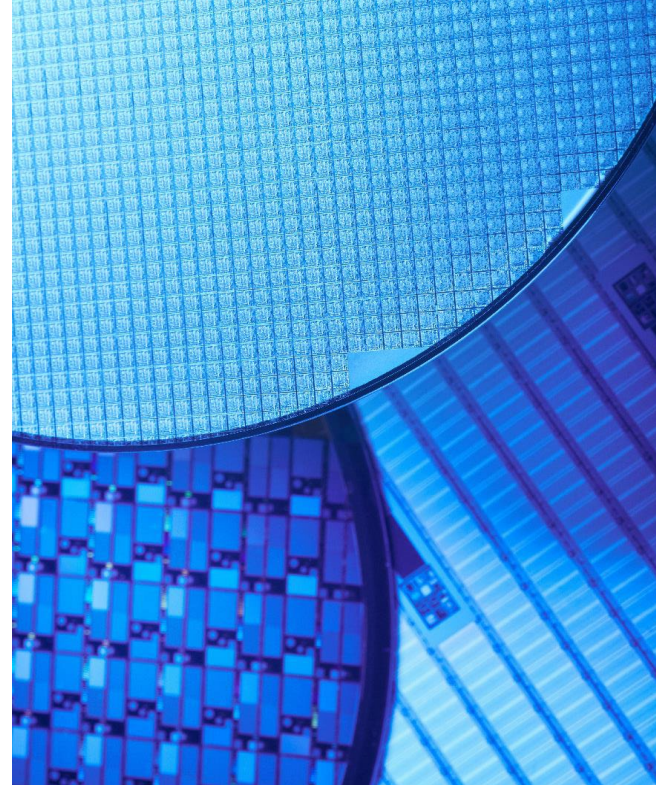
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Chief Government Affairs Officer
SVP/GM, Aerospace & Defense Business Unit
SkyWater Technology

Semiconductors are the Fuel
of the 21st Century Economy

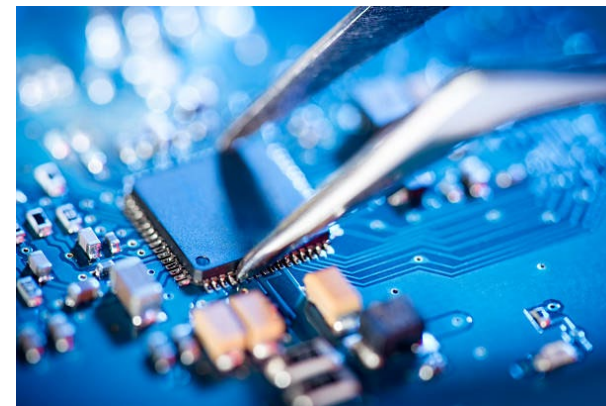


What is a Semiconductor?

- Also called integrated circuits, ICs, chips, or microchips
- Semiconductors are an important part of our modern lives and an essential component of ALL electronic systems
- Most anything with an on/off switch has a semiconductor in it!



Completed Silicon Semiconductor Wafers – shown with many devices fabricated all at once



Each tiny device is singulated (diced), packaged into a single product, then assembled into a board or module

A continuing legacy of Innovation, Based in Minnesota

Mainframe Computer Pioneer
In Business 1957 – 1992
HQ: Bloomington, MN
Dominant market position
Peak: \$2.93B / 18,000 employees



Predecessor Companies
WWII Navy Crypto Team
ERA → Rand → Sperry
Founders left to form CDC

Information Services

Magnetic Peripherals

Government Business

BiCMOS Fab

CMOS Fab



Seymour Cray

VTC Inc.

VTC Inc.
Cypress



CERIDIAN

HQ: Bloomington



SEAGATE

HQ: Fremont
Major Site: Bloomington



Mission Systems

Site: Bloomington



CRAY

Now HPE

Site: Bloomington



POLAR
semiconductor

HQ: Bloomington



skywater

HQ: Bloomington

→ CHIPS: A unique opportunity to reclaim our heritage as the Silicon Heartland



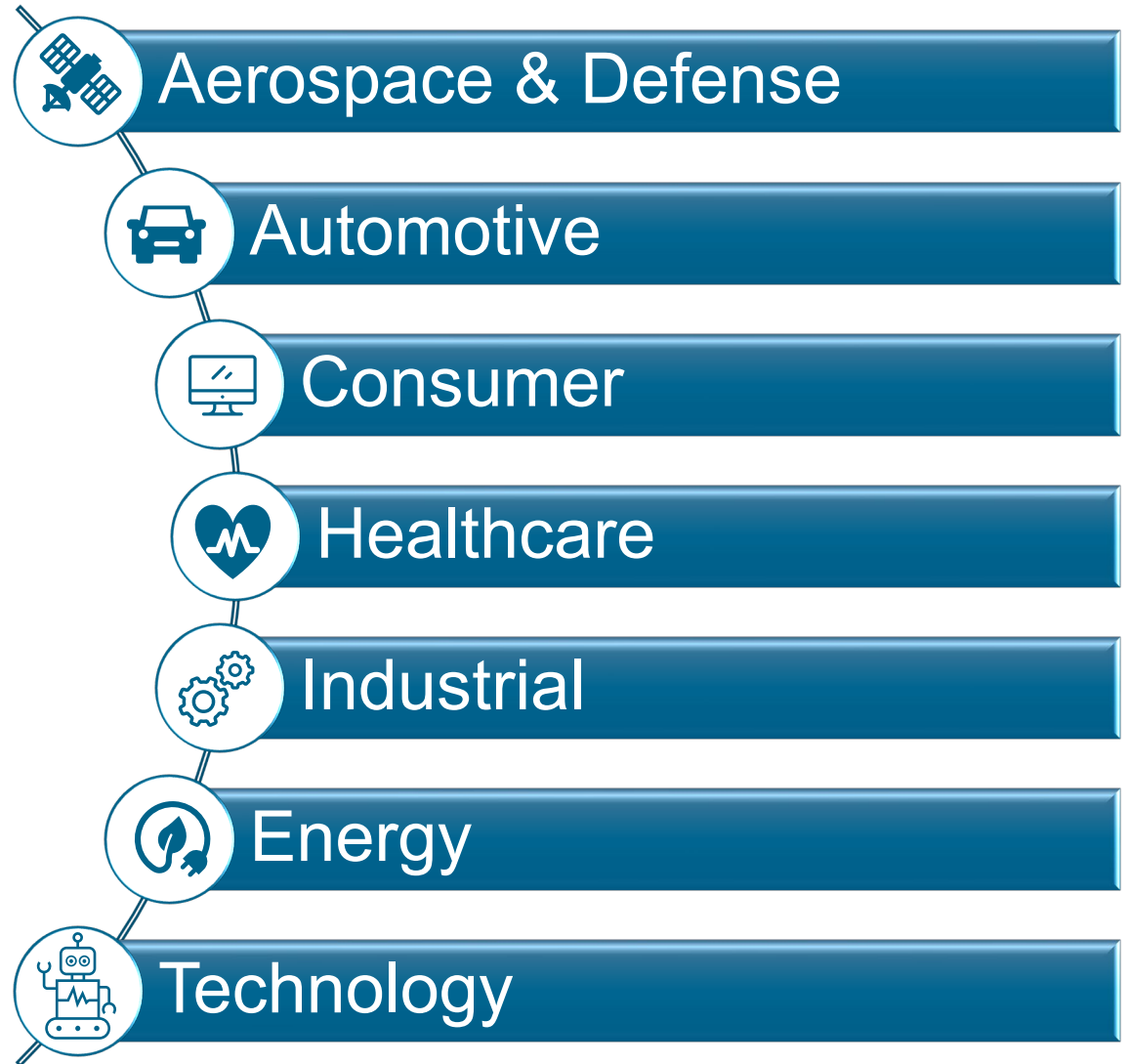
The Semiconductor Industry Enables Many Others

COVID-19 underscored the importance of semiconductors for remote work, telehealth, rapid vaccine development, among many other areas.

AI and 5G/6G are the most promising catalysts to put the 4th industrial revolution on a fast track.

New disruptive tech will fuel exponential growth:
75 years to reach \$500B in revenue
By 2030 revenue will reach \$1.3T (*)

(*) International Business Strategies January 2022



→ Semiconductor Infrastructure is critical for national and economic security

A Dynamic World Drives the Semiconductor Industry

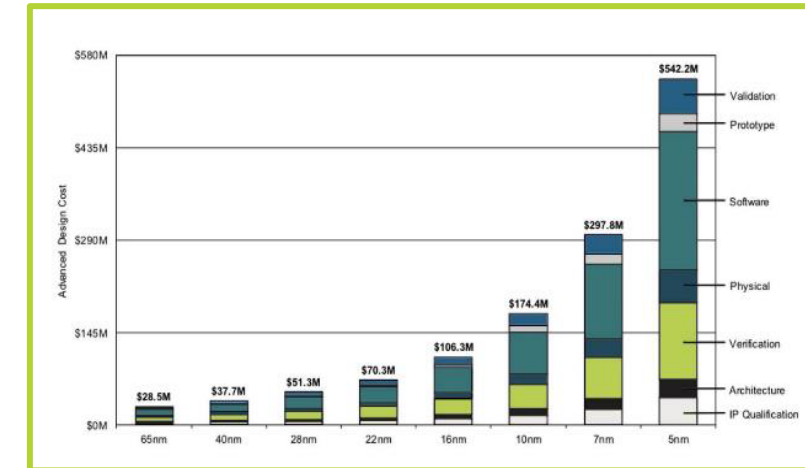
IP and Information Security Risks are Growing Concerns



Supply Chain Risks motivate Reshoring and Improved Transparency



Costs of New Product Design are Rising Exponentially

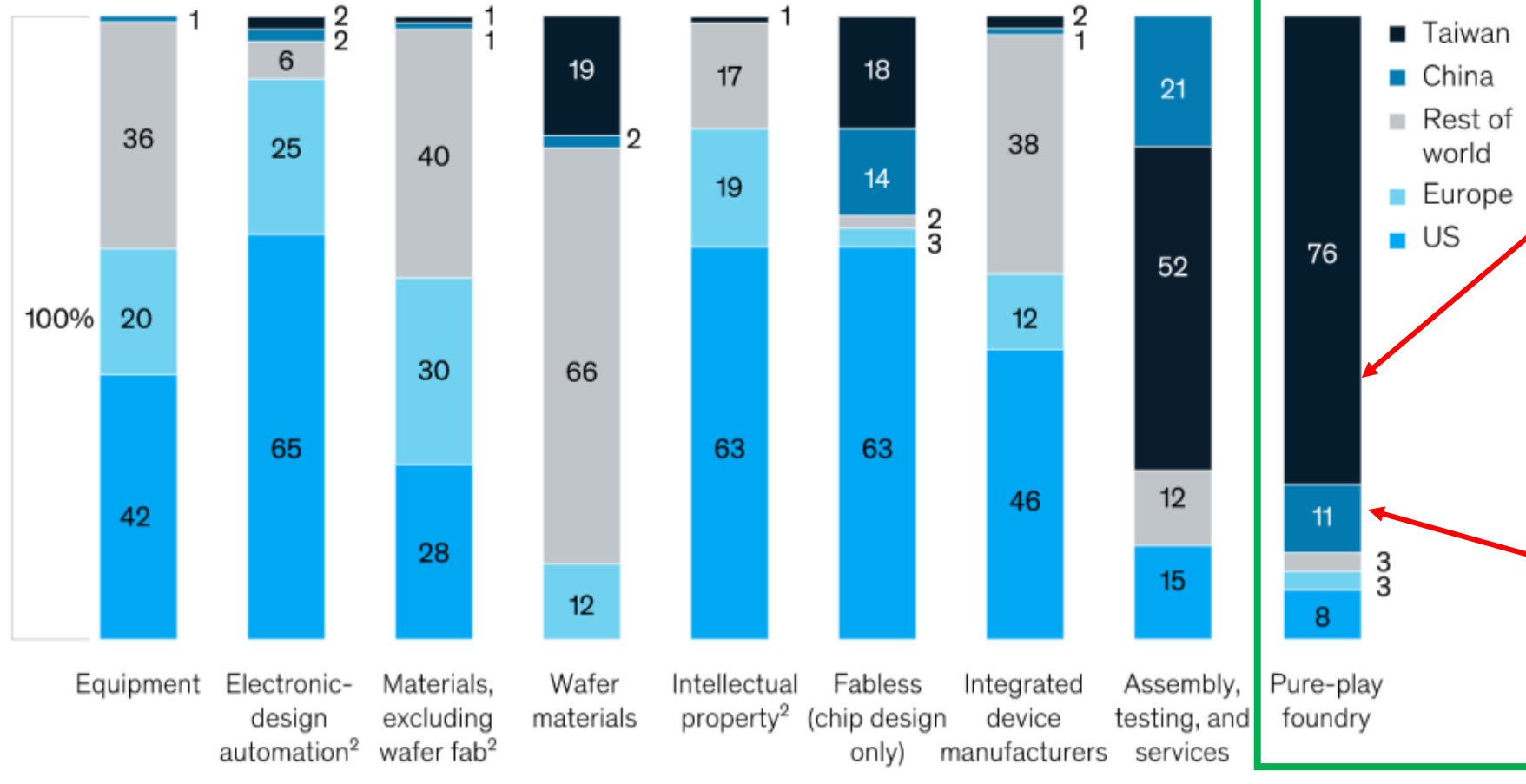


Most semiconductor innovation and equipment is produced in the US,
but only **12%** of microelectronics manufacturing happens in the US.

Source: Richard Waters. "US chip industry plots route back to homegrown production." *Financial Times*. Aug 2020.

Semiconductor Manufacturing is Concentrated in Asia

2020 semiconductor sales along the value chain,¹ % share



Taiwan dominates the Foundry market

A "Silicon Shield" protects Taiwan from China

China is investing \$150B to capture semi mfg

Pure-Play foundries are primarily overseas

Source: Ondrej Burkacky, Marc de Jong, and Julia Dragon. "Strategies to lead in the semiconductor world." McKinsey & Company. Apr 2022. <https://www.mckinsey.com/industries/semiconductors/our-insights/strategies-to-lead-in-the-semiconductor-world>

SkyWater is Revolutionizing Technology Realization



SkyWater's Unique Model Accelerates Disruption

OPEN ACCESS FOUNDRY SERVICES

Technology as a ServiceSM (TaaS)SM

Innovation as a Service



Manufacturing as a Service

Advanced Technology Services (ATS)

enable co-creation of differentiated solutions which are the unique expression of the combined customer/SkyWater multi-disciplinary technology teams.



Prototyping



Production



Wafer Services

supply customers with ICs and microdevices for commercial or mission ready products.

OUR TaaSSM MODEL

Co-creates disruptive technologies

Security Overlay enables support for Defense and Secure Applications

Leverages manufacturing scale for efficiency, speed, and reproducibility



Bloomington, MN



Kissimmee, FL



West Lafayette, IN

OPERATION

- ~600 employees
- 200 mm equipment
- 91,000 ft² Cleanroom (Class 10 + SMIF)
- 10,000 30 ML CMOS wafers/month or 50,000 MOSFET wafers/month
- 65 nm+ feature geometries

CERTIFICATIONS

- ISO9001 Quality Management System Certified
- ISO9100/IATF16949 Automotive Certified
- ISO13485 Medical Certified
- AS9100 Aviation, Space and Defense Certified
- ISO14001 Environmental Certified
- DMEA Cat 1A Trusted since 2010
- ITAR and Secure Processing Supported

OPERATION

- ~50 employees
- 200 mm equipment
- 35,400 ft² Cleanroom (class 1,000 & class 10,000)
- Site added to operation Feb 2021
- Facility will enable custom heterogeneous integration solutions
- Unique Public-Private Partnership (PPP)
 - Site/fab owned by Osceola County
 - SkyWater operates facility
 - Ecosystem partner with BRIDG (nonprofit)

CERTIFICATIONS

- ISO9001 Quality Management System Certified
- DMEA Cat 1A Trusted – pending, planned 2023

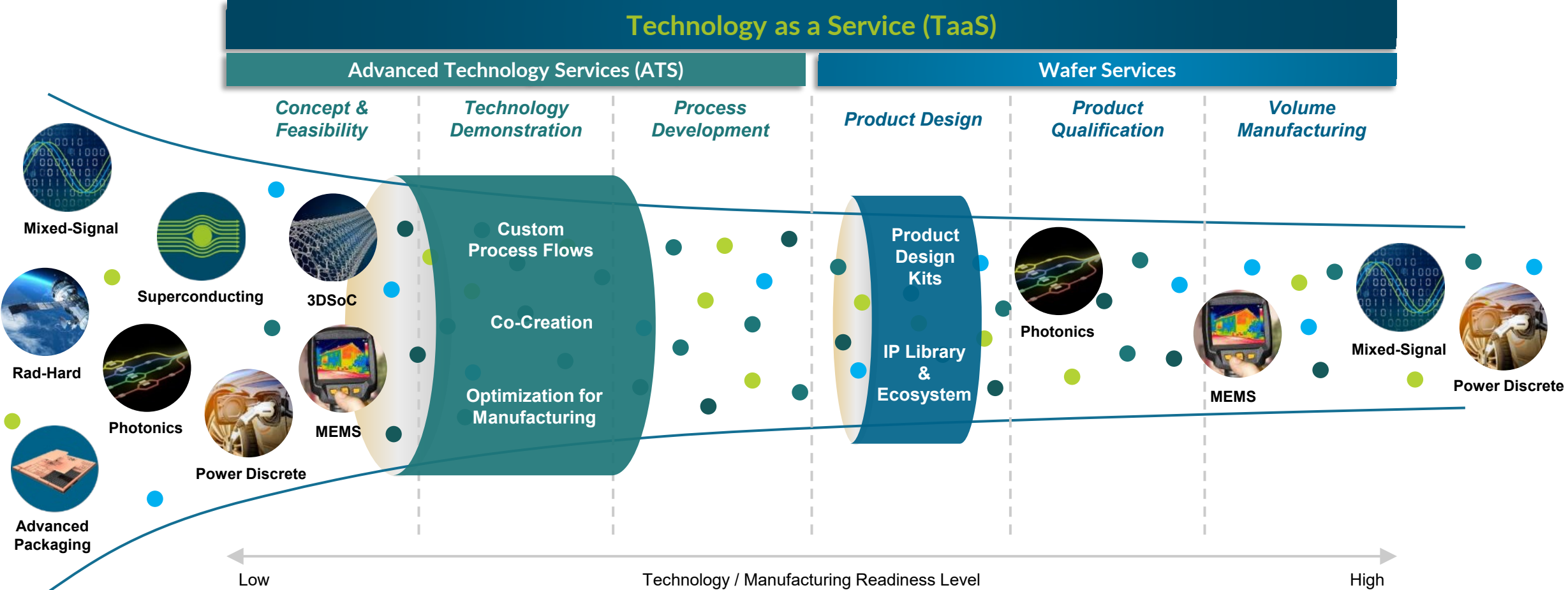
FUTURE OPERATION

- ~750 employees
- 200mm/300mm Capability
- Embedded R&D Capability
- Intelligent Automation and Decision Making
- Trusted Certification
- Advanced Wafer Fabrication and Packaging
- Industry Partnership Network (Customers and Suppliers)

SITE PLANS

- Groundbreaking in 2023
- 30-36 months to begin production
- 650,000 ft² Facility; 100,000 ft² Cleanroom
- Approximately 750 employees (5000 indirect)
- Technology platform decisions will rely heavily on customers needs

SkyWater's Model Enables Fabless Innovation



✓ **Efficient R&D**

✓ **Accelerated Time-to-Market**

✓ **Volume Manufacturing**

Chips & Science Act of 2022 and How SkyWater will Execute



President Biden Signs the CHIPS & Science Act of 2022

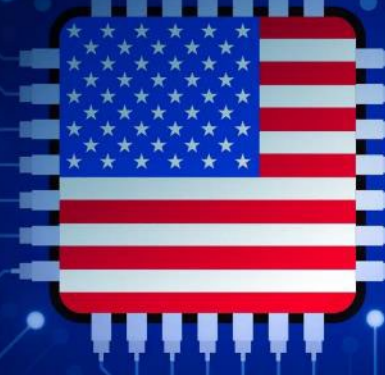


August 9, 2022: SkyWater President & CEO Thomas Sonderman attended the signing of the historic CHIPS legislation in a Rose Garden ceremony at the White House. From **President Biden holding up a SkyWater wafer** at the virtual Chip Summit in 2021 to the **signing of the CHIPS & Science Act of 2022**, SkyWater has supported this critical initiative every step of the way.

SkyWater Applauds Historic Legislation to Stimulate US Semiconductor Production



skywater



CHIPS & Science Act: Four Key Elements

1. Manufacturing Incentives Program: \$39B split between leading edge and mature/specialty
Legislation requires a mix of Federal, State/Local, and Industry funding – percentages not defined
Federal funding may include a mix of instruments, for example grants, loans, and loan guarantees
 - a) \$28B for large-scale investments in leading-edge logic and memory manufacturing clusters
 - b) \$10B for expanding manufacturing capacity for mature and current-generation chips, new and specialty technologies, and for suppliers to the industry.
2. R&D Investments to strengthen and advance U.S. leadership in semiconductors: \$11B
 - NSTC (National Science and Technology Center), NAPMP (National Advanced Packaging Manufacturing Program), and Manufacturing USA
3. DoD Commons Program: \$2B
 - Goal is to bridge the valley of death from lab to fab & productization
 - Network of academic labs, semiconductor fabs, and startups/innovators to accelerate DoD prototyping
4. Investment Tax Credit of 25% for semiconductor manufacturing capital launched 2023-2026
 - No specific funding cap – works to partially offset Asian incentives and cost advantages

→ Department of Commerce will expect to see significant State & Local support for a CHIPS Manufacturing project to demonstrate support and buy-in from the local economy

Public-Private Partnerships Work...We Need More!



MN Fab expansion commissioning



Partnership with Osceola County

How SkyWater will Execute

	Minnesota	Florida	Indiana
Legislation Criteria	Department of Employment and Economic Development	Enterprise Florida & Florida Department of Economic Opportunity	Indiana Economic Development Corporation
Workforce Development	University of Minnesota Normandale Community College Hennepin Technical Community College	University of Central Florida Valencia College & Osceola Technical College NeoCity Academy High School	Purdue University Ivy Tech Community College Greater Lafayette High Schools
Synergistic Innovation	SkyWater Advanced Technology Services (R&D inside a production scale fab)		
Secure Manufacturing	SkyWater Wafer Services (pure-play foundry blending defense and commercial business) Directly addresses the preference for entities willing to serve USG and commercial		

We have been actively engaged for >2 years in our target states and with relevant entities. Department of Commerce guidelines will drive final CHIPS submittals in early 2023.

CHIPS Bill and SkyWater Targets for Minnesota

CHIPS Funding Source	Federal Budget	SkyWater Vision Budgets are notional totals
Incentives program for building and expanding semiconductor manufacturing	\$39B	Phase 1: fab upgrade plus tooling to double fab output up to \$500M investment and 200+ direct jobs (1000 indirect) add GaN capability, 65nm CMOS, migrate to Copper Phase 2: 200mm fab expansion investment TBD, +150 direct jobs (750 indirect) add 65k-90k of fab cleanroom space, triple current output
NIST R&D Program: APMP Advanced Packaging Mfg Program NSTC National Semiconductor Tech Center	\$11B	NSTC site as part of ASIC Coalition – IBM-led NSTC coalition SkyWater on governance committee
DoD Commons R&D network of labs, fabs, and startups for prototyping	\$2B	This program mirrors our business model: lab-to-fab transition Serve as a Core site supporting multiple Technology Hubs
Investment Tax Credit for equipment placed in service 2023-2026	25%	Use to increase leverage on all investments

Funding mix guidance to come from Dept of Commerce rulemaking process - not defined yet
 SkyWater industry partner network – obtain purchase commits, determines tooling & technology focus

Engagement with National, State and Local Government



SkyWater Minnesota Visit: U.S. Rep. Betty McCollum (HAC-D), Under Secretary of Defense (R&E) Ms. Heidi Shyu, Principal Director for Microelectronics Dr. Shenoy



October 7, 2022: We were pleased to host this delegation for a tour of our clean room and a discussion about the **U.S. semiconductor industrial base and investments** Congress has made in microelectronics with the CHIPS Act.

Senator Amy Klobuchar Visits SkyWater Minnesota



August 16, 2022: We were pleased to host Senator Klobuchar at our SkyWater Minnesota facility to **celebrate the historic CHIPS & Science Act of 2022**. We were joined by guests from Seagate, Onto, TEL and the University of Minnesota. The CHIPS grants, if awarded to in-state companies, will help Minnesota to reclaim its legacy of leadership in this industry.

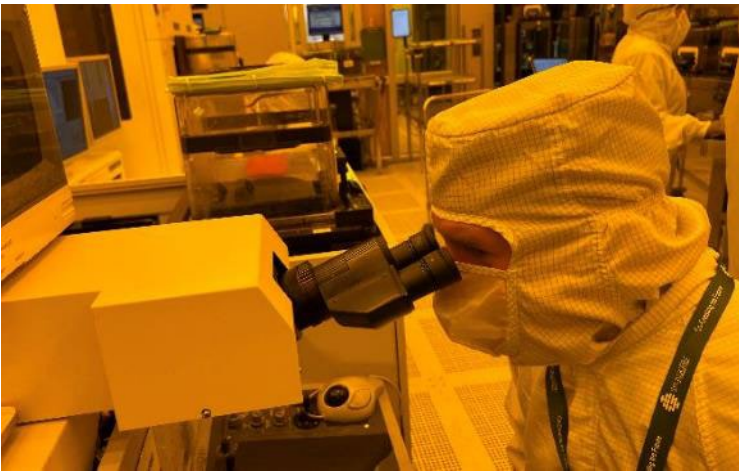
U.S. Rep. Dean Phillips Visits SkyWater Minnesota



August 11, 2022

Rep. Dean Phillips visited SkyWater and spent some time working inside our fab and talking with our executives about how SkyWater hopes to use funds from the CHIPS Act to accelerate investments to increase capacity at our Minnesota facility.

Also hosted MN Rep. Pete Stauber and several other legislators at SkyWater





We streamline the concept to production journey.

Technology as a Service

Innovation as a Service



Manufacturing as a Service

