SINGAPORE
SEMICONDUCTOR VOICE
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WOOING CHIP TALENTS

Electronics Industry Day 2021

Lockdown? It Didn't Stop Me From Landing My Dream Job

Wisdom of the New Agile Leader

SSIA
Singapore Semiconductor Industry Association

Foreword by Executive Director

On behalf of SSIA, I would like to wish all readers a Happy New Year!

2020 was like a roller coaster year for the industry. Our economy was hard-hit by the COVID-19 pandemic, which had started its spread early last year, and in April, Singapore went into the circuit-breaker period. The semiconductor industry has been fortunate to see a lesser impact when compared to other sectors. However, it has still been impacted by the supply chain disruption, trade tensions, and shortage of workforce due to travel restrictions. To address these challenges, SSIA launched different initiatives to stay relevant to the needs of companies. Most importantly, our members' support was a testament to the success SSIA has achieved in growing the semiconductor industry here in Singapore over the past year.

In 2021, we kicked off our workforce development initiatives with the Electronics Industry Day. We are excited to host the month-long online event together with JTC and e2i, with the support from Institutes of High Learning (IHLs) and over 30 companies. It is indeed a collaborative effort from different sectors to woo talents to understand and join our industry. I sincerely invite all of you to help promote the event to your friends and contacts who are interested in joining a sector that enables technology in daily lives.

I would also like to seek companies' support for the Semiconductor Women's Forum on 11 March 2021. For the first time in the industry here, SSIA is organizing an event bringing together female industry leaders and entrepreneurs to share their experience and career journeys in the semiconductor industry. This event will be a hybrid event with guests on-site while the majority of the participants will join the event virtually via the Zoom platform. Besides the SSIA network and working partners, we will also extend the invitation to students from IHLs. SSIA will be announcing more details soon. I hope companies will support us in terms of sponsorship, which will help fund upcoming SSIA's talent development initiatives that are key to the industry's transformation journey.

Finally, I would like to take this opportunity to wish all our Chinese readers Happy Chinese New Year! May this year be filled with good health, joy and prosperity!

EDITORIAL TEAM

EXECUTIVE DIRECTOR
Ang Wee Seng
weeseng@ssia.org.sg

STRATEGIC PROGRAMS DIRECTOR
Julie Koh
juliekoh@ssia.org.sg

PROJECT MANAGER
Daphne Leong
daphne@ssia.org.sg

MARKETING & COMMUNICATION MANAGER
Gillian Cheng
gillian@ssia.org.sg

HR MANAGER
Patsy Tan
patsy@ssia.org.sg

SENIOR BUSINESS DEVELOPMENT EXECUTIVE
Jasmine Tai
jasmine@ssia.org.sg

SENIOR PROJECT EXECUTIVE
Rebecca Foo
rebecca@ssia.org.sg

EXECUTIVE ASSISTANT
Cindy Chong
cindy@ssia.org.sg

DESIGNED BY
Superskill Graphics Pte Ltd
www.superskill.com

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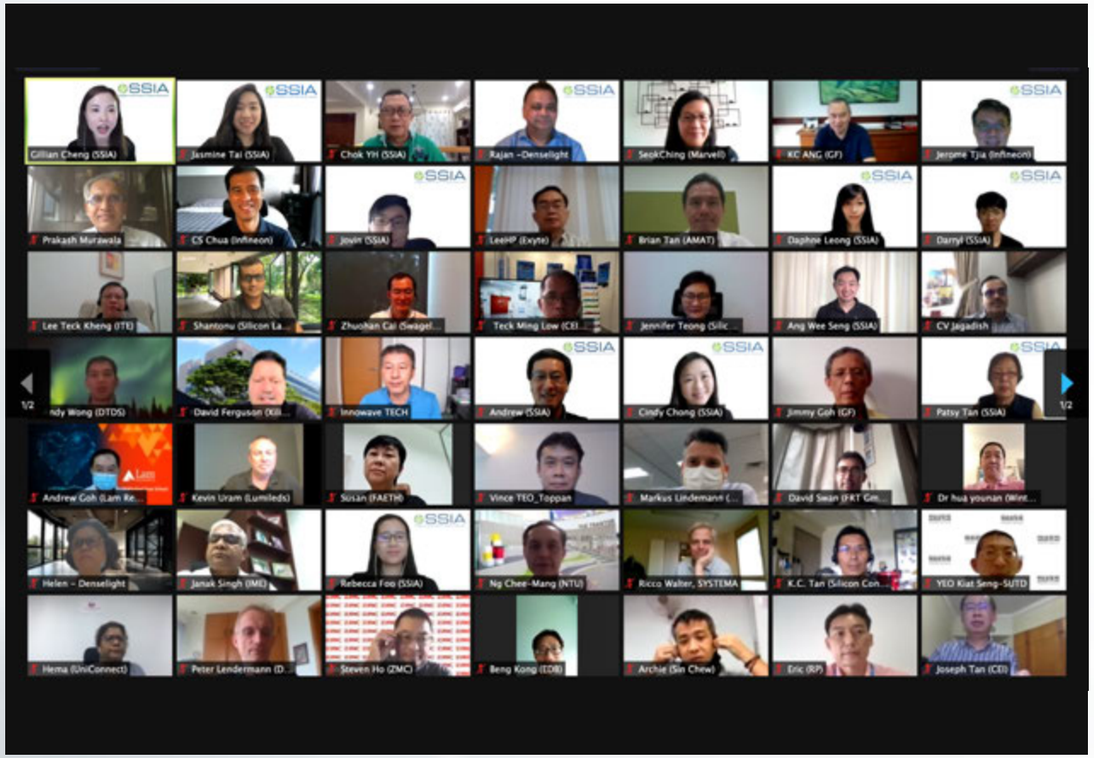


Singapore Semiconductor Industry Association (SSIA) AGM 2020

SSIA Strives To Stay Relevant To The Needs Of Companies

The Annual General Meeting (AGM) of Singapore Semiconductor Industry Association (SSIA) was held on 26 November 2020. It was the first time the Association held the AGM online due to the COVID-19 situation.

One of the AGM agenda was the election of Board Members for the next term, 2020 – 2022. Andrew Chong, Independent Board Director and Business Advisor, was re-elected as Chairman of SSIA Board, while Brian Tan, Vice President and Regional President of Southeast Asia at Applied Materials, was the new Vice Chairman of the Board. All the previous Board members were re-elected to another term in office.

SSIA Chairman Andrew Chong said, "2020 has been a rollercoaster year for the semiconductor industry in Singapore. Our economy was hard-hit by the COVID-19 pandemic. The industry has been fortunate to see less

of an impact than many other sectors. Nevertheless, the industry has still been impacted by the supply chain disruptions, trade tensions, and workforce shortage due to travel restrictions."

To stay relevant to the needs of companies, SSIA launched different initiatives in 2020, which included working with global trade associations to seek governments' support in recognizing the semiconductor industry as essential operations should the pandemic situation worsen, hosting the Minister Dialogue session to discuss concerns from the industry, as well as hosting the SSIA Supply Chain Conference inviting local and global speakers to share their supply chain management insights and possible collaborations.

At the AGM, the Board also discussed the business outlook of the semiconductor industry in 2021. Andrew said, "The COVID experience has accelerated the semiconductor industry's growth with the recognition of the industry's essential contribution to enabling the changes to the economy, the way we work, and how we live. The outlook for next year will be an interaction between continuing strong demand for semiconductors versus the supply chain's ability to manage this demand."

In 2021, SSIA will continue rolling out ongoing and new initiatives to meet the industry needs as the economy and social restrictions change. They include:

- Helping companies, especially SMEs, to implement digital solutions in their business processes. A committee to define Singapore Semiconductor's Intelligent Manufacturing Framework has been set up to help local companies understand digitalization needs.

- The Local Ecosystem Committee will help strengthen the local semiconductor ecosystem through closer collaboration between semiconductor manufacturers and their suppliers.

Diversity & Inclusion – For a More Inclusive, Resilient World

The Inaugural Semiconductor Women's Forum in Singapore

The semiconductor industry in Singapore remains a male-dominant industry even though female leadership contributes tremendously in corporate sectors worldwide, as recognized by global studies. One reason for this is the lack of female talents joining our industry. In 2019 and 2020, GSA and Accenture collaborated on a survey 'GSA: Women in the Semiconductor Industry'. The results showed a significant under-representation of females with the highest in leadership and technical roles.

Singapore Semiconductor Industry Association sees the opportunity to attract more female talents into our industry and grow the talent pool. In fact, many industry leaders have taken the lead and pledge to make a substantial impact on the recruitment, retention, and advancement of women in our industry.

The inaugural Semiconductor Women's Forum 2021 will be held from 9:00 am to 1:30 pm on 11 March 2021 in a hybrid format. The theme will be **Beyond Recovery: Leadership For A More Inclusive And Resilient World**. It aims to inspire more female talents to join the semiconductor sector and, at the same time, inspire the current female workforce to stay in the industry. It will also be a platform driving the industry-wide initiative to promote a diverse workforce and inclusive culture in our workplace.

The Forum is also part of Singapore's national focus to develop and grow the semiconductor talent pool, with SSIA at the helm of driving this initiative under the Electronics Industry Transformation Map (ITM) framework.

The event will bring together industry players and partners to listen to female leaders and entrepreneurs who have excelled in the semiconductor industry to share their experiences and career journeys. Female student leaders from polytechnics and universities will also be participating in the event and become our young industry ambassadors back in school to communicate the vibrancy of our industry.

For companies who are interested in sponsoring the event, please fill in the form by scanning the QR code or contact Daphne at daphne@ssia.org.sg.

Scan the QR code for more event details:

SSIA R&D Committee – Advancing a Vibrant R&D Ecosystem

SSIA has gone through a major transformation over the past two years to better serve and represent our industry. It has focused its initiatives around the framework of Electronics Industry Transformation Map, and at its core – helping companies drive productivity, innovate their product and services, and continue to grow and retain our industry's talent pool.

Innovation and R&D are key enablers for industry transformation and core to diversification. To advance a vibrant R&D ecosystem in Singapore through analysis and survey, SSIA has set up an R&D Committee since 2020. It is chaired by the SSIA Secretary, Jerome Tjia, also Head of Development Centre for Infineon Asia Pacific, comprising industry leaders from the semiconductor industry. The Committee looks into the current R&D landscape in Singapore and envisions what the future landscape would be.

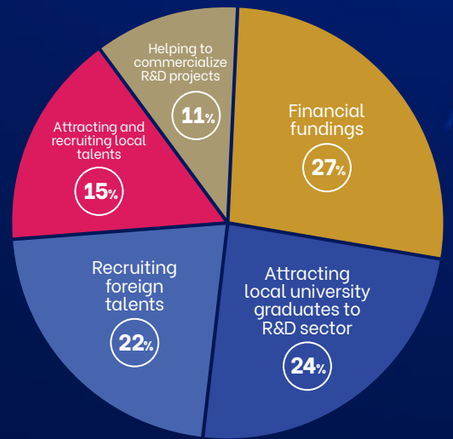
Survey on R&D Activities in Singapore

In May 2020, a survey was conducted to understand the ecosystem and challenges in the R&D arena, with 15 companies responding. The survey showed that more than 90% of respondents had a presence in product R&D specializing in systems and software. The majority of the respondents said they had R&D presence in Singapore, yet most of their R&D activities were in South-East Asia, Europe and the US.

Most of them expected there will be an increase in R&D investment in the next 5 years, mainly due to the development of analog, power management and RF technologies, expansion of scope, new technology requirements and regional focus. Besides, respondents were optimistic in forecasting even more investment in R&D beyond 5 years, mainly driven by the needs to refresh their technology offering, their forecast for a bigger market, and a positive outlook on the macro view of the economy.

Pressing Factors for R&D

Regarding the most pressing factors for companies, they responded it was the high costs in Singapore, and this will drive the shift of their R&D activities to other lower-cost sites. Another concern from respondents was the lack of training and talents in the R&D arena. There was also an obvious concern about not having sufficient talents to support the R&D sector growth in Singapore. That was why most respondents called for government support to help woo more future talents.



Government support suggested by companies to facilitate their R&D development

Growing the R&D Talent Pool

To address the challenges of attracting talent, the SSIA R&D Committee has raised several suggestions to grow a Singapore-based R&D talent pool.

TALENT ATTRACTION

- Launch initiatives to promote career and opportunities in the semiconductor industry
- More student outreach to increase engagement with students
- Establish enticing engineering scholarships
- Companies to offer more attractive compensation

TALENT DEVELOPMENT

- Continue current traineeship programs for R&D talent pool
- Launch more industry technical trainings (e.g. IoT, 5G, USB, PCIe, etc)
- Offer Institutes of Higher Learning (IHL) continuing education and training, and specialized University-level R&D training program

FOREIGN TALENT

- Supplementary key foreign talents will still be needed during the transition to increase local talent pool
- Provide funding support to develop local talent and competency

DEEPER ENGAGEMENT WITH UNIVERSITIES AND RESEARCH INSTITUTES

- Establish KPI on industry relevancy and collaboration
- Incorporate more industry-relevant syllabus (e.g., Digital IP, SoC Verification and Test Development)
- Launch more Continuous Education Training (CET) and specialized R&D training program

The Committee has made recommendations to the SSIA Board and government agencies based on the study. It will continue defining the support required to help grow the R&D landscape in Singapore.

SSIA
Singapore Semiconductor Industry Association

Upcoming Electronics & Industry Relevant Courses

Building a Smart Urban Farm

16 January 2021 / 30 January 2021 / 27 February 2021

The objective of the course is to introduce participants on how a smart urban farm can create a sustainable and affordable food source and they will learn how technology can make farming effortless and increase yields. Basic farming knowledge, techniques and maintenance processes will be discussed. Participants will also learn hydroponics farming and enjoy hands-on session during the course.

Who should attend?

Agriculture farm manager, farm worker, farm owner, people interested in building their own urban smart farm

Wafer Fabrication in Semiconductor Industry (3 day)

Co-organized by SSIA & SP

22-24 February 2021

Interactive 3 day course with classoom sessions and practical laboratory work that provides participants with the relevant knowledge and skills of the Wafer Fabrication process in the Semiconductor manufacturing industry. The courses are conducted in person.

Who should attend?

Those who recently joined the semiconductor industry or engineering technical or personnel under the Electronics Skills framework

Industrial Cost Optimization

23-24 February 2021

This online course, held over 2 days, will cover cost saving measures based on technical engineering data analysis as well as statistical evidence.

Who should attend?

All personnel in charge of optimising company's materials spending, equipment maintenance spending as well as energy required for production

Introduction to Industrial FMEA

Co-organized by SSIA & SP

25 February 2021

The objective of this course is to equip participants with the knowledge of Failure Mode and Effects Analysis (FMEA), a step-by-step approach for identifying all possible failures in a design, a manufacturing process, an equipment, or even a service. Participants will also have the opportunity to work on real-life case studies where they will learn how to create a proper risk assessment, prioritise the different critical levels of risk, and trigger necessary mitigation actions.

Who should attend?

Technician, Associate Engineer/Assistant Engineer, Equipment Engineer, Maintenance Engineer

IoT for Electronics Industry

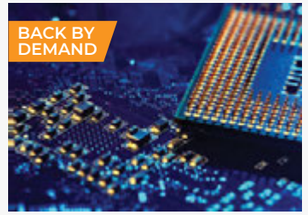
Co-organized by SSIA & SP

2 March 2021

One day classroom / practical session to equip participants with knowledge of the Internet of Things (IoT), IoT applications and its ecosystems used in the semiconductor / electronics manufacturing industry. There is a hand-on session for particaipants to apply their knowledge.

Who should attend?

All engineering or technical personnel



Semiconductor 101

22-23 March 2021

This 2-day online course enables the learners to gain knowledge of the journey of semiconductor manufacturing from sand to finished chip. Students will understand the eco-system and how all of them come together to support the semiconductor industry.

Who should attend?

Non-technical audience who wants to know a high-level overview of semiconductor devices and how they are fabricated

Data Analytics for Electronics Industry

Co-organized by SSIA & SP

23 March 2021

The objective of this course is to equip participants with knowledge of fundamentals of data analytics. Participants will also be able to apply these analysis tools to their data when designing and developing their future intelligent systems for the electronics & semiconductor industries. There would be hands-on session with the data analysis tools such as data wrangling, visualisations, regression models and prediction. Participants can apply the knowledge and skills to help improve their operational tasks and increase work productivity.

Who should attend?

All engineering or technical personnel

If you are interested to customize an in-house course for your company, or for any other enquiries, please contact daphne@ssia.org.sg

Scan the QR code for more details

Electronics Industry Day 2021

WOOING CHIP TALENTS

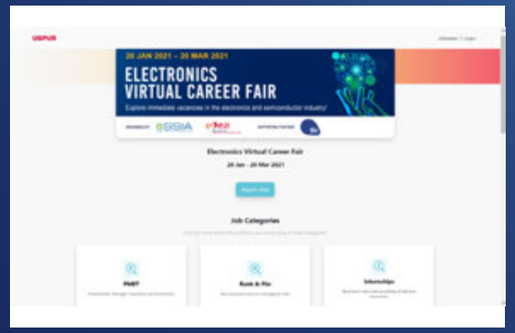
Even as many sectors scaled back in 2020, the electronics and semiconductor industry was blazing forward. It continues to create good job opportunities and offer a variety of roles to shape the future of technology.

In Singapore, there are currently more than 2,800 jobs and training opportunities for the sector, spanning the value chain from technical and innovation engineers, to process and operations roles, and global supply chain roles. Companies in the industry are continuing to hire aggressively into 2021, fueled by the acceleration of digitisation, disruptive new technologies, and cutting-edge devices from smartphones and wearable devices to driverless cars, all of which have semiconductors at their core.

A Hub for Company Exhibitions and Job Opportunities

To grow a sustained talent pipeline for the electronics and semiconductor sector, as well as make the electronics sector an attractive environment to work in, Singapore Semiconductor Industry Association (SSIA) has partnered JTC and e2i, electronics companies and Institutes of Higher Learning (IHL) to launch the second edition of Electronics Industry Day from 27 January to 28 February 2021. The Electronics Industry Day is a flagship event that brings electronics companies and IHLs' students together on one platform. Held virtually this year, the event consists of various activities targeting over 2,000 students and job seekers, including a career fair, plant tours, exhibitions of over 30 companies, and industry talks. The event page is https://ssia.org.sg/jobs.

SSIA has also launched different initiatives since mid-last year to support companies on their hiring needs. The Association has championed a Semiconductor Communication Campaign with Economic Development Board (EDB), which brings the critical role chips play to the forefront, showcases exciting developments, and profiles young people in the sector. Other initiatives include the new semiconductor job portal, career fairs, school career talks, and the ongoing Professional Conversion Programme.

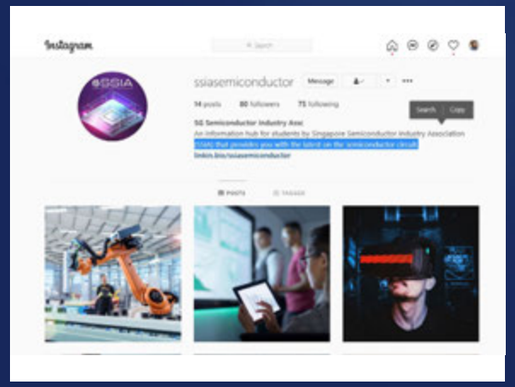


The Electronics Industry Day online platform

Enhancing the Physical Infrastructure for The Electronics Sector

Besides supporting the industry on talent attraction efforts, JTC is working closely with partners and businesses to enhance the physical infrastructure for the electronics sector. JTC unveiled a 5-Year Estate Enhancement Plan during the inaugural Electronics Industry Day in 2019 to make Wafer Fab Parks more vibrant and conducive environment for talent and companies. A series of physical enhancements will be rolled out across Wafer Fab Parks progressively from 2021 to 2025.

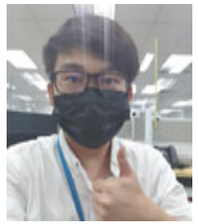
Mr Cheong Wee Lee, Director, Biomedical & Electronics Cluster, JTC, said, "The Electronics sector continues to see positive growth and good job opportunities even in the midst of the pandemic. The second edition of Electronics Industry Day has seen increased company and student participation. This is a great time for job seekers to interact directly with companies and learn how you can shape the future through new technologies. The transformation of industrial estates like JTC's Wafer Fab Parks with more greenery and cycling paths will also be an added advantage in creating a more attractive work environment."



The new Instagram page of SSIA (@ssiasemiconductor)

Lockdown? It Didn't Stop Me From Landing My Dream Job

For many in the Class of 2020, the uncertain employment market made it hard to feel hopeful about prospects or earnings. Yet, one sector presented a bright spot, with active recruitment and promising possibilities: semiconductors. We speak to five school-leavers who found their dream jobs in the midst of a pandemic.

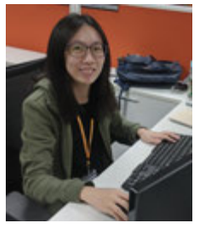


"When ams offered me a job as a Process Engineer, it was exactly what I wanted and could foresee myself doing long-term – it would also allow me to put into practice many of the things I had learnt. My job is very hands-on, I ensure processes on the production line behave as they should and provide immediate assistance to operators when there is a problem. It requires strong interpersonal skills, as well as a lot of critical thinking and making sensible judgements on the spot. That always gives me an adrenaline rush – deciding if a defect is serious enough to condemn a lot, and what the impact of that decision would be on the back-end. The more I do, the more interesting I find it, and the more convinced I am that this is where I want to be."

Kwang Hong Xing, Process Engineer, ams Sensors Singapore Pte. Ltd.
Joined June 2020

"In engineering school, my classmates dreamed of interning as software developers in global firms. Me, I dreamed of immersing myself in the semiconductor sector – a sector fundamental to technologies from AI to electric vehicles to the soon to come 5G network, but often overshadowed by more "glamorous" options. I wanted to understand everything about it. When I was offered a position as product engineer at Marvell Singapore, I was really grateful. I love my job and continually challenge myself at work to acquire new knowledge, ideas, and skills. There is no end to learning in this job, or to opportunities to contribute to cutting-edge performance, see things in a new light, or take that next leap."

Ricky Lim, Product Engineer, Marvell Asia Pte. Ltd.
Joined July 2020



"It was during my internship at MediaTek that I was offered a full-time position beginning right after graduation. Despite being nervous, what I knew was that I want to grow professionally as a female engineer, and some day, mentor other women in the industry. I believe that we are just as capable for roles in engineering. And that is exactly what my experience at MediaTek has been. Barely six months into my job, I am already being assigned projects where I am trusted to work independently and to deliver quality work for customer projects. With the pace of technological advancement the way it is, I can look forward to participating in exciting projects with global impact, like 5G. It will be a proud moment when I own a smartphone or tablet that contains a chip that I worked on."

Oi Sok Yee, Engineer, MediaTek Singapore
Joined June 2020

"It was my internship at ASM that convinced me that this was the industry for me. You saw your ideas turning into solutions and know what you implemented has made an impact on the company and the world around you. I knew that COVID-19 had affected the job market, but I also knew that semiconductors were in demand and that ASM was growing at a rapid pace. I was traveling on a bus when I got the news that my application had been accepted. I remember feeling thankful that I could return to ASM and continue what I had started during my internship: coming up with innovative solutions, and working with people with truly open minds in a place that I'm always driven to do my best."

Chew Yee Kiat, Production Supervisor, ASM
Joined September 2020

"I was attracted to the role of field process engineer because it requires teamwork for troubleshooting and problem solving. I had applied to multiple companies, and the offer from Lam Research Singapore was just what I was looking for - the opportunity to work with a great team, and one that is willing to help me learn both the technical and non-technical aspects of the job. It is fascinating working with tools and on processes that I had only ever seen on videos or the internet. The level of precision required and the way processes vary across tool types also mean I keep learning and, as I build up knowledge and skill sets, there are many opportunities to work on interesting projects."

Steffi Khoo, Field Process Engineer, Lam Research Singapore Pte. Ltd.
Joined July 2020

Semiconductors: Be Where the Future is Being Written

Even as sectors scaled back in 2020, the semiconductor industry blazed forward, with Singapore in the thick of things. Companies are continuing to hire aggressively into 2021, fueled by the acceleration of digitisation, disruptive new technologies, and cutting-edge devices from smartphones and wearable devices to driverless cars, all of which have semiconductors at their core. As the global appetite for technologies like AI, IoT, and 5G grow, the only way for the sector – and those who join it – is up.

Ang Wee Seng, Executive Director, Singapore Semiconductor Industry Association

Semiconductors are everywhere from your smartphone, fridge, to your car – and they will only become more important as we develop the next generation of tech innovations such as autonomous vehicles, and a 5G-enabled ecosystem. And as Singapore's semiconductor industry continues to grow, so will its need for talent, including in areas like R&D, manufacturing, and business strategy. We've seen some of that already – between April and September alone, there were more than 2,800 jobs and training opportunities on offer at 130 companies, across the full value chain from technical and innovation engineers, to process and operations roles, and global supply chain roles. As we continue to digitalise as a society, this is an industry that will continue to grow. As a global semiconductor hub, Singapore – and its young joiners – are well-positioned to capitalise on it.

Ang Wee Seng

Chips are tiny but their impact is massive. Working in the sector, the power behind some of the world's biggest technology brands is literally in your hands.

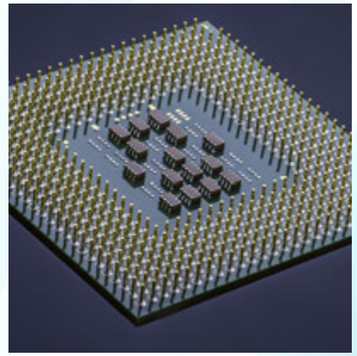
EL Saravanan, Managing Director, Advanced Micro Devices Singapore

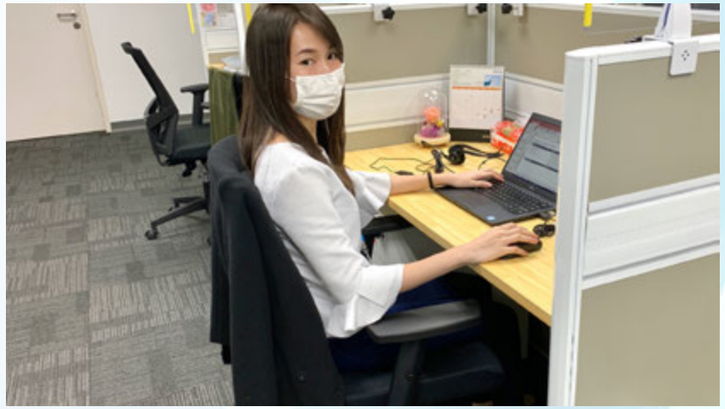
"Many young people join AMD as fresh graduates. We develop high-performance computing and visualisation products to solve some of the world's toughest and most interesting challenges, and they play key roles in developing these next gen products. We firmly believe in setting up students for successful careers in semiconductors. Every year, we recruit between 40 to 50 students from local universities. What we do is tailor a series of courses for these interns, where they are taught by our own employees, giving them fundamental technical as well as crucial soft skills. There has never been a better time to be in the semiconductor industry. With the latest technological trends, from Artificial Intelligence and Machine Learning, to Big Data and Industry 4.0, the semiconductor industry provides exciting opportunities for innovation and growth, and our young talents are critical to this."

EL Saravanan

Cassandra Yeow, Product Development Engineer, ams Sensors Singapore Pte. Ltd.

"Having been on this journey for close to a year, one word that describes my experience is 'Growth'. The opportunity to grow in my technical knowledge, project management, and personal development is limitless. I am currently involved in a significant project for a consumer product, my first in my role as a product development engineer. The scale of this project, which spans functional groups in Singapore, Zurich, and Austria means I have the opportunity to communicate and work together in a global team. I am constantly brushing up on my technical skills, with the support of my manager who paves the way for me to take on additional learning opportunities. My colleagues, too, are approachable and more than willing to share their technical knowledge. After all, we are in the business of technology innovation and improving human life – and this is an endless quest."





Cassandra Yeow

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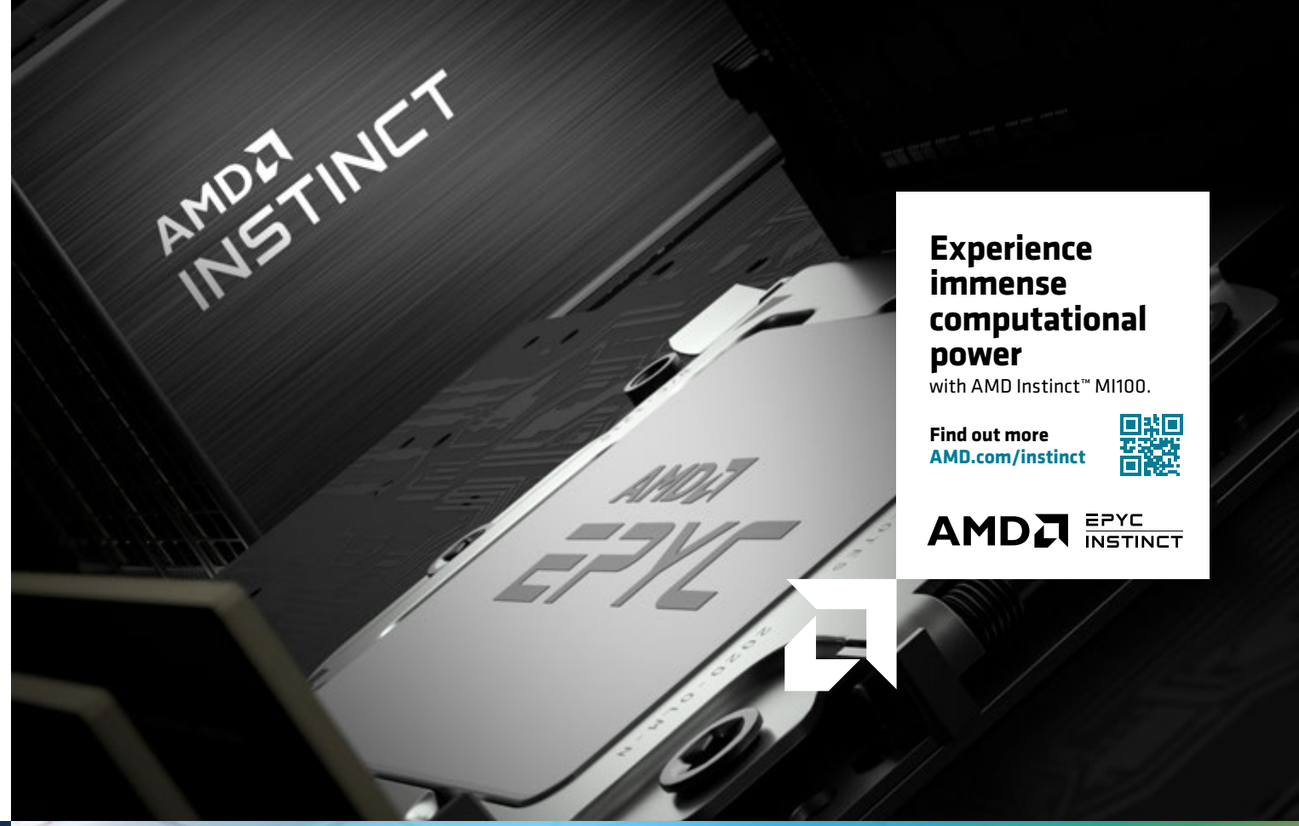

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Company Introduction

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Contacts:
Business Development and Engineering:
Mr Heng Teck Yow (Senior Director), hengty@cei.com.sg

Equipment Design and Manufacturing:
Mr Joseph Tan (General Manager), tansm@cei.com.sg

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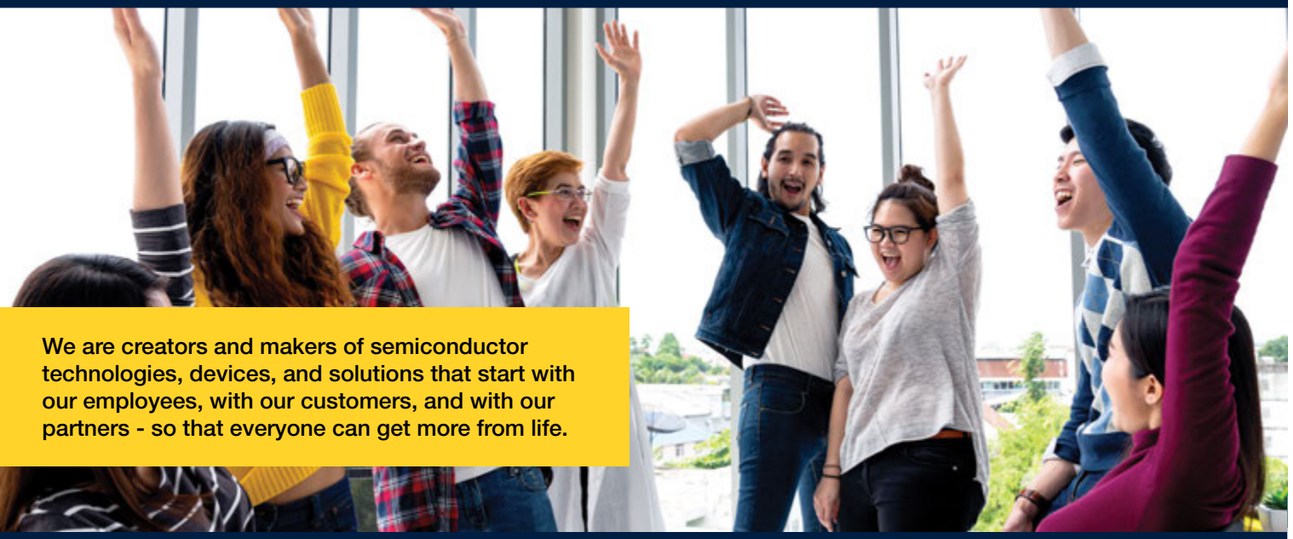

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Powering the Future of Finance with Chip Technology

The movement of money has undergone substantial changes over the years. With the advent of financial technology, or FinTech, the financial services industry has transformed. Enabled by today's powerful microprocessors and memory chips, the ability to generate, store, and analyze data is helping us make smarter, financial decisions. Companies and consumers can better manage their financial operations by using software and algorithms often found in everyday electronic devices. Let's look at these advancements.

What is FinTech?

FinTech encompasses all financial technology or any company that provides financial services with the internet, mobile, software or cloud services.

This phenomenon has entirely changed the way the average person understands and approaches their finances. In the not so distant past, using cash or checks was the status quo. Now, with FinTech, it is far more likely that money is exchanged using WeChat, Venmo, or Cash App. Stockbrokers were the gatekeepers of the investment world – limiting access to the average person. Now, however, apps like Robinhood or eToro allow users to invest in stocks or cryptocurrencies directly from their phones.

Advantages of FinTech

The benefits of financial technology are seemingly endless. First, they're easy to use. Many FinTech apps have adopted user-friendly interfaces, which strip away the complexities of investing and budgeting, and simplify them to remove barriers to entry for potential users. New FinTech products have adopted game-like designs, which make investing more attractive to the younger audience. These applications give users unprecedented control of their finances – from saving money to sending money – and allow users to do so from the couch or on the go.

The development of FinTech applications has also sped up the flow up money for the average person. While previous generations were often limited by third-party money managers and accountants, today's FinTech users can invest in major stocks using their phones in seconds.

Examples of FinTech Applications

Transforming the Financial Services Industry

The FinTech revolution has allowed users to easily keep track of their income and expenses. FinTech has lowered the age of the average investor, with easy-to-use apps and user-friendly interfaces, there are far more investment opportunities for younger individuals. Investors and wealthy individuals are becoming younger than ever, with the U.S. now boasting over 600,000 millionaire millennials. Additionally, with options like purchasing fractional shares, the movement of money has never been easier to navigate, and the barriers to entry in the world of investment have been largely removed. The future of FinTech is not only brighter, but younger, and borderless.

FinTech apps are becoming the gold standard for technology – pushing the boundaries of what a single user can do from a mobile phone. In the past 10 years, $4.68 billion has been pledged on Kickstarter to crowdfund exciting projects. Popular payment app, Venmo, has amassed a user base of more than 52 million. With new players entering the fray to challenge and improve upon existing offerings, it is likely the number of FinTech users only continues to grow.

SOURCE OF CONTENTS

Lam RESEARCH

Microsoft

Semiconductors transform the tech industry. Azure transforms the semiconductor industry.

Whether it's communications, computing, electronics, automotive and entertainment – or the new wave of emerging technologies such as 5G, Big Data, Artificial Intelligence (AI) and the Internet of Things (IoT) – semiconductors are the lifeblood of innovation. The insatiable demand for semiconductors has pushed global revenues past the $450 billion mark. Relentless competition for those revenue dollars drives schedules, productivity, and innovation.

Microsoft Azure is a next generation high-performance cloud computing platform that provides the infrastructure for electronic design automation (EDA) software. Here's how we help the semiconductor industry drive innovation, sustain growth and gain the leading edge.

Azure turns challenges into opportunities

The exponential rise in data creation, processing, transmission and storage is set to drive up demand for semiconductors over the next decade.

The industry, however, faces its own challenges. Shorter product refresh cycles, frequent evolution of standards, and the constant need for more performance are compressing the design cycle and shortening time to market. Designs are growing more complex, and organizations need better design flows and comprehensive validation at every stage of development. The new process geometries also require massive compute power to address the process variability at such tiny geometries.

This requires companies to reassess their end-to-end capabilities, from a toolchain and infrastructure perspective.

Microsoft is working to improve the complex electronic design automation (EDA) software landscape, boost productivity, optimize resources, and speed up time to market. We work closely with foundry partners and EDA vendors to develop finely tuned solutions that run on Azure high-performance computing (HPC) infrastructure.

Azure creates greater business value

Research suggests that cloud-enabled operations can unlock more than $1 trillion in shareholder value*, through both revenue growth and margin expansion.

For example, Azure frees developers from the limitations of infrastructure performance and availability. Development teams can focus on running the right number of iterations, simulations, and regression tests in smaller windows to deliver greater functionality, higher quality, and more customizations.

In addition, Azure supports teams across the development life cycle with agile DevOps tools and reusable best practices that ease the transition to the cloud platform and new ways of working.

Also, compared to the on-premises experience, Azure offers ways to optimize the cost of ownership of cloud resources while maintaining or enhancing the performance.

Deep understanding of the silicon industry helps us develop and deliver unique financial and ownership models that make Azure not just a viable—but a cost-optimal—solution.

In addition, with the help of our long-standing partnership with the EDA vendors, Azure teams help drive the optimization of resource use directly into the EDA tools, as well as support innovation in EDA licensing models.

*Source:
McKinsey & Company: Making the cloud pay: How industrial companies can accelerate impact from the cloud

"The Joint Innovation Lab with Microsoft is one big step forward, elevating cross-industry partnership to the next level."

Dr. Cliff Hou
Senior Vice President of Technology Development
TSMC

Benefits of a global platform

Azure experts can help architect a best-fit solution for you, reimagining your experience with infrastructure and facilitating new ways of working with the cloud. Your current and emerging infrastructure needs are well served by the benefits of the Azure platform:

Scalability
Enjoy nearly unlimited scalability, run as small or as large as you need, when you need it.

Agility
Upgrade your infrastructure as often as new technology updates are available and gain more power, speed and agility.

Global presence
Enable your global teams to work together. Azure operates 54 global regions (and growing), offering your business unprecedented scale, reach and access.

Security
Ensure you have the right security and protections for your IP. Azure provides the security, privacy, and compliance protections used by 95 percent of Fortune 500 companies.

Use models
Be flexible in how cloud delivers value to your business. Azure fully supports burst, hybrid, and Azure-centric deployment, with efficient storage architectures for each scenario.

Scan to read more about Azure for the Semiconductor Industry

ARIZONA'S WORKFORCE: POWERING THE SEMICONDUCTOR INDUSTRY

Building a semiconductor is a complex process. It requires the work of engineers, scientists, technicians, developers, fabricators and more—just for the manufacturing. Then there's the supply chain, which includes even more specialists and technicians, without whom there would be no finished product.

Few places harbor the talented and diverse workforce needed to support this industry like Arizona.

ARIZONA IS A LEADER IN ADVANCED SEMICONDUCTOR MANUFACTURING

Industry giant Intel, which has been operating in Arizona since 1979, employs 12,000 people in the state. Its $7 billion Fab 42—said to be the most advanced in the world—became operational in 2020. Other chip-makers with large presences in Arizona include NXP, ON Semiconductor, Microchip and Broadcom. The most recent addition to this list of industry leaders is Taiwan Semiconductor Manufacturing Company (TSMC), which announced plans in 2020 to establish a $12 billion fab in Phoenix. This facility, which will be operational in 2024, will employ thousands.

The reasons these companies are operating in Arizona are many: the state's pro-business and streamlined regulatory environment, low cost of doing business, thriving innovation ecosystem, strategic location and quality of life. Paramount to the semiconductor industry is access to highly skilled and educated talent, which is what Arizona has in abundance.

ARIZONA SEMICONDUCTOR EMPLOYMENT STRENGTHS

- TOP 2 — FASTEST MANUFACTURING JOB GROWTH
- TOP 3 — INDUSTRIAL ENGINEERING JOB GROWTH
- TOP 5 — SEMICONDUCTOR AND OTHER ELECTRONIC COMPONENTS MANUFACTURING EMPLOYMENT IN THE U.S.

Esmi, 2020

A WORLD-CLASS UNIVERSITY SYSTEM

Without the availability of high-tech talent, investment of the magnitude present in the state's semiconductor industry would not be possible. That talent is grown and educated in Arizona.

Arizona is home to some of the best engineering programs in the country which provide a workforce that not only keeps the semiconductor manufacturing industry strong, but gives it plenty of room to grow.

In 2019, nearly 9,000 students graduated from Arizona universities with degrees relevant to the semiconductor industry. Arizona State University (ASU), which has been ranked the most innovative university in the country six years running, has nearly 25,000 students enrolled in engineering programs—a 170% increase since 2010. Industry leaders like Intel demonstrate what this means for hiring and maintaining a top-tier labor force. More than 2,700 ASU graduates are counted among the company's employees. In return, Intel provides ASU with researchers, adjunct faculty members and assistance with curriculum, a partnership that keeps the ecosystem thriving.

In addition, the University of Arizona is investing $200 million in research, IT management and other programs that support the industry. Northern Arizona University's undergraduate engineering program is one of the top 50 in the country according to *U.S. News & World Report*. And Arizona is home to one of the largest community college systems in the U.S., with more than 200,000 students.

TOP PROGRAMS FOR TOP ENGINEERS

#1 MOST INNOVATIVE UNIVERSITY
ahead of Stanford & MIT

2ND MOST ENGINEERING GRADUATES
with a master's or doctorate degree in the western United States

NEARLY 9,000 GRADUATES
in relevant fields for the semiconductor industry in 2019

NEARLY 25,000 STUDENTS
enrolled in Arizona State University engineering programs (170% increase since 2010)

ARIZONA IS OPEN FOR OPPORTUNITY

More than 120,000 people moved to Arizona between 2018 and 2019, the fourth highest of any state in the nation. Maricopa County, Arizona's largest, is also the fastest-growing county in the U.S., and Phoenix is the nation's top metro area for in-migration.

They're coming to Arizona for opportunity. The state ranks consistently in the top five for economic momentum, and Arizona's pro-business environment has earned it a top ten Best State for Business ranking from *U.S. News & World Report*. Unlike other states including Texas, North Carolina, California and Washington, Arizona has neither a franchise, business inventory, estate, worldwide unity or gross receipts tax, to go along with the nation's sixth-lowest corporate income tax rate. Under the leadership of Governor Doug Ducey, Arizona has eliminated more than 2,200 rules and regulations, saving taxpayers $134 million.

THE SEMICONDUCTOR TALENT EPICENTER IS IN ARIZONA

#1 — County for Attracting and Retaining High Quality Workers: Maricopa County *(Emsi, 2020)*

#1 — Fastest-Growing County: Maricopa County *(U.S. Census Bureau, 2019)*

#1 — Net Migration: Phoenix metro area *(U.S. Census Bureau, 2019)*

#2 — State for Job Growth *(Bureau of Labor Statistics, 2019)*

#3 — State with the Fastest-Growing Population in the U.S. *(U.S. Census Bureau, 2019)*

With a focus on emerging next-gen technologies, the state remains dedicated to developing targeted established industries and maintains its status as a global leader in advanced manufacturing, especially in the production of semiconductors.

Arizona's strategic location gives manufacturers access to 85 million consumers and three of the world's largest economies (Texas, California and Mexico) within a day's drive as well as the assistance of modern infrastructure. Its affordable cost of living and exceptional quality of life make an attractive destination for anybody considering a relocation.

Some of the top semiconductor manufacturers in the world have done their analyses and picked Arizona as their home. With plenty of room to grow, we're ready to show you all our state has to offer.

SOURCE OF CONTENTS

ARIZONA COMMERCE AUTHORITY

Flexible GeSn Photodetectors Toward Near Infrared Imaging Application

Application of Flexible NIR Photodetectors

Flexible photonic devices have drawn extensive attention as a promising candidate toward various flexible and wearable applications. Low-cost flexible near infrared (NIR) photodetectors (PDs) have great potential in defense and civilian systems for night-vision applications. Among various materials for flexible PDs, Germanium (Ge) has been one of the most attractive candidates for NIR applications due to its high absorption coefficient, high mobility, and inherent compatibility with CMOS technology. The additional Tin (Sn) and external tensile strain could reduce the bandgap of Ge, leading to efficient transition from indirect to direct band-structure and therefore broader detection wavelength range and higher photo response.

NIR PD can be used in night vision goggle for defense systems

Thorny Problem

It has been proved that rigid GeSn PDs with 8% Sn composition could achieve a light absorption cut-off wavelength beyond 2 µm, improving light absorption in NIR region while extending its applications toward mid-IR region.[1] However, degradations on surface roughness and crystalline quality resulted from severe Sn segregation limit the fabrication of flexible GeSn NMs. Though strain-free GeSn nanomembranes (NMs) was fabricated via undercut and transfer printing technique,[2] study on the effect of mechanical bending on GeSn has not been demonstrated at device level yet due to the lack of device quality flexible GeSn materials.

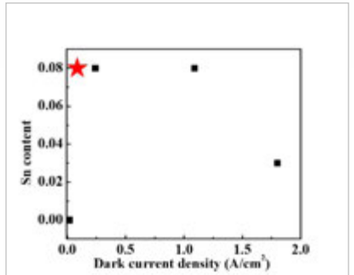
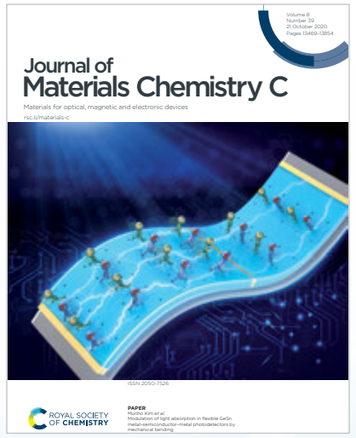


Fig.1: Comparison of the measured dark current density of our devices with that of other published results

Research in Singapore

In Singapore, some research groups have been devoted to the study of GeSn related optoelectronic devices. However, their research area is limited to rigid devices. The Nanyang Technological University (NTU)'s Electrical and Electronic Engineering (EEE) research team, Nano Engineering Device Laboratory, led by Prof. Kim Munho expands its application in flexible devices based on his abundant experience in flexible devices. The team has demonstrated flexible GeSn metal-semiconductor-metal (MSM) PDs by exploring the effect of mechanical strain on its optoelectronic properties. The PDs were fabricated from transfer-printed GeSn NMs on polyethylene terephthalate (PET) substrates.[3] Strain was introduced into the GeSn PDs under bend-down (uniaxial tensile strain) and bend-up (uniaxial compressive strain) conditions. Applied strain can affect band-structure of GeSn alloys, leading to a modulation of electrical and optical characteristics of the PDs. Accordingly, dark current increases from 8.1 to 10.3 µA in the bend-down condition and decreases to 7.2 µA in the bend-up condition, respectively. Responsivity at the wavelength of 2 µm was increased from 1.03 to 3.68 mA/W by 151% under bend-down condition while it decreases to 0.45 mA/W by 35% under bend-up condition. The study indicates that GeSn NMs can be used to realize flexible NIR PDs with an absorption wavelength approaching 2 µm. In addition, such flexible GeSn PDs with the capabilities of excellent mechanical durability represent significant advances in the field of group IV NIR optoelectronic devices. This work has been published in Journal of Material Chemistry C and selected as the front outside cover.



Front outside cover image selected for Journal of Materials Chemistry C

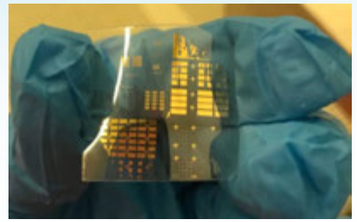


Image of flexible GeSn PDs

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1. W. Wang, D. Lei, Y.-C. Huang, K. H. Lee, W.-K. Loke, Y. Dong, S. Xu, C. S. Tan, H. Wang, and S.-F. Yoon, "High-performance GeSn photodetector and fin field-effect transistor (FinFET) on an advanced GeSn-on-insulator platform," Opt. Express 26, 10305-10314 (2018).
2. Y.-C. Tai, P.-L. Yeh, S. An, H.-H. Cheng, M. Kim, and G.-E. Chang, "Strain-free GeSn nanomembranes enabled by transfer-printing techniques for advanced optoelectronic applications," Nanotechnology 31, 445301 (2020).
3. S. An, S. Wu, C. S. Tan, G.-E. Chang, X. Gong, and M. Kim, "Modulation of light absorption in flexible GeSn metal–semiconductor–metal photodetectors by mechanical bending," Journal of Materials Chemistry C 8, 13557-13562 (2020).

ABOUT THE AUTHORS

Kim Munho
Assistant Professor, NTU School of Electrical & Electronic Engineering

An Shu
PhD candidate, NTU School of Electrical & Electronic Engineering

Deputy Prime Minister Heng Swee Kiat attended the Infineon 50th anniversary event as the guest-of-honour. Dr. Reinhard Ploss, CEO of Infineon, attended the event virtually.

Infineon to Make Singapore a Global AI Innovation Hub by 2023

Infineon Technologies marked its 50th year in Singapore on 1 December 2020 by announcing plans to be a global artificial intelligence (AI) innovation hub in Singapore as part of its corporate-wide digital transformation.

To prepare for a digital future, it will empower its Singapore workforce to be capable of deploying and developing AI solutions in all business functions.

More than 1,000 employees will be upskilled and around 25 unique AI projects covering the entire value chain of activities in Singapore will be deployed by 2023.

Internally, Infineon will focus on inculcating a digital growth mindset among its staff by encouraging behavioral changes through habit changing nudges and enabling leaders to drive augmented performance.

Additionally, the company will pro-actively engage with the semiconductor, electronics, and innovation ecosystems in Singapore through collaborations with SGInnovate, local start-ups, institutes of higher learning (IHLs) and research institutions on new AI solutions. These organizations can work on actual problem statements by leveraging Infineon's rich datasets to build their solutions.

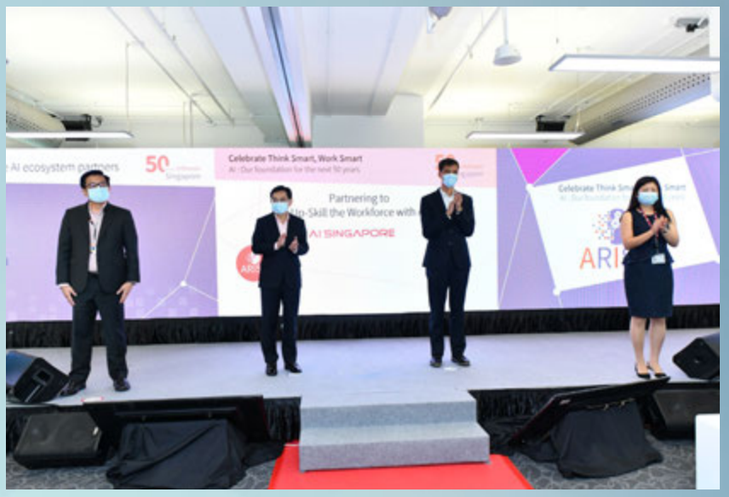
Infineon is also looking to empower the next generation of employees and innovators by collaborating with NUS-ISS and AI Singapore (AISG) to offer AI courses and certifications.

Deputy Prime Minister, Coordinating Minister for Economic Policies and Minister for Finance Heng Swee Kiat, attended the 50th anniversary event as the guest-of-honour. Dr. Reinhard Ploss, Chief Executive Officer of Infineon, attended the event virtually. The celebration was themed "Celebrate Think Smart, Work Smart. AI – Our Foundation for the Next 50 Years."

"Infineon's decision to locate its global AI innovation hub here is another important milestone in our longstanding partnership, which has spanned 50 years. The latest investment will allow Infineon to build new smart solutions for its operations in Singapore and beyond, and in the process upskill its Singapore workforce," said Dr Beh Swan Gin, Chairman, Singapore Economic Development Board.

"Singapore is a global node of technology, innovation and enterprise that is able to reinvent itself while conserving its strengths. The country offers a vibrant innovation ecosystem and an attractive environment for top talents to live and work in. On its journey to become a Smart Nation, a key step is Singapore's national strategy to develop impactful AI solutions. This fits well together with Infineon Singapore's vision to make it an AI innovation hub and a key player for our AI strategy," said Dr. Ploss.

"Singapore is the first in Infineon worldwide to embark on a comprehensive AI journey for all our business and manufacturing operations, embedding AI into every job function. To help our employees on this digital transformation, we will be helping our staff to develop a digital mindset and driving training programs while creating exciting opportunities and AI solutions with our ecosystem that benefit individuals and industries in Singapore and around the world," said Chua Chee Seong, President and Managing Director, Infineon Technologies Asia Pacific.



Infineon announced collaborations with SGInnovate, local startups, IHLs and research institutes on the topic of AI, at its 50th anniversary event

The company has budgeted more than S$27 million to prepare for a future driven by AI. The investment will cover infrastructure, AI projects, employee reskilling, and collaborations with ecosystem partners.

Infineon has been part of Singapore's semiconductor landscape for the past 50 years, starting out first as Siemens assembling low-cost discrete transistors and diodes, and passive components.

With about S$700 million invested here in the last decade, the company has become the lead site for smart factory solutions development and the global test hub for automotive microcontroller units. It is also a key node for Infineon global distribution and one of the major microelectronics R&D centers in Asia.

Following the announcement on its plans to make Singapore the company's global artificial intelligence (AI) innovation hub by 2023, Infineon signed agreements with four organizations, including AI Singapore, NUS Institute of System Science, SGInnovate and Tata Consultancy Services Asia Pacific Pte. Ltd, to boost the AI ecosystem in Singapore.

Mr. Heng Swee Keat witnessed the event held at Infineon Technologies Asia Pacific Headquarters in Singapore.

SOURCE OF CONTENTS

New Challenges, Innovative Solutions

Setting Goals and Exceeding Expectations in 2021

In a June 2020 article titled "Preparing Your Business For Excellence During Crisis" published by Innowave, we discussed combining advanced technologies with a pragmatic change in operational paradigm to achieve business continuity and excellence in the midst of a global crisis.

Today, let us examine how making these important decisions has definitively improved the performance of the semiconductor industry.

Setting the Agenda

As businesses look to 2021 and beyond, one of the key lessons of 2020 is that efforts into automation should not be narrowly defined as "pandemic response". Strategic goals like streamlining operational processes and labor dependency reduction must ultimately drive this innovation. As such, industry leaders find themselves making tough choices with regards to various structural reforms and infrastructure reinvestment.

One thing is certain: the hyper-accelerated drive towards Industry 4.0 is here to stay, and it is paramount that companies stay ahead of the curve in this fast-changing landscape.

Putting Ideas to Work

First and foremost in this effort is making a concerted effort to digitize. Companies are awash with analog data - from equipment, people, processes. By digitizing and analyzing this data, we improve the efficiency, productivity, and access by different users and stakeholders. The shift to paperless real-time monitoring of production also removes the need for manual monitoring and stacks of on-paper data.

Major technological advancements we have made in optics systems and computer vision have significantly reduced cost and increased capability of defect detection, recognition, and classification. Detection of minute crack lines, even with complicated backgrounds, before breakage also offer an early signal of the health of the line.

By combining our AI algorithm and computer vision techniques, with state-of-the-art automation with a UPH> 160, and easy-to-use HMI for operators, we have achieved a huge reduction of engineers and operators' time. This greatly reduces the need for data collation, analysis, judgement by engineers, and improving detection rate and accuracy at the same time. The smart functions also make it possible for line people and operators to take fast action after the training of use of smart functions.

True to our central strategy of designing end-to-end solutions, we deployed our proprietary platform that provides a whole suite of features that build on the data obtained from our crack detection tool. These include:

- Real-time monitoring of crack and breakage rate in the entire production line
- Trend of overall crack and breakage rate in any defined time frame, in conjunction with those rates observed in different layers
- Occurrences of patterns of crack lines across production machines throughout a specified time window.
- Automatically analyze common machines for specific defects signature, or suspected equipment with certain failure patterns or defects signature.
- Tool health surveillance system that generates circumstantial report.

Meeting Goals

To achieve the objectives set by our customers, a series of active and intimate collaborations between us and various business stakeholders are necessary. This allows us to avoid potential pitfalls, explore deeper improvements, and to fully understand the problems and challenges faced by businesses.

This successful and proven model of collaboration has resulted in significant improvements, including over 65% reduction in scrappage and a corresponding increase in line yield, within just a few months, results in multi-million dollars saving. With proper training and change management, we are confident that our customers will continue to improve their yield without our active intervention.

An Eye on 2021

2020 was a challenging year. While we are grateful that it has also been a fruitful year, we have only just begun, with this article illustrating just one of several successful stories. Innowave Tech will continue to advance our technological edge, explore the benefits of digitization and automation, and develop other intelligent solutions for the semiconductor world.

Fig. 1 - Detailed Tool Health Information board

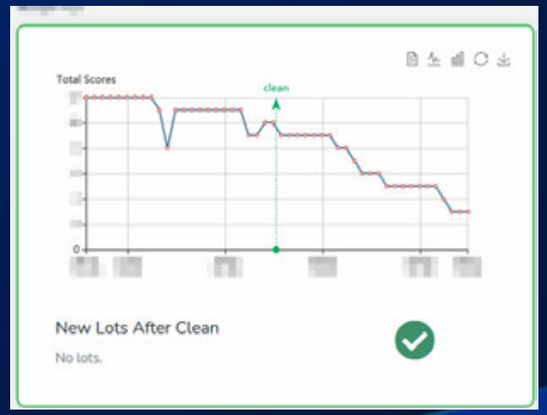


Fig. 2 – Result showing drop in BW after predictive tool maintenance

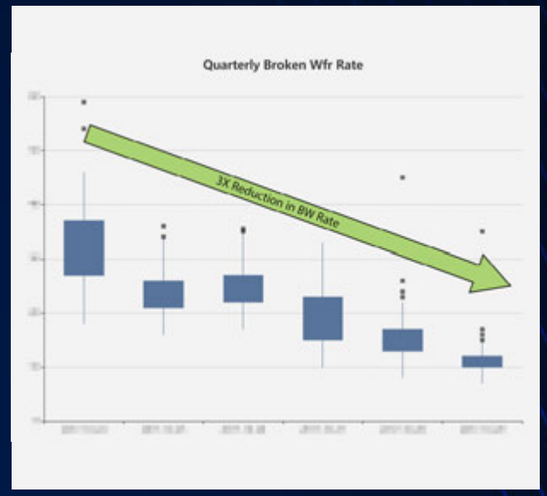


Fig. 3 - BW Quarterly Rate

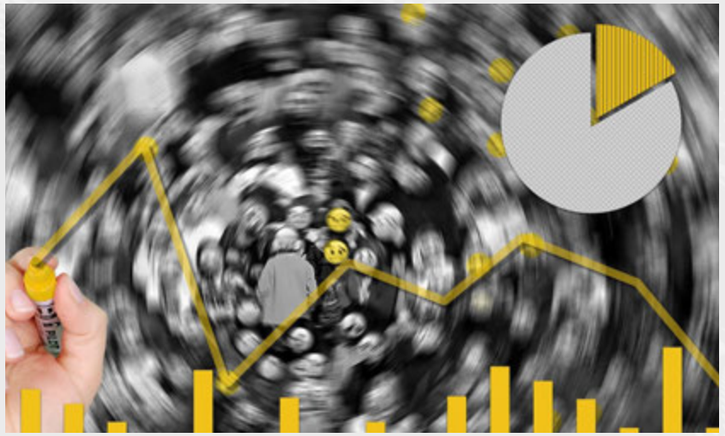
A Word from Industry Leader

" Predictive technology was successfully incorporated in this Smart Camera System to detect sources for crack/ broken wafers. This truly marks the spirit of Industrial 4.0!"

Alan Lek, Director of Yield
Skyworks Solutions, Singapore

ABOUT THE AUTHOR

Xu Jin Song
Managing Director, INNOWAVE
www.innowave.com.sg



WinTech Nano – Your Lableess Vision Enabler

Lableess as a word was invented by Mr. Li Xiaomin, President of Wintech Nano via the WeChat official account on 21 November 2020. Inspired by the Fabless concept, Xiaomin created the equivalent word "lableess" to urge the semiconductor industry to adopt a business model of leveraging capable 3rd party analytical lab service providers to remain focused on their core technologies and designs, instead of investing heavily in high end analytical equipment and resources. Over the past decades, most of the Fabless set-up IC design companies have grown significantly faster than their IDMs competitors, thanks to the pure play foundries in both technology development and resource utilisation. This disintegration of IC design companies and foundries has forced semiconductor industry to abide by Moore's Law.

Mr. Li Xiaomin, President of Wintech Nano

According to Xiaomin, the lableess concept corresponds to traditional in-house lab concept, which usually has several intrinsic challenges, such as **1) high cost** due to low utilization of advanced analytical equipment, **2) continual development** of analytical equipment technologies, **3) glass ceiling** of in-house lab team and experts.

To overcome these challenges, the lableess business model is an apparent solution, especially in the emerging markets where technical sources are generally in great shortage. Capable 3rd party analytical lab service providers, like WinTech Nano, could fill in the gap like a "General Hospital of Industry" through:

- **High capital invested hardware**, i.e. advanced analytical equipment
- **Expertise & knowledge** with a vast range of industrial processes and material designs
- **Uniquely developed** analytical tools/methodologies/sample preparation technologies
- **Neutrality** of technical analysis and services provided

From a 3rd party analytical service provider's perspective, the key sustaining factor of the lableess business model is to remain neutral without stepping into the equipment or product design business. From a company's point of view, the value-adds provided by 3rd party analytical services should be significantly higher than in-house lab alternatives.

Let experts do the job, let WinTech Nano be your Lableess Vision Enabler.

SOURCE OF CONTENTS

LG Announces Autonomous Robot With Disinfecting UV Light For Various B2B Applications

Newest Addition to LG's CLOi Family of Robots Will Help Hotels, Schools, Offices, Restaurants and Retailers Deliver Peace of Mind

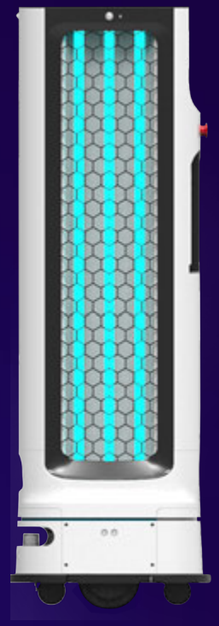
Combining its core competencies in robotics, artificial intelligence and autonomous vehicles with a deep understanding of customer needs, LG Electronics announced in December 2020 that it was developing an autonomous robot that will use ultraviolet C (UV-C)[1] light to disinfect high-touch, high-traffic areas. LG plans to offer the UV robot to hospitality, retail, corporate and education customers in the United States in early 2021.

"This autonomous UV robot comes at a time when hygiene is of the highest priority for hotel guests, students and restaurant customers," said vice president Roh Kyu-chan, head of the robot business division in LG's Business Solutions Company. "Consumers can have the peace of mind that the LG UV robot will help reduce their exposure to potentially harmful germs."

To be officially unveiled at Digital CES® 2021, LG's new robot is expected to enable a new standard of hygiene by helping to disinfect high-touch, high-traffic areas. Because of its autonomous design, the robot will be able to move easily around tables, chairs and other furniture, generally irradiating a room's touchable surfaces in 15 to 30 minutes, disinfecting multiple areas on a single battery charge.[2]

Engineered to be easy to operate, LG's robot can be integrated into established cleaning routines without requiring extensive staff training or specialists to operate. Staff will be able to monitor progress via remote updates to mobile phones or tablets. Employee exposure to UV rays will be minimized through a built-in safety lock activated by human motion detection sensors,[3] pressing of an emergency stop button or via the mobile application.

"A higher level of hygiene will be expected by customers in the contactless ecosystem which we are now facing," Roh said. "LG is committed to leveraging its diverse expertise in robotics, artificial intelligence and autonomous driving to develop creative solutions to tackle tomorrow's challenges."



[1] Covers wavelength spectrum between 100-280nm.
[2] Actual time based on room size.
[3] Motion detection sensors effective up to 5 meters radius.

SOURCE OF CONTENTS

Press release of LG

Digital Manufacturing Solutions For Industry 4.0 And Beyond

Being successful within the digital manufacturing industry is never easy due to its competitive climate. With Arcstone's solutions, learn how Lumileds, a global lighting solutions provider, has digitized their maintenance processes.

Lumileds' Digital Transformation Journey

In 2018, Lumileds began its digital transformation journey as they prepared to scale their activities throughout their facilities regionally to be a leader in the data-driven manufacturing space. The transition began at the manufacturing facilities in Singapore and Penang, focusing on wafer and die fabrication of Lumileds high-performance LEDs. Lumileds' digitalization effort centered on productivity and time saved in terms of data analysis and performance tracking.

Due to the large number of machines at each site and heavy, paper-based maintenance processes, Lumileds faced maintenance management challenges. A digital revolution was very much required for the 1,000+ machines alone in the Singapore location, each requiring precise and thorough tracking. Digitalizing these paper-based methods and making the data available was the main challenge. Additional aspects were about preventive maintenance and the preservation of the quality.

Arcstone's mission is to provide digital manufacturing solutions for Industry 4.0 and beyond to drive the digitalization of the industrial supply chain. Our solution digitalizes and transforms manufacturing processes from the shop floor straight into the hands of customers. By understanding Lumileds' concerns, Arcstone sought to enable a more open, accountable, and productive manufacturing environment for Lumileds and other manufacturing players. Talking about Arcstone's strategies for Lumileds, Justin Devakumar, Senior Manager at Lumileds, commented, "The digitalization of our maintenance process would significantly cut the time taken for technicians to search and print out checklists, update soft copy versions as well as automate the release of the tool back in our MES system."

Two Phases to Deploy the New Solution

The deployment has yielded several impacts, both immediate and long-term. The short-term impacts that Arcstone brought were saving up to 30% of workforce hours and shortening maintenance periods by 25% per machine. There was a 14% reduction in indirect workload and 4 hours per day reduction for report generation. At the same time, our solutions have yielded improvements in analysis quality, preventive maintenance, and company-wide transparency in the long-term.

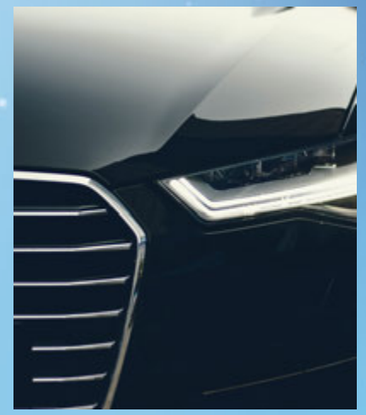
With this orientation, Arcstone's deployment to Lumileds was enacted in 2 phases:

Phase 1 saw the creation and implementation of digital workstations at each of Lumileds' locations to allow users to access the main interface from portable tablets, anywhere in the factory. Familiarity with the smart devices and the portability has simplified the transition to the modern workstation. The E-Checklist creator was a significant value-add, where the platform helped Lumileds remove the need to constantly build checklists and allowed all end-users to upgrade effortlessly. It also helped cut transaction time and scanned for improper formatting or unusual data automatically.

In Phase 2, Arcstone integrated with the customer's existing MES, consolidating machine data and generating personalized reports and visualization software. Customizable dashboards featured on the digital workstation provided real-time traceability that was previously not readily accessible.

Times Square ball

Lumileds' Singapore site extended their digital transformation after the two phases by electronically integrating their calibration process and automating system data processing. The E-Calibration module and arc. quire, Arcstone's data collection solution, was implemented to incorporate and streamline a multitude of data inputs and collection.



"Having a solution provider that is willing to partner with us in our digitalization journey has been key. Strong supplier collaboration and cross-learning is crucial for success in digital transformation, you need a good team to work with and solution providers who will go through the paces with you,"

Justin Devakumar
Senior Manager, Lumileds

With the successful solutions provided by Arcstone, Lumileds will continue building towards a SMART Factory that focuses on digitalization of manufacturing interactions using smart devices and the introduction of IoT.

SOURCE OF CONTENTS
ARCSTONE

Huawei – Empowering Singapore's Flourishing AI Ecosystem Today and Tomorrow

Seeing strong potential in the utilization of AI in Semiconductor & Manufacturing industry, Huawei seeks to collaborate with local enterprises to nurture and train new AI talents as well as strengthen the burgeoning AI industry ecosystem. Committed to cultivating 100 AI architects and 1000 AI developers in Singapore over the next three years, Huawei has put in place plans for the next five years to make this ambition a reality.

Equipping the AI Educators

Huawei aims to contribute to growing the pool of AI talents in Asia by partnering and supporting 1000 universities and AI training organisations worldwide with curriculum development and training facilities. Given its proximity to universities in the region, Singapore is anchored to become the headquarters for AI talent training.

As part of this thrust, Huawei held its second AI Educator Symposium at NUS School of Computing on 28th Oct 2020. Over 3,000 educators from universities across Southeast Asia, polytechnics and top China universities met online to share innnovative ways of teaching AI to students of different ages. Significantly, the Symposium set the ground for Singaporeans, Chinese and regional educators to share ideas on the topic of AI education and how to prepare the next generation of students for challenges and opportunities brought about by rapid AI advancements.

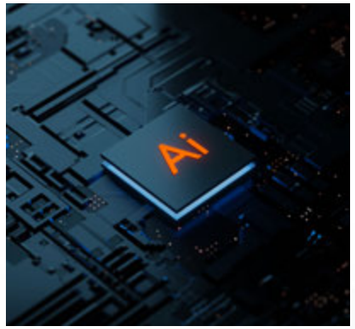
"Having a solution provider that is willing to partner with us in our digitalization journey has been key. Strong supplier collaboration and cross-learning is crucial for success in digital transformation, you need a good team to work with and solution providers who will go through the paces with you".

Chang Xin
President of Huawei Intelligent Computing, Asia Pacific

Fuelling The AI Ecosystem

Huawei's AI Developer Programme currently supports over 1.3 million developers in creating innovative AI solutions. Towards bolstering AI

industry capacity and capabilities, Huawei has previously announced its intention to invest US$1.5 billion in a second iteration of an AI Developer Programme over the next five years. Under the new programme, Huawei aims to support AI advancements through equipping developers with Huawei's advanced computing capabilities, and promoting an AI development industry framework.



Besides an AI lab in Singapore, Huawei has launched a series of talent, innovation and Singapore-China bridging programmes, which provide training and workshop opportunities for hands-on practice with testing and integration facilities. More importantly, the bridging programmes provide an open and advanced platform for ecosystem development and industry collaboration.

"Our various programmes showcase our commitment in taking the AI ecosystem in Asia to the next level. We plan for the long term and will continue to drive efforts to sustain and improve the AI ecosystem. We welcome further cooperation with Singapore universities, research institutes and enterprises".

Nicholas Ma
CEO of Huawei International

One example of the Singapore-China bridging programme is the Artificial Intelligence Innovation Bootcamp in Singapore, which was held in 2019 and unfortunately cancelled in 2020 due to COVID-19. In addition, the company is also collaborating with WSG to offer Singapore students internship opportunities in the company starting this year.

SOURCE OF CONTENTS
HUAWEI

A Chat with the SSIA Secretariat Team Member

The Story of Julie's Career Journey

Can you tell us about your career journey? What first got you into the semiconductor industry?

Back in 1992, as a fresh graduate from National University of Singapore - Chemical Engineering, I joined TECH Semiconductor as part of the startup team and had the privilege to go for a 6-month overseas training in Texas Instrument Dallas and Japan. It was the first 200mm Fab startup in Singapore back then, when the semiconductor industry was emerging. After 12 years of thriving career in technology development and manufacturing operations, I wanted to experience other aspects of semiconductor industry, and to see the world. I transited from technology to working with people, namely customers whom we build our products for. I joined Chartered Semiconductor, currently known as Globalfoundries, for about 10 years as their Customer Engineering Director, working with strategic customers like Qualcomm and Samsung. The most fulfilling part was to grow the account from scratch to #1 customer in the company. In 2014, during an ex-colleague gathering, it was chanced upon to re-join Micron (Micron had acquired TECH Semiconductor in 2010) and expand my technical expertise further, leading the Backend (Assembly and Test) Subcontractors Quality Assurance. Reflecting on my career - being trained in technology; working with people, having customer focus; managing subcontractors, driving a quality mindset - all these have brought growth. I would like to bring along this skillset and be an advocate for our Singapore Semiconductor industry through my career in SSIA.

What are the similarities and differences between your previous roles and the role in a semiconductor trade association?

I used to lead and manage strategic customers programs where business partners are external customers and internal stakeholders. For my current role, I get to work with multiple companies (MNCs and SMEs), government agencies and institutes, on strategic programs making the semiconductor industry more vibrant here.

Volunteering at the Purple Parade supporting The Animal Project (TAP) and Autism Resource Centre (ARC).

Picture taken during Micron Fab10A Grand opening with NUS interns and Micron team members working on the autonomous vehicle project.

How do you know about SSIA and why do you choose to join the Association?

It all started with my presence at the SSIA Semiconductor Summit and Dinner in 2019. The event was very engaging and well organised, not realising at that time that it was managed by a lean but amazing team. I was recently recommended by a board member. Upon hearing Wee Seng's sharing of SSIA's vision and mission, I realised the Association has gone through a remarkable transformation in the last 2 to 3 years. I am most glad to join the team contributing to our semiconductor industry.

Tell us something about your role in SSIA?

My role as a Strategic Programs Director is to lead SSIA in developing and managing strategic programs with key stakeholders, including government agencies and partners of SSIA, to better support the industry's growth in Singapore. Some interesting programs include the initiative to strengthen the local ecosystem that supports the industry and intelligent manufacturing, and the upcoming Semiconductor Women's Forum. They are exciting programs that engage our industry to thrive further.

What do you enjoy most about working in SSIA?

It is the people. It is enjoyable working with a team who are very dedicated with diverse talents. Also, getting to work with different industry partners and being able to make a positive impact on our industry gives me great satisfaction.

Let's talk about something personal. Can you share with us a bit more about your hobby?

During my spare time, I enjoy reading books on psychology which provide insights and scientific explanation on people's behaviour. It allows me to be more empathic and understanding to others. I am also a strong supporter of Diversity and Inclusion. Volunteering at Purple Parade which celebrates the abilities of persons with special needs, has been a wonderful activity for my family in the last few years. As an active steering committee member of my previous company's Women's Leadership Network, I am also deeply passionate about supporting and nurturing future women leaders in our industry. It is very fulfilling to see people grow and elevate. SSIA will be organising the first Semiconductor Women's Forum Day on 11 March 2021, do join us!

"I am also deeply passionate about supporting and nurturing future women leaders in our industry. It is very fulfilling to see people grow and elevate."

Wisdom of the New Agile Leader: "If You are Not Continuing to Innovate in This Digital Age, You Will Fail."

Missing the Boat in the Digital Transformations Eras

If we look through recent history, many companies were caught or blindsided and had to shut their doors because their leader did not see the "unexpected" digital transformations. We are all familiar with examples, like Blackberry, Compaq, Blockbuster, Palm, Napster, Polaroid, AOL, Toys R Us, Kodak, Borders, etc.

More recently, many companies were impacted by the "Amazon Effect" where the ongoing evolution and disruption of the retail market, both online and in physical outlets, resulting from the shift to increased e-commerce. Again should the leaders have been surprised and not prepared.

How do you continue to thrive as an organization or a leader with the tsunami of technological change coming; AI, AR, IoT, Quantum Computing, Blockchain, Biometrics, etc.?

I was discussing this issue with Ahmed Afzal, former CEO of Madhya F&B,under Trakindo Group. He managed Carl's Jr, Wingstop, Caribou Coffee, and GAB. He also had a regional stint with UNESCO and worked at Tektronix Inc and Sumitomo Corporation of America in the US.

I asked him the main reasons leaders and even entrepreneurs failed to see in the digital transformation eras?

He shared the three main reasons why so many executives missed the boat in the digital transformations eras citing research from IRIS Indonesia.

The three are:

1 First, the lack of long term strategic view on technology – rapid change and tsunami of options forces some executives to inject ad-hoc efforts to keep up with the rest. Unfortunately, many of these 'experiments' are not controlled tested nor sufficient long-term investments made.

2 Second, the overload of data leads to confusion in decision-making, and having appropriate action taken. Executives need expert analysis, which may be outsourced to help them filter all the data into something that is digestible and more precise for timely decisions.

3 Third, only focus on easy, piecemeal investments in technology to get short term gains and keep up with the herd instead of digital transformation as the core revenue generator. And it must encompass a total review, which includes focusing on transforming business models, processes, job scopes, and even the talent strategy.

What We Must Learn

How ready are you for this next upcoming digital tsunami? What are you doing? How are you educating your team, organization on how to leverage the imminent technological changes
So I asked Afzal the proverbial question, How do you get an organization ready to make sure they are not left behind?

He shared four points you should consider:

1 Make sure your current team and future hires are open to change and digital transformation as part of the fabric of the company culture – everyone must be an innovator. Encourage risk-taking!

2 Ensure your staff is getting professional training on how technology is changing the way they work now or in the near future – connecting leadership and staff with their customer's ever-changing needs in the field.

3 All employees' individual development plans must have a clear development agenda on the digital role in their department. Management should remove barriers and encourage everyone to challenge current SOPs with technology.

4 Company strategic plan must be in-line with current updates impact of new technology in your respective industry.
What new start-ups are there in our industry? Allocate 10% of budget for R&D on new technology projects.

If you are not taking some of the steps above for your organization, you may be blindsided. If you think you are ready for everything – how prepared were you for COVID 19?

What We Need to Learn

In my soon to be released book called The Next Right Turn: Making the right career steps in a digital world, coauthor Dr. Mark Munoz, and I suggest these four stages of getting your people ready.

STAGE 1 - SKILL UPGRADE

Employees need to upgrade their skills and pursue lifelong learning to keep their jobs. The competition will be tough, and employees need to differentiate their skills and focus on where they can truly add value.

STAGE 2 - TECHNOLOGY ASSIMILATION

Many new technological gadgets and tools will emerge; employees need to learn to embrace technology quickly. There will be machines (or already are) and robots in the workplace; employees need to know to work hand in hand with machines and practice symbiotic computing.

STAGE 3 - ATTITUDINAL CHANGE

Emerging technologies will be daunting to many; employees need to overcome technological insecurity and fear by changing their attitude and taking gradual steps towards progress. Companies will be very focused on profitability and productivity enhancement, employees, need to optimize resource usage to truly stand out in the organization.

STAGE 4 - RESOURCE OPTIMISATION

Employees need to take charge of their own destiny and design their own personal development journey through a Personal Career Development Plan. Employees need to be game-changers and innovators, leveraging talent, and resources to make a difference in the company and achieve the pinnacle of success.

ABOUT THE AUTHOR

Stephen Krempl
Global Speaker, Facilitator, Best Selling Author and Business Communication Coach

www.kremplcommunications.com

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