IC DESIGN YOUR
FUTURE

SUMMIT AND SEMICONDUCTOR DINNER 2022

ADVANCING TECHNOLOGIES TOWARDS A SUSTAINABLE FUTURE

Thursday, 29 September 2022
Marina Bay Sands Expo & Convention Centre

For more information or enquiries, please contact **jasmine@ssia.org.sg**

FOREWORD BY
Executive Director

Looking back at the past year, it is amazing to see how far the semiconductor industry has come. We have faced many challenges, but we have also seen many successes. The global pandemic has forced us to change the way we operate, but it has also made us more resilient. We have adapted to new ways of working and communicating, and we have continued to innovate.

If you've attended any major events in the recent months, you will feel as if you are back to the pre-pandemic days. We can now socialise with our business associates and friends physically. Despite having to return to some form of normality, we must remain wary of the situation around us. The invasion of Ukraine by Russia continues to influence the global economy. Inflation is having an impact on countries across the world, which will have a direct influence on consumer sentiment.

Companies in our industry are also starting to be cautiously optimistic about the demand for chips in the near future. While the industry is still addressing the backlog of chips orders, there seem to be some signs that the market is weakening. We have learned to remain vigilant over the pandemic period, and be ready to face whatever challenges lie ahead. We must continue to focus on projects and initiatives that help our businesses remain resilient to any potential disruptions.

That said, investment continues to happen all around the world in our industry. Industry leaders are optimistic about our industry's future. The semiconductor market is expected to cross over a trillion US dollars by 2030, as projected by McKinsey & Company. Demand from the computing, data storage, wireless communications, and automotive segments will continue to lead this growth. This is why we must learn to manage the current uncertainty, and plan for the future so our industry can thrive. We must continue to focus on growing our talent pool and continue to strengthen and grow our ecosystem in order to keep Singapore as a competitive global semiconductor hub.

Companies in our industry continue to hire, not just in Singapore but regionally. SSIA will collaborate with companies to bring better awareness about our industry to attract more talents. We will organize more recruitment fairs and career talks with various institutions. We will also be running communication campaigns to publicize our industry to both the young talents and job seekers who intend to join the semiconductor industry. We hope all these initiatives will help our companies find talented people to fill the roles in their respective companies.

SSIA Secretariat is currently busy planning our upcoming flagship event - the Summit and Semiconductor Dinner 2022 on 29th September at Marina Bay Sands. This year's Summit is themed "Advancing Technologies Towards a Sustainable Future". We will have a line-up of wonderful speakers at this year's Summit. As with prior years, we will expect many industry leaders to join and companies to sponsor the event. We hope that you will be able to join us at both the Summit and the Dinner. For companies who would like to sponsor this event, please feel free to reach out to the SSIA Secretariat. The Summit and Semiconductor Dinner is our industry's largest event in Singapore. You can check out more information from our website.

As mentioned in my recent speech at Semiconductor Business Connect 2022 in May, the SSIA Secretariat will be expanding to better support the growth of our industry here and the region. I will soon announce the new members of our team, and I hope you will be able to engage with them soon. I look forward to catching up with you in person at the Summit and Semiconductor Dinner.

Thank you. Stay safe and healthy!

ANG WEE SENG
Executive Director
Singapore Semiconductor Industry Association (SSIA)

CONTENTS

SEMICONDUCTOR BUSINESS CONNECT 2022 –
Strengthening and Growing the Local Ecosystem

On 19 May 2022, the Singapore Semiconductor Industry Association (SSIA) presented our first larger physical event for 2022, with more than 220 onsite, as well as online attendees from about 100 multi-national corporations, SMEs and government entities gathered for this year's Semiconductor Business Connect 2022.

Mr Alvin Tan, Minister of State, Ministry of Trade and Industry & Ministry of Culture, Community and Youth, is the Guest of Honour of the event. This is our first event to include a conference, exhibition, and most importantly networking sessions since the pandemic began.

This event is an important platform to promote the initiative to strengthen and grow the semiconductor industry's ecosystem by facilitating innovation through business collaboration. Semiconductor Business Connect aims to connect the semiconductor network, to innovate solutions and collaborate for success.

Mr Ang Wee Seng, Executive Director of SSIA says, "Businesses are now gaining momentum and are on their way back on track to pre-pandemic days. We will see more business travels, physical meetings and most importantly, business networking happening. To that end, SSIA too will be organising larger physical events, in hope to encourage more physical networking sessions and ultimately to bring back the industry's vibrancy to help businesses thrive. This will also be in line with our mission and vision to make Singapore a successful and competitive global semiconductor hub."

Business matching and collaboration extend beyond the day's event, and will continue throughout the year. Do come forward with companies' problem statements and we will strive to connect you with potential solutions from the network; collaborate for growth and success.

1. *Guest of Honour speech – Mr Alvin Tan, Minister of State, Ministry of Trade and Industry & Ministry of Culture, Community and Youth*

2. *Mr Ang Wee Seng, Executive Director, Singapore Semiconductor Industry Association - Opening Address*

3. *Mr Bo Huang, Expert Associate Partner, McKinsey - Strategies to Lead in the Semiconductor world*

4. *Mr George Alajajian, VP Strategic Parts Supply Chain, Intel Corporation - Emerging Opportunities in Fab Equipment Components Supply Chain*

5. *Mr Ganesh Prasad, Director, Product Marketing, Wedge Bond Business Unit Kulicke & Soffa Pte Ltd - Solutions Enabling the Automotive Industry*

6. *Mr Guillaume Darmayan, Head of Business Development for Industry, ENGIE South East Asia - The Global Energy Transition - Towards Sustainable Ecosystem*

7. *Mr Joseph Chia, Vice President & General Manager, GIGA+ Fab, GlobalFoundries Singapore Pte Ltd - Talent: The Crown Jewel of the Local Semiconductor Ecosystem*

8. *Mr Bryan Ng, VP Sales and Business Development, camLine - Supplier Quality Management for Incoming Goods*

9. *Mr Mike Feng, Chief Technology Officer, Innowave Tech Pte Ltd - The Power of Artificial Intelligence (AI) - Achieving Industry Transformation Goals*

10. *Mr Mazher Najeeb Anwar, Chief Technology Officer, SESTO Robotics Pte Ltd - Mobile Robots and Manipulators for Material Handling Operations*

11. *Mr Hoe Boon Chye, Chief Executive Officer, Barghest Building Performance (BBP) - Energy Optimization at $0 Investment*

12. *Mr Lim Wei Yang, Director, Deston - Rethink Water Treatment - Save Energy in Manufacturing Site Cooling*

13. *Dr Zhang Xi, Deputy General Manager, WinTech Nano-Technology - "Labless" Vision to Build a Robust Ecosystem*

SEMICONDUCTOR BUSINESS CONNECT 2022 – Innovate Solutions, Collaborate for Success

Figure 1 - SSLA Run 7 Participants

Singapore Semiconductor Leadership Accelerator (SSLA) Run 7

The 7th run of the Singapore Semiconductor Leadership Acceleration (SSLA) programme was held from 11 April to 13 May 2022, and its theme was "Global Trends, Global Mindset: Leading for the Sustainable Future". The global ecosystem lies at the heart of the semiconductor industry; as the demand for semiconductor innovation and microchip increases globally, there is a need for companies at all ends of the design-manufacturing chain to work hand-in-hand. Thus, in Run 7, the programme focuses on creating synergies and inspiring collaboration as leaders navigate through real-world issues such as trade wars and supply chain challenges.

Given its aims, SSLA adopts an immersive hands on learning experience designed to accelerate personal and professional growth for leaders to succeed in the increasingly volatile, uncertain, complex and ambiguous (VUCA) global environment, with special emphasis on the semiconductor industry. In partnership with Human Capital Leadership Institute (HCLI), Singapore's centre of excellence in leadership in Asia, the programme brings together industry thought leaders, policymakers, experts and academics to discuss pertinent topics with the participants,

and create opportunities for them to exchange ideas and collaborate on practical solutions to the challenges facing the industry.

Over the course of the programme, participants were introduced to topics such as Geo-Politics, Trade Wars and Supply Chains Challenges, Ecosystem Edge in the Semiconductor Industry, Leadership Agility, Human Capital Management Best Practices for Workforce 4.0, Business Innovation Model, Strategies for Sustainabiity, and Communication and Engaging with Impact. Believing in a well-rounded leadership development, the SSLA program not only builds business and strategic skills, but also people management skills critical for execution (i.e. Leading Business and Leading People). Understanding self and how one self interacts with others are equally important for personal growth (i.e. Leading Self). The programme considers the need for business specific knowledge topics, i.e. the World and Asia, Drivers for

Figure 2 - Invited speaker, Steven Krempl, sharing on "Communication and Engaging with Impact"

Growth and Leadership Implications, in the design of the program.

There are many highlights of the programme. As one of the participants shared, "It is a great learning experience for me. The content design is encompassing, covering a whole spectrum of important topics from geopolitical and ecosystem, to being compassion leader. On top of that, there are business games like nation building that help us to understand the importance of strategy, partnerships, collaboration and communication in ecosystem, which is really helpful". Participants also shared on how they have benefitted from the programme, for example, noting that they felt that the programme has enabled them

to view things with a different lens, provided them with good frameworks to follow and apply in their jobs and organisations. A **video** on the testimonials from some of the participants can be viewed here.

To join the SSLA programme and be a part of a strong alumni of over 164 leaders from 32 unique organisations, please check our **SSLA website** for more information.

Next 3 runs:
- Run 8 ~February / March 2023
- Run 9 ~July / August 2023
- Run 10 ~1H 2024

We look forward to your enrolment and participation!

Figure 3 - Participants engaging in a business game

SINGAPORE SEMICONDUCTOR LEADERSHIP ACCELERATOR PROGRAMME

Programme Dates

Run 8   : ~February/March 2023 (Virtual & Onsite)

Run 9   : ~July/August 2023 (Virtual & Onsite)

Run 10 : ~First Half 2024

Please contact **secretariat@ssia.org.sg** for more information.

TRAIN, UPGRADE & RESKILL with SSIA

As the semiconductor and electronics sector strengthen our local ecosystem and relook at ways to attract and retain talents, training, up or re-skilling and upgrading remain critical in staying relevant and future-proofing ourselves. Check out programmes in the pipeline, brought to you by SSIA and our learning partners.

INTRODUCTION TO VACUUM AND PLASMA TECHNOLOGY (1 DAY)

Ever wondered how vacuum and plasma systems work? Find out for yourself through this introductory course where you will learn about vacuum and plasma technology commonly applied in the semiconductor, electronic, and manufacturing industries. The knowledge and skills gained through this course can be applied to optical coating, IC chip fabrication, 5G, Internet of Things, and more!

Who is this suitable for?
Engineering and technical personnel interested in understanding the vacuum and plasma systems.

MICROSCOPY AND THIN FILM CHARACTERIZATION FOR FAILURE ANALYSIS (1 DAY)

Ever wondered how imaging and characterisation tools work to provide insights on device failure? Participants of this introductory course will be equipped with fundamental knowledge on microscopy and thin film characterisation for failure analysis. There will also be hands-on opportunities and demonstrations during lesson to facilitate learning.

Who is this suitable for?
Engineering or technical personnel who are interested to learn about microscopy and thin film characterisation tools for failure analysis.

IOT FOR ELECTRONICS INDUSTRY (1 DAY)

This course introduces the fundamentals of Internet of Things (IoT), how data could be transferred from sensors (IoT) to the cloud or network and data management to drive efficiency, enhance and improve operational tasks and work processes for the semicon and electronics manufacturing industry. There would be hands-on session with setting up an IoT system and participants can apply the knowledge and skills to help improve their operational tasks and increase work productivity.

MODULE 1: Overview of a typical IoT application, and sensor data upload to IoT Cloud
MODULE 2: Graphical Data Management Tools and Applications in semicon and electronics manufacturing industries

Who is this suitable for?
All engineering or technical personnel.

INTRODUCTION TO INDUSTRIAL FAILURE MODE AND EFFECTS ANALYSIS (FMEA) (1 DAY)

This course equips 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 is this suitable for?
Technician, Associate Engineer/Assistant Engineer, Equipment Engineer, Maintenance Engineer.

DATA ANALYTICS FOR ELECTRONICS INDUSTRY (1 DAY)

This course introduces the fundamentals of data analytics and various tools such as data wrangling, data visualisation and data analytics which is one of the enablers of industry 4.0 to improve operational efficiency and business processes. Participants will be equipped 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.

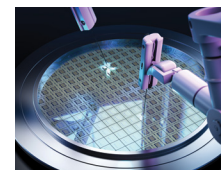MODULE 1: Introduction to data analytics and data wrangling
MODULE 2: Data Visualization and Unsupervised Data Analytic Techniques
MODULE 3: Supervised Data Analytic Techniques

Who is this suitable for?
All engineering or technical personnel.

WAFER FABRICATION IN SEMICONDUCTOR INDUSTRY (3 DAYS)

This course provides participants with the relevant knowledge and skills of the Wafer Fabrication process in the Semiconductor Manufacturing Industry. Participants will be introduced to facilities in the manufacturing process such as cleanrooms and handling of hazardous chemicals, various stages in Semiconductor Manufacturing from front end to back end; fabless, manufacturing flow and understanding of the fabrication processes for integrated circuits (IC) and statistical process control. There will be hands-on sessions working with process equipment and metrology tools in the cleanroom. The Industry 4.0 technologies and its benefits to the Semicon Industry will also be taught in the course.

Who is this suitable for?
All engineering or technical personnel under the Electronics Skills framework; associate engineer for process, quality, product, integration, equipment and facility for the Semiconductor & Electronics Industry.

ADVANCED MANUFACTURING INSPECTION WORKSHOP (4 DAYS)

This course will cover the application of machine vision and pattern recognition technologies in Advanced Manufacturing. Participants would be instilled with the essential knowledge of machine vision systems including their key components, functionality and the image processing technologies. On top of that, the course will also provide an overview of the techniques in image analysis and the derivation of useful hidden patterns in the images. These would include application of suitable AI models for pattern recognition and classification.

Aims:
▶ To be able to configure and deploy commercial and open source machine vision systems for visual inspection
▶ To be able to integrate machine vision systems on robots for visual inspection application
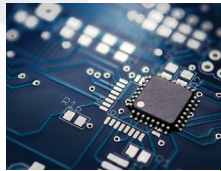
SEMICONDUCTOR PROCESSES (2 DAYS)

In today's day and age, semiconductors are found in all aspects of our lives. They control the computers we use to conduct business, the phones and mobile devices we use to communicate, the cars and planes that get us from place to place, the very machines that diagnose and treat illnesses, electronic gadgets we use to listen to music, watch movies, and play games, just to name a few. This course enables learners to gain knowledge of the journey of semiconductor manufacturing from sand to a finished chip. You will also gain an understanding of the local semiconductor ecosystem and how all of us come together to support the sector.

WHY: we need IC chips (more than just computers)
HOW: chips are made (From Sand to a functional chip)
WHAT: are possible areas of involvement (overall eco system)

Who is this suitable for?
Non-technical audience who wants to know a high-level overview of semiconductor devices and how they are fabricated.

Check out **SSIA website** or scan the QR code for full list of events, training and courses. Or contact Cindy Chong at *cindy@ssia.org.sg.*

SSIA Welcomes New Members

CapitaLand

CREATZ3D

DSC INDUSTRIAL
宇 盛 直 营
Google DSCIND
Equipment Life-Time Services

JLSemi

KUEHNE+NAGEL

SWAT MOBILITY

XYNTHESIS

IC DESIGN YOUR FUTURE
SUMMER CAMP

20–22 JULY 2022
ON-SITE AT AMD AND GLOBALFOUNDRIES CAMPUS

Summer Camp — IC Design Your Future

is proudly brought to you by the IC Design Committee. This 3-Day program provides the universities' undergraduates an opportunity to learn more about Semiconductor and Electronics industry, IC Design career prospects, visit leading multi-national companies like AMD and GlobalFoundries; and most importantly, interact with various Semiconductor companies' industry leaders and members to experience the vibrancy, focus and passion of this industry.

Who it's for:
NTU / NUS / SUTD, Year 2 / Year 3 (AY2022/2023) undergraduates from Electrical, Electronics, Computing, or Design Engineering

Objectives:
To get to know Semiconductor industry and IC Design sector, and grow the IC Design sector

Programme Features:
• Sharing by Semiconductor and Electronics industry leaders and experts
• Panel Discussion and networking with industry leaders
• #AskMeAnything with AMD and GlobalFoundries team
• Line Tour and Fab Tour
• Innovation Day - Experiential learning with games

NANYANG TECHNOLOGICAL UNIVERSITY

NUS National University of Singapore

SUTD SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

IC Design Committee

The IC Design Committee was initiated in mid-2021, led by a group of leaders from leading product and manufacturing companies, as well as representatives from the Institutes of Higher Learning (IHL), supported by EDB and SSIA; with the objective to drive and sustain talent attraction and development initiatives for IC design sector in Singapore.

The committee focus on "2+1" Focus Areas, namely,

- Talent Attraction
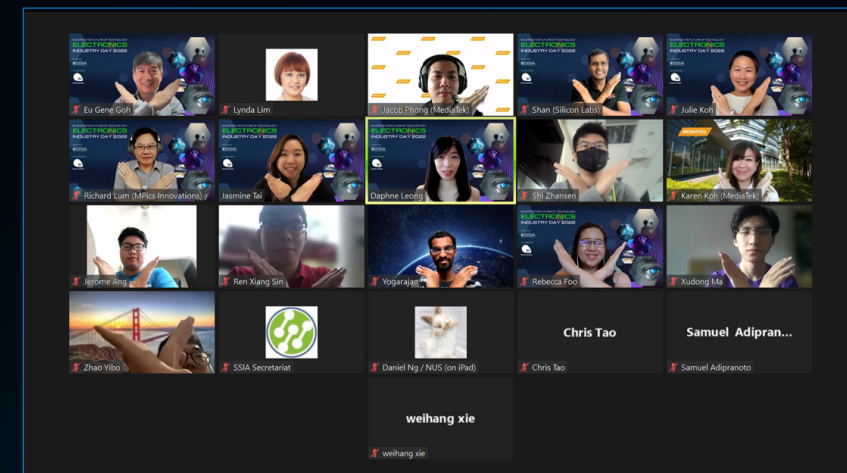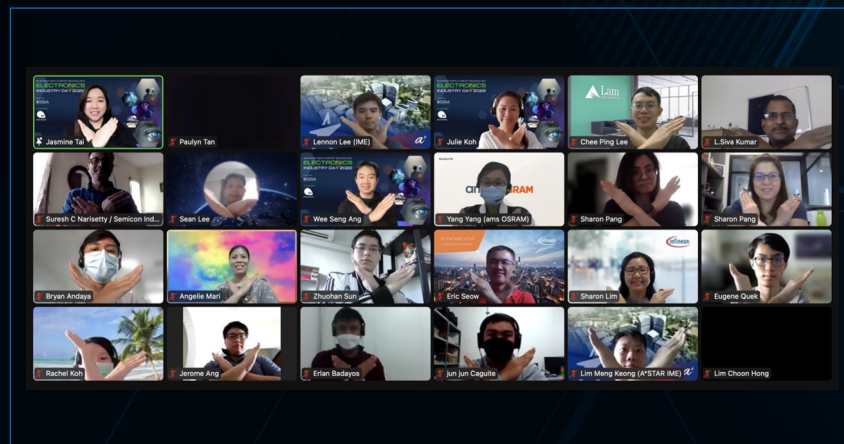- Talent Development
- Community

Since the Electronics Industry Day 2022 in Q1 2022, the IC Design Committee have participated in multiple Career Talks on IC Design for most of the universities in Singapore, namely NUS, NTU, SUTD, SiT and TUM Asia. Themed: **Semiconductor – Powering AI, Electrification and Metaverse**, sharing with the undergraduates

about Semiconductor industry – IC Design sector, focusing on the opportunity, the collaborative culture, and the bright prospect of IC Design.

Mr Eu Gene Goh, Senior Director, Design Engineering of AMD, and co-chair of IC Design Committee said: "To maintain a thriving IC design community in Singapore, the impor-

tance of a consistent pipeline of local talent cannot be understated. So it was very heartening that the industry, together with EDB, IHLs and under the leadership of SSIA came together as a team to look at ways to encourage even more of our young talents to take up IC design as a career. We're in a renaissance for the semiconductor industry, which makes it the perfect time to capitalize on the high level of awareness and interest."

This July, the IC Design Committee proudly brought to you the inaugural **Summer Camp - IC Design Your Future**. It is a 3-Days program, 20-22 July 2022, which gives the university undergraduates (Electrical, Electronics, Computing and Design Engineering)

whom may be interested to join the IC Design sector in the near future, an opportunity to learn more about Semiconductor and Electronics industry, IC Design career prospect, visits to leading multi-national companies like AMD and GlobalFoundries; and most importantly, providing the opportunity to interact with various Semiconductor companies' industry leaders and members to experience the vibrancy, focus and passion of this industry. This is in partnership with NTU, NUS and SUTD.

Prof Yeo Kiat Seng, Associate Provost, Research and International Relations of SUTD, and co-chair of IC Design Committee applauded the Committee's efforts in inspiring, preparing and nurturing the next generation of STEM innovators. He added: "I believe in empowering our students, equipping them with the right skills to succeed globally and building a forward-thinking culture where learning is lifelong, innovation is prevalent and technology adoption is enabling. It is therefore no longer an option to keep doing things the old way; innovation and accepting change are now prerequisite for survival and success in a VUCA world."

To address and accelerate talent development in terms of IC Design skills, the IC Design Committee come together

in collaboration with the industry and IHL, to propose the Digital Design Finishing School Program. It is planned as a 3-6 months industrial hands-on training for young talents (fresh graduates) whom just join the industry / product companies as IC Designers. This finishing school program aims to impart the vocational skills required to execute the job independently in the shortest time possible.

semiconductor companies. The Digital Design Finishing School was born out from the needs of the thriving and demanding IC design sector in Singapore and to reduce the barrier of entry for all young talents in Singapore to embark on this fruitful, exciting, and dynamic career. This initiative demonstrates a long-term commitment of the industry, government and IHLs to invigorate the semiconductor industry, and especially IC Design sector in the coming years."

Looking forward to more young talents joining the semiconductor industry, IC Design sector, designing and building new products that helps and continue to improve people's daily life.

LIST OF ORGANISATIONS PARTICIPATING IN THE IC DESIGN COMMITTEE

Semiconductor Companies:
AMD
GlobalFoundries
Infineon
Marvell
Maxlinear
Mediatek
Nuvoton
Realtek
Silicon Labs
STMicroelectronics

Participating Universities:
NTU
NUS
SUTD

Supporting Partners:
EDB
SSIA

Shantonu Bhadury, Director of Engineering, Silicon Labs commented: "It is imperative that we continue to improve the competitiveness of our workforce and bridge the gap between our academic learning and the vocational requirements of the

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IC Design Committee

Chip Design is not Rocket Science

… it's much more difficult,"

The title is what goes as one of the chip industry's inside jokes.

I remember smiling wryly when I read this quote from an online Bloomberg article more than a year ago when chip shortages received global attention. This was also the first time my acquaintances asked me if that is what I worked on in MediaTek, and whether there were chips in cars?

Surely, the world of an IC designer is intriguing not only for a common man

but also for a potential aspirant evaluating whether to enter this domain. So let us try to delve further and uncover some of the intricacies related to this domain.

## HANDLING INCREASING COMPLEXITY OF CHIP DESIGN

The increasing complexity of microchip processes and packaging technologies have helped create some of the most important innovations of mankind. Chip design has also been instrumental in this endeavour, helping realize various 'Systems-on-Chip' (SoCs) that are getting more complex every day. In an SoC, circuit blocks of different types must all adapt well to a "digital mainstream" environment that has device characteristics optimized mainly for digital designs, higher packing density and sub-1V supplies. This inevitably leads to analog circuits facing reduced dynamic range and increased circuit noise, causing signal integrity issues and difficulties in meeting performance specifications. Yet, yield must be maximized in spite of power supply and ambient temperature fluctuations. Additionally, RF IC designs are ultra-sensitive to chip parasitics and electromagnetic interference

that create frequency spurs affecting performance and causing violation of emission regulations. Overcoming these challenges requires continuous innovations to enable analog/RF circuits to co-exist with digital circuitry for achieving a highly integrated SoC.

HOW TO BE A GOOD CHIP DESIGNER?

A successful chip designer is predominantly an electrical or electronics engineer, with the following attributes:

1. Continuously seeks to improve and innovate: Besides continuing to develop themselves professionally, they are always searching for ways to further improve circuits in every new generation with better performance at lower power consumption, and costs.
2. Problem solver: Often, chip performance may not match what was simulated during the design phase, and designers are required to find out what caused the deviation. Root cause analysis is thus an essential skill.
3. Meticulous: Paying attention to details and avoiding design mistakes are very crucial, because
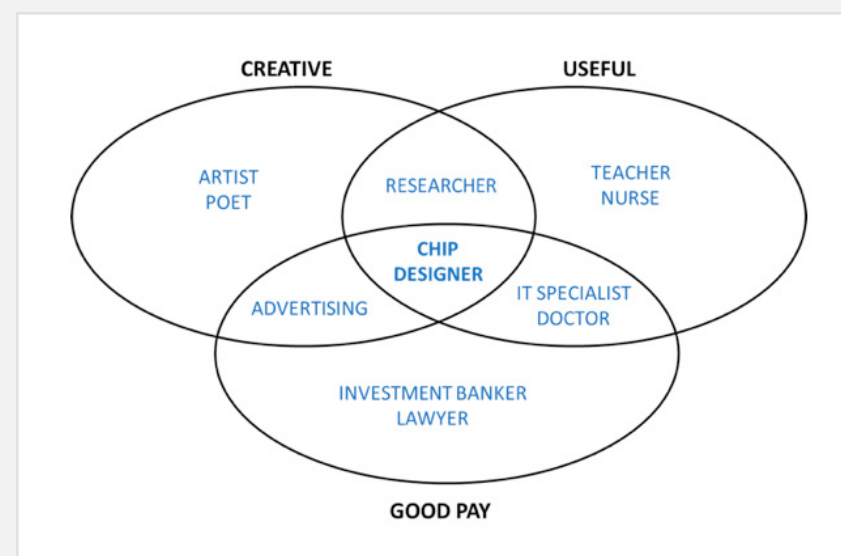
the fix to bugs could cost the company millions of dollars and loss of precious time due to the need of remaking the photolithography masks and re-fabrication.
4. Team player: Due to the complexities involved, a chip is generally designed by a group of engineers, making teamwork extremely important.

WHY CHIP DESIGNERS LOVE THEIR JOB?

Chip designers seldom do a career switch, here's why:

- Apply what you were taught: Design engineers get to apply what was taught in their university days: circuit analysis, system design, digital / analog / RF IC design, device physics etc. In this career, the "dots get connected" and one realizes the practical usage of various theories that were taught in school.
- The longer you stay, the more valuable you become: Chip making being an expensive process, is where

design mistakes are intolerable. Therefore, experience is well sought after to achieve 'First Time Success'.
- Thrill of seeing YOUR final products displayed in stores: Engineers love to see their hard work being displayed as final products that they can show to their loved ones.
- Technically challenging career: Continuous advancement of semiconductor technologies leads to new design challenges even for the same product line, breaking monotonicity that is prevalent in many other jobs.

CHIP DESIGN AS A CAREER

I chanced upon a Venn diagram a long time ago that tried to convince students to take up engineering as a career. The diagram is as illustrated here while substituting the term "Engineer" with "Chip Designer":

Chip designers do not receive "top dollars" compared to certain other professions. However, the desire to create innovative solutions that

enhance everyone's life gives them job satisfaction that cannot be quantified in monetary terms, providing them a fair mix of the best of "all worlds".

CHIP DESIGN OUTLOOK IN SINGAPORE

During the COVID-19 circuit breaker in 2020, semiconductors was listed as one of the "essential services" sector that continued to operate. Fast forward to 2022, we hear several foundries planning to build advanced facilities in Singapore. This highlights the steady growth of the semiconductor industry in Singapore. This, no doubt, will attract more fabless design companies to set-up subsidiaries to complete the ecosystem. The demand for chip designers in this region will ultimately increase.

To conclude, chip designers are the unsung heroes who over the past 50 years have contributed to modernization of computing, communications, transportation, entertainment and healthcare, just to name a few. We hope to get a fair share of recognition soon.

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LIEN WEE LIANG
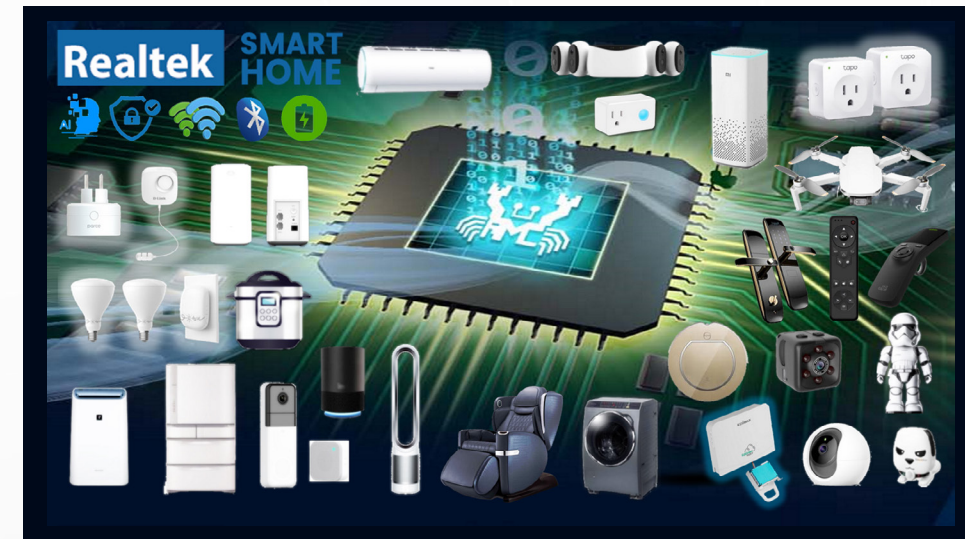Director, RF Design Division,
MediaTek Singapore Pte Ltd

MEDIATEK

Today, it is hard to imagine life without smartphone or other wireless communication devices. Wireless technology has become an essential part of life in many parts of the world. It has impacted the way people interact and the way people do things, whether it's business-related or personal.

In the days before the internet, we were pretty limited in the ways that we could communicate. With rapid evolution of digital communication technology, communication has become a lot more immediate and far more cost-effective. The cultural climate today has become virtually unrecognizable compared to even 30 years ago, and a lot of that is down to how much easier it is to communicate. Trends are picked up and dropped quicker than ever.

Nearly every sector of the economy now relies upon wireless technologies in fundamental ways – from banking and agriculture to transportation and healthcare. And powerful new technologies that rely on robust wireless communications networks – such as 5G, artificial intelligence and Internet-of-Things (IoT) – hold great promise to improve lives at an unprecedented pace and scale.

The key enabler behind modern wireless communication is Semiconductor. Semiconductor is important to modern living and it powers almost everything in our daily lives. From smartphones to operating theatres to planes, semiconductor evolved to improve technologies and do wonders for your entertainment and convenience. Without semiconductor, society would regress by at least 60 years. Semiconductor also plays as a crucial element for economy - The semiconductor shortage isn't just affecting computers; The tiny chips are vital to many industries.

Connectivity Enabler for You

Realtek Semiconductor Corporation is a world leading fabless IC design house providing connectivity solutions in Communications Network, Computer Peripheral and Multimedia. Realtek Singapore focuses on developing ICs for IoT applications and wireless communication. Today, Realtek is well received for its innovative work in IoT solutions, for which Realtek Singapore plays a pivotal role in product development.

Realtek engineers stay passionate about their work, which is the key that drives innovation. If you are enthusiastic about cutting edge technology, have a creative thinking and like to innovate, Realtek is the place for you. We're looking for talented individuals at all career levels to join our team.

Scan QR code for more information.

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REALTEK SINGAPORE

GlobalFoundries Design to Product Highway

As one of the world's leading semiconductor manufacturers with a truly global footprint, GlobalFoundries build strong partnerships with global customers in design, development, and manufacturing services; made possible by our diverse talent pool spanning across three continents.

GF offers a broad range of technology platforms from feature-rich CMOS, advanced high-performance FinFET, to industry-leading FD-SOI solutions (FDXTM), to high-performance silicon-germanium, and silicon photonics.

To realize our customers' success, it is essential to have design and IP platform solutions available where each component works together seamlessly. In this article, we will focus on how GF accelerates customer innovations from design to product; taking full advantage of our technology platforms.

SO HOW DO WE DO IT?

We partner with our customers to understand market requirements and translate them into technology definitions (such as design rules, optical correction rules) for developing new design features. We then deliver novel solutions in areas of design architecture and components such as Logic, RF, Analog and Memory with optimized Best-In-Class PPA (Power, Performance, Area).

We present our technology to customers with our Process Design Kit (PDK) and design methodology collaterals. This collection of technology files and runtime codes for design construction, design analysis, and manufacturing compliance checks are compatible with leading Electronic Design Automation (EDA) tools. By adding high-quality and innovative features to our PDK, we lower the barrier of technology adoption for our customers.

COLLABORATIONS ACROSS BORDERS AND BOUNDARIES DELIVER SUCCESS

GF partners with IP and design service providers to offer qualified solutions for customers to adopt. There are more than 4000 and growing silicon-validated IP titles designed by GF and our partners. We also provide customers with reference designs and SOC-level benchmarks that demonstrate the value proposition of GF technology. Recommended Design and ASIC services are readily available to support our customers.

Transforming customer designs from its digital contents of the design to physical photomasks require intensive and flawless on-the-point execution to ensure first time right mask quality within cycle time target to meet customer commitment. As the customer gateway to GF Fabs, an efficient tapeout infrastructure is crucial to handle huge volume data transfer in a highly secured environment. Combining engineering experts from GF and world-leading commercial mask shops, we create a strong mask making network to deliver quality photomasks. GF Post-Fab service enables a quick, high-quality, and cost-effective path from design to final Integrated Circuit (IC) product. Our Turnkey Solutions offer customers the best-suited solution ranging from in-house Bump / Sort, Advanced Packaging such as 2.5D Interposer and 3D Chip-Stacking integration solutions to supply chain partnership model. Noteworthily, GF is the industry's only foundry with in-house RF mmWave test capabilities.

DESIGN ENABLEMENT IN GF SINGAPORE

Working in Design Enablement at GF allows me to witness and participate in collaborative efforts with individuals and teams of a combination of expertise, locally and globally. Innovation is relentless but being able to share our customers' success keeps my passion alive. GF having many touch points throughout our customers engagement from design to product, there is no shortage of opportunities to make a difference in transforming the industry that is changing the world.


Design to Product: An End to End view

- Translate market requirements into technology definitions, best-in-class PPA
- Deliver high-quality PDK and design methodology with innovative features
- Qualified IP and design service solutions
- Strong mask making network to deliver quality masks
- High-quality, and cost-effective turnkey path from design to final IC product
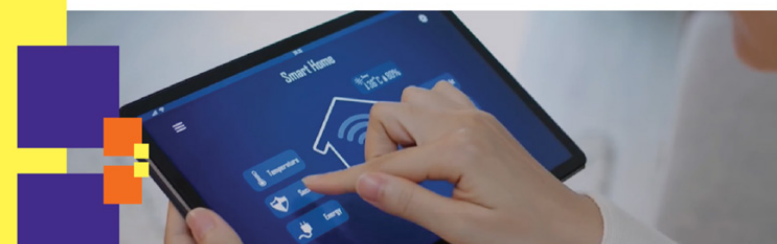
CONTRIBUTED BY

LUM YEN HAN
Sr Manager of Ecosystem & Design Solutions

Together, We Advance

I feel common misunderstandings towards semiconductor industry is due to the lack of awareness of how much of the world is enabled by semiconductors. Through the pandemic and semiconductor shortage, more people are now aware of how far-reaching semiconductor industry is based on the products that are short in supply. It is heartening to hear how our customers are using Xilinx products to help our society get through the challenging times of the pandemic.

It is an exciting time to be part of the combined company as bringing AMD and Xilinx together means that we now have the strongest portfolio spanning CPUs, GPUs, FPGAs and Adaptive SoCs, which enables our customers to innovate in the markets they operate which includes data center, PCs, embedded, and gaming. An example would be the many projects related to metaverse, NFTs and cryptocurrencies that we are beginning to hear more of. Many of these projects would come and go. However, whichever way it goes in the future, I would be proud to be part of the company that has enabled these projects in some way. The new AMD covering diverse markets also mean that it would be a sustainable company that would stand the test of time and continue to enable the many waves of innovation of the future.

"The acquisition of Xilinx brings together a highly complementary set of products, customers and markets combined with differentiated IP and world-class talent to create the industry's high-performance and adaptive computing leader," said AMD President and CEO Dr. Lisa Su. "Xilinx offers industry-leading FPGAs, adaptive

SoCs, AI engines and software expertise that enable AMD to offer the strongest portfolio of high-performance and adaptive computing solutions in the industry and capture a larger share of the approximately $135 billion market opportunity we see across cloud, edge and intelligent devices." *(Note: In the recent announcement by Lisa Su in early June 2022, the estimation has grown to US$300 billion.)*

DR. LISA SU
AMD President and CEO

My hope for the industry is that we realize how much impact and responsibility we, as a community, have on the future of our world. Our world is getting more and more complex and no one company can accomplish everything on its own. Instead of companies trying to outperform the competition, I feel we must change our mindset to one of collaboration. How do we as the semiconductor ecosystem, work together and bring out the best of the talent pool we have among us. As AMD and Xilinx come together,

the new AMD has started with the "Together, We Advance" mindset. This mindset should be extended to the semiconductor ecosystem. We can all thrive on collaboration.

"The rapid expansion of connected devices and data-intensive applications with embedded AI are driving the growing demand for highly efficient and adaptive high-performance computing solutions," said Mr. Victor Peng, AMD President, Adaptive and Embedded Computing Group (Former Xilinx President and CEO). "Bringing AMD and Xilinx together will accelerate our

ability to define this new era of computing by providing the most comprehensive portfolio of adaptive computing platforms capable of powering a wide range of intelligent applications."

MR. VICTOR PENG
AMD President, Adaptive and Embedded Computing Group (Former Xilinx President and CEO)

As part of the Singapore design team, I have been fortunate to have the support of the team to grow and develop and the opportunity today to lead a team of young engineers. I feel the way we groom and develop young talents must be adjusted to suit the complex world we are in today. For the new college graduates, communication is key. For example, communicating that terms like "Individual Contributor" does not mean that a single individual does everything from start to finish. It is almost always a team effort. At a team level, we need to be mindful of job design and role assignment. Due to increasing complexity, we sometimes must break down the team's collective goals into small chunks at the risk of individuals losing the sense of ownership. Job

design becomes a critical process where individuals each own a different aspect which collectively achieves the team's goals. When we do role assignments, I feel we need to be aware if we are always assigning roles to the most competent person to meet short term needs. Being short term focused could mean that we deprive young talents of hands-on learning opportunities for their personal development. I am glad that the culture of the Singapore design team places importance to the talent development process that would give us the best chance for sustainability and a steady pipeline of talent that are ready to take on opportunities that present themselves as we grow our team.

"Together, We Advance". **Join us and be part of the journey.**

CONTRIBUTED BY

JOSEPH YANG
Design Manager, Singapore Design Center AMD
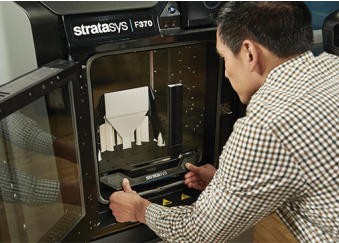
AMD
XILINX

Redefining Innovation

Reshape and accelerate unrestricted design-to-manufacturing processes.
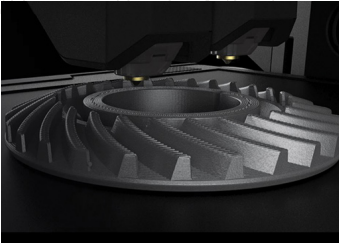Make the impossible, possible.

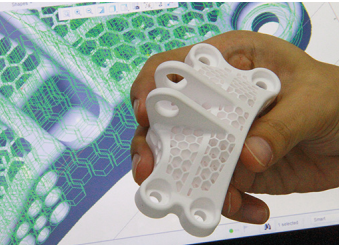## Industrial 3D Printing Solutions Provider

3D Printers & Service Divisions

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Offering leading industrial technologies from Fused Deposition Modeling (FDM), PolyJet to Stereolithography (SLA) for demanding engineering applications.

Metal
State of the art technologies include NanoParticle Jetting FDM & Laser Metal Fusion.

Ceramics Division
With its known unique properties from being chemically inert to withstanding high heat temperatures.

A focused service bureau in pushing manufacturing boundaries that only advanced technical ceramics can execute.
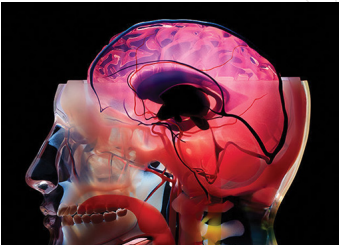
Medical Division
End-to-end solution dedicated to medical applications in the conversion of CT/MRI images to 3D printed models.

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Ultra-Low Power Sensor Interface Circuits for Next-Generation Wearables

Considering the growth of the ageing population and increased needs of tracking personal health, continuous monitoring of multiple vital signals in daily life is desired. A miniaturised wearable device monitoring vital signals, with a slim profile and a flexible form factor, could be a game changer for personalised healthcare. Recent advances in stretchable materials enable the development of various kinds of flexible biosensors that could go into such next-generation wearables.

A*STAR's Institute of Microelectronics (IME) is collaborating with other A*STAR research institutes including the Institute of Materials Research and Engineering (IMRE) and Institute of High Performance Computing (IHPC), as well as local universities such as the Nanyang Technological University, Singapore (NTU Singapore), National University of Singapore (NUS) and the Singapore University of Technology and Design (SUTD) on a next-generation wearable device that emphasises sweat analysis. Sweat analysis has an advantage as a non-invasive approach to providing metabolic information which can be used to interpret a user's health status. By integrating flexible biosensors and electronics on a common substrate, the sensor system has a better fit with the skin and forms a more reliable tissue-electronics interface.

Depending on the working mechanism, the sensor output can be in the form of voltage, current, capacitance, resistance, and more. Each type of output needs a dedicated readout circuit for signal conditioning and processing. On the other hand, limited by the battery size and capacity, the active circuits in the system should consume low power to support long-term continuous operation. Furthermore, due to the nature of small signal amplitude and low operation frequency, the acquisition of vital signals is vulnerable to interferences from external sources such as 50 Hz AC power lines and internal biological sources such as muscle movement-induced motion artifacts.

To achieve the goal of such devices, circuit design innovations are required in the areas of high resolution, wide dynamic range interface circuit, low power consumption leveraging the semiconductor process feature size scaling, and new digital-intensive design techniques and enhancement of system robustness to the interferences.
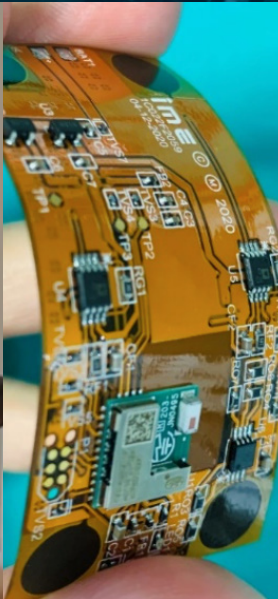
The team has developed a prototype that is now engaged in extensive lab trials, aims to commence clinical trials later this year. Looking forward to it.

Photo of assembled prototype device

Trial on treadmill

Flexible circuit board

CONTRIBUTED BY

Institute of Microelectronics
IME

GYRO SYSTEMS INC.

**I AM HERE !!!
GYRO SYSTEMS INC.**

AMR   **SEMI S2**

GYRO SYSTEMS is one of the few Autonomous Mobile Robot companies, which focused on semiconductor wafer-level handling robotics applications.
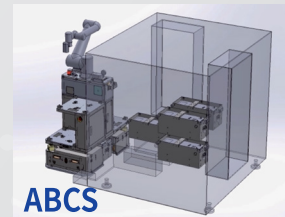
GYRO SYSTEMS was established in 2015. In a very short period, it has entered the world's largest semiconductor factories.

From design to assembly, software and testing, all developed 100% by Gyro's team. In just a few years, our offices/manufacturing plants/customer service bases have been established all over the world.

Gyro AMR is built based on SLAM technology, which utilizing integrated Mecanum wheel, AI navigation and positioning module.

Installed with the flexible high efficiency fleet management software, and equipped with six-axis collaborative robot arm, the Gyrobot , together with electronic shelves, mini stocker, provide a complete solution for intelligent factory automation logistics in semiconductor Fab.
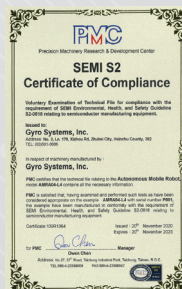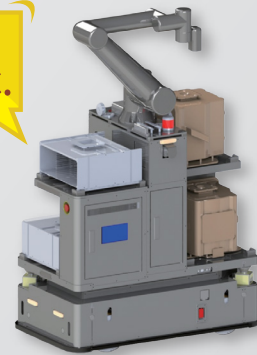
Automatic Battery Changing Station

ABCS
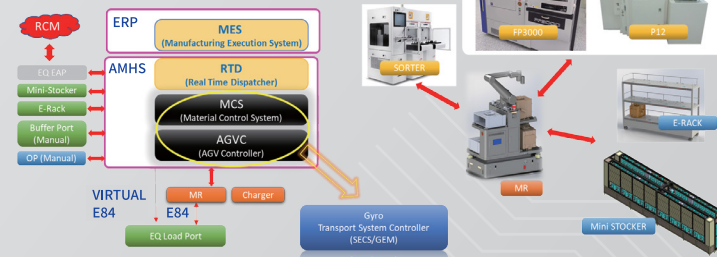
One-Stop AMHS solution for semiconductor fab:
- RTD/Transport System Controller / E-RACK /STOCKER /AMR
- E84 handshaking or Virtual E84

SEMI S2

TSC(Transfer System Controller)

E-stocker overview

Operation:
→ Put foup/lot box on the input position
→ Scan RFID/barcode

Lot output
Lot input

Our location
Office–Singapore, Malaysia, Suzhou China, Hsinchu Taiwan.
Manufacturing – Suzhou China, Hsinchu Taiwan, Malaysia.

Website
https://www.gyro.com.tw
https://www.gyrobot.com

AVI-TECH ELECTRONICS PTE LTD

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ABOUT US
Avi-Tech Electronics is a total solutions provider to your contract manufacturing needs (serving the semiconductor, electronics, life sciences and other emerging industries), and Semiconductor Burn-In, Board Manufacturing and Boards related services

- Incorporated in 1981 with an established track record spanning over 4 decades
- Corporate HQ located in Singapore: 120,000 sq.ft. with about 200 employees
- Publicly listed on the Singapore Exchange Mainboard in July 2007
- Numerous awards and certifications attesting to our high standard of business operations and quality management systems (ISO 9001, ISO 14001 & ISO 13485)

PRODUCTS & SERVICES

ENGINEERING SERVICES
- End to end, high mix low volume manufacturing services for various applications
- OEM-CM integration services and equipment manufacturing services
- Turnkey project services (system integration / box build / PCBA)
- Value-added engineering services and technical services

BOARD MANUFACTURING AND BOARDS RELATED SERVICES
- Design, manufacture and assembly of various Printed Circuit Boards
- Complete PCBA Facility
- High mix, low volume niche PCBA services

BURN-IN AND RELATED SERVICES
- Static, Dynamic, Test During Burn-In ("TDBI"), and High Power Burn-In
- Production, Engineering, & HTOL
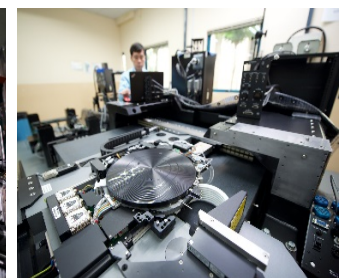
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Tokyo Electron aims for a sustainable society that is both digital and green.

Beautiful
planet,
now and
forever

TEL TOKYO ELECTRON

Sensing solutions for optimized and next gen displays

Leading market position, driving industry innovation

ams and OSRAM develop and deliver industry-leading sensor solutions that promise excellent image quality and display functionality to meet manufacturer requirements for their bezel-less or small frame designs. Our technology leadership enables accurate ambient light, color, and proximity sensing solutions to operate behind OLED displays used in next-generation mobile handsets. Our innovative packaging and silicon design mean we deliver sensing solutions that fit in the industry's smallest aperture size behind inked glass. While our color sensors enable emissive (paper-like) displays – making text as readable as on printed paper. These sensors meet the most challenging industrial design requirements while providing superior proximity detection performance with minimal optical crosstalk.

Co-Innovate Solutions to Build a Smart Sustainable City

On 1 June 2022, SSIA co-organized a visit to CapitaLand's Smart Urban Co-Innovation Lab (the Lab) located at The Galen at Singapore Park 2, where close to 30 attendees came together to experience how solutions can be co-innovated to build a smart sustainable city and explore new market opportunities. The Lab brings together various industry players - local technology start-ups, system integrators and global corporate enterprises - to co-innovate solutions for smart sustainable cities, from ideation to testing within the 5G-enabled Singapore Science Park, to commercialisation.

Mr Aylwin Tan, CapitaLand Investment Limited's Chief Customer Solutions Officer and Director of the Lab covered CapitaLand's perspective on the commitment to sustainability, how they would like to contribute to the environmental and social well-being of the communities where it operates, as it delivers long-term economic value to its stakeholders. He shared that the Lab is in search of 4 categories of solutions in the areas of Sustainability, Manpower/Space Optimization, Digitalization and Employee Wellness.

Two other collaborators in the Lab, Delta Electronics and KONE shared their innovation journeys. Cecilia Ku, Managing Director and Calvin Ong, Product Manager, from Delta Electronics shared the smart manufacturing solutions that they are working on and called for collaborators to join in the projects. Michiel Bruggeman, Head of Innovation Asia Pacific, from KONE shared on their open innovations, including the lift integration project that is currently in progress with the Lab. The session continued with a tour around the Lab with an introduction to projects that are in progress and networking amongst the attendees.

One of the objectives of SSIA's Semiconductor Business Connect is to bring together the SSIA network of companies, to innovate solutions, and to collaborate for success. Post-event, a participating SSIA network company shared that they are in the midst of exploring two potential collaborations with the ecosystem partners of the Lab. We believe that more solutions in our network could be put together with an ecosystem to build smart sustainable cities for all of us. If there is interest to collaborate with the Lab by CapitaLand, do reach out to **SSIA Secretariat** and we will connect you with them.

amu **OSRAM**

SEMICONDUCTOR TRADEWINDS –
May / June 2022

As we approach the halfway point of 2022, the semiconductor industry is still going at maximum speed on its bullish run that started in 2021. Most semiconductor industry companies are reporting double digit growth and record revenues for Q1 despite some economic inflationary pressures, supply chain issues made worse by China's zero COVID lockdowns, and geopolitical tensions.

OUTLOOK FOR 2022

The global semiconductor market is forecast by analysts to grow around 11~13% in 2022 to reach revenues around US\$670 billion, with the industry forecasted to be on track to reach US\$1 trillion before the end of the decade as silicon content rapidly increases in everything from cars to smartphones.

Supporting the semiconductor growth, the global wafer Fab equipment revenue is expected to grow between 18~20% to hit a record high US\$109 billion in 2022. This follows last year's remarkable 40+% growth. The semiconductor materials industry is also forecast to grow strongly with 7% yoy in 2022 following record results in 2021.

The global shortage of semiconductors and record revenues being generated by semiconductor manufacturers has resulted in a wave of new Fab construc-

tion. It is reported that 28 new volume fabs will start construction in 2022 alone, of which 23 will be 300mm fabs and 5 fabs will be 200mm and below. One of those Fabs will be UMC's new 300mm Fab in Singapore, which is one of 2 new Fabs being built in Singapore, the other being GlobalFoundries new Woodlands Fab which started construction last year.

In Europe, Intel is still proceeding with its new mega Fab in Germany, planned to start construction next year, and is reported to be receiving US\$7.3billion in government subsidies which represent 40% of the construction costs. However, TSMC has announced it has no concrete plans to build a Fab in Europe at the current time.

In the US, GlobalFoundries has announced it has exercised an option to purchase 66 acres of land adjacent to its New York Malta Fab. GF is reported to be looking for government subsidies to fund the further expansion of its Fab 8 campus.

Analysts are predicting that electronics goods will get more expensive as foundries are planning another round

of price increases due to rising costs & fab expansion plans. TSMC is rumored to be planning a single digit rise in 2023 following it's reported double-digit price increase in 2022, whilst Samsung which so far has resisted price increases is reported to planning a double-digit price rise. Other foundries are also reported to be following the market leader's approach. These cost pressures are expected to be passed on downstream though not all segments may be able to accept these increases, for example the smartphone segment.

LATEST RESULTS

Although there is weakening demand in the smartphone and consumer electronics segments, this is so far

not hurting revenue at the foundries and OSAT's. For the first 5 months of 2022 the foundries are all reporting record revenues increasing by over 40% compared to the same period a year ago. The backend OSAT's are also reporting record year to date revenues, up between 13~25% compared to a year ago.

The world's leading foundry TSMC announced record revenues of US\$28.5 billion for the first 5 months in 2022, up 45% compared to the same period a year ago and have reiterated its guidance for 30% revenue growth for the full year 2022 due to strong demand in automotive and high performance computing applications.

The equipment and wafer and material suppliers are also reporting strong results. Equipment manufacturer Applied Materials reported 12% yoy growth in revenue in Q2 to US\$6.25 billion. AMAT reported it is fully booked with a large backlog for the year, but the company is suffering from COVID related supply constraints which delayed around US\$150 million in revenue in Q2.

DYNAMIC MARKET OUTLOOK

Despite the strong results so far in 2022, there are some localized signs that the global semiconductor shortage could be peaking with potential industry headwinds including inflationary pressures, ongoing supply-chain challenges and geopolitical tensions. The talent shortage is also becoming more pronounced as the industry pushes to rapidly expand production capacity.

In April worldwide factory output fell for the first time since June 2020. The manufacturing purchasing managers index falling from 52.9 in March to 52.2 in April, caused by a decline in production, mainly due to output loss in mainland China due to lockdown

measures. China's semiconductor output shrank -12% in April to it's lowest level since Dec 2020 disrupting supply chains around the world. Although in May China semiconductor output did recover 6% to to 27.5 billion units, it is still lower than pre-shutdown days indicating that production is still not back to normal.

One segment that is particularly suffering is the smartphone market. In Q1 2022 global smartphone production volume dropped -13%, and for the full year total production is forecast to fall around 3% to 1.33 billion units due to China's COVID lockdowns and inflationary pressures in the 2H of 2022.

Whilst the automotive industry major European automotive companies like Mercedes, Daimler and BMW have indicated that they are now getting enough semiconductors to produce at full capacity.

Of the top 16 semiconductor companies, memory and automotive suppliers still have a positive outlook for Q2, but 4 companies, Intel, Qualcomm, Nvidia and Texas Instruments are

predicting weaker revenues in Q2 than Q1 2022

So far these headwinds have not impacted semiconductor foundries and OSATs who are still reporting high factory utilisation rates, with high performance computing and automotive segments compensating for the decrease in demand from the smartphone and consumer electronics segments. However it does seem that the severe backlogs for demand seen last year are starting to decrease and these headwinds will need to be carefully watched over the coming quarters.

CONTRIBUTED BY

MARK DYSON
Foundry Account Director
ams OSRAM

ams **OSRAM**

EXECUTIVE SPOTLIGHT

Mr Nick Cheng, VP of Engineering, Skyworks

Nick Cheng, Vice President of Engineering at Skyworks Solutions Inc. graduated with a PhD degree in Electrical Engineering from the University of California, Santa Barbara in 1999, joining Skyworks the same year as an RFIC design engineer and currently manages two design centers with 180+ engineering staff responsible for the development of next generation RF front end (RFFE) modules that enable cellular radios in applications such as smart phones, tablets, and automotive. More than one billion units of RFFE module products have been developed by his teams and shipped to top-tier customers. He has been awarded with ten US patents and published more than fifteen technical papers. It is remarkable how Nick has advanced his career and is one of Skyworks' veterans behind its 5G technology enabler.

Let us hear more from Nick below.

WHAT ARE SKYWORKS' KEY MARKET SEGMENTS?

Skyworks is empowering the wireless networking revolution and our highly innovative analog semiconductors are connecting people, places and things spanning several new and previously unimagined applications within the aerospace, automotive, broadband, cellular infrastructure, connected home, entertainment and gaming, industrial, medical, military, smartphone, tablet and wearable markets.

WHAT ARE THE CHALLENGES IN ENABLING 5G FILTER TECHNOLOGY (SKYWORKS' KEY TECHNOLOGY)?

There are several physically moving components inside 5G smartphones-MEMS microphones, MEMS accelerometers, MEMS gyro sensors, quartz crystals for timing and RF filters. The smartphone RFFE covers all the components (power amplifiers, low noise amplifiers, switches, filters, etc.) in between the transceivers (modem) and antennas. With 5G covering easily 30 or RF bands, a smartphone can have 80 to 100 RF filters inside. For filtering under 6 GHz, only surface acoustic wave (SAW) and bulk acoustic wave (BAW) filters can provide the performance, cost and size demands from smartphone OEMs. These micro-acoustic filters are made from piezoelectric materials such as lithium tantalate (LiTaO3), lithium niobate (LiNbO3) and Aluminum Nitride (AlN). Skyworks is one of the very few companies in the world with its own SAW and BAW technologies and continues to invest in technologies to support customers with new RF bands and better performance, lower cost and smaller size filters in new smartphone generations. Electromechanical components create exciting challenges in finding better ways to suppress filter spurious modes and harmonic content to improve on filter ruggedness (more difficult as parts become smaller) and balance the factors impacting filter quality factors, coupling factors, temperature drift, etc. Our SAW and BAW development teams have expertise in electrical engineering, electronic engineering, material sciences, piezoMEMS, mechanical engineering, system engineering and more.

WHAT IS THE OPPORTUNITY FOR THE LOCAL/GLOBAL WORKFORCE?

Our engineering environment is uniquely supportive and collaborative. Every engineer is paired with a mentor when they first join Skyworks and our engineers collaborate across design teams to create worldclass go-to-market products. If you are looking for a challenging and exciting career in the world of technology, then look no further. Skyworks is an innovator of high-performance analog semiconductors whose solutions are powering the wireless networking revolution. One may even consider starting the Skyworks journey as interns where they are given adequate training and guidance to be able to contribute in today's work environment.

At Skyworks, you will find a fast-paced work environment with a strong focus on global collaboration, minimal layers of management and the freedom to make meaningful contributions in a setting that encourages creativity and out-of-the-box thinking. Our work culture values diversity, social responsibility, open communication, mutual trust and respect. We are excited about the opportunity for our employees to learn and grow knowledge, skills, capabilities, responsibilities and impacts by being part of a team of talented individuals who together can change the way the world communicates.

Our dynamic environment builds leaders as engineers gain a range of unique skills and industry knowledge providing a leading edge in their careers.

Look for opportunities to grow and develop here: **https://careers.skyworksinc.com/**

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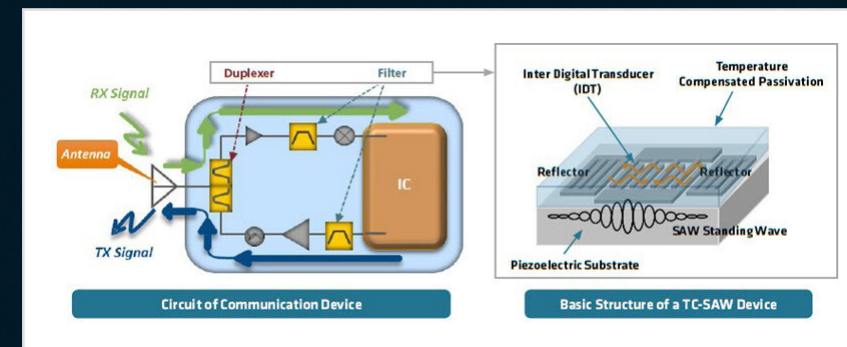
Infineon recognized for best practices in reskilling and upskilling

For the first time this year, Infineon participated in the Employee Experience Awards Singapore and secured the Silver Award for the **"Best Learning and Development Programme"** and the Bronze Award for the **"Best Capability Development Programme for the HR Team"**.

The **"Best Learning and Development Programme"** category recognizes Infineon for making learning accessible to all employees even during the height of Covid-19 pandemic using LinkedIn Learning as well as its employee reskilling and upskilling initiatives at Singapore location as part of our transformation journey to become an AI Innovation Hub. In addition, the award also recognizes Infineon for its new ways of learning such as learning nuggets, training landscape, talk #digitalization, and for nurturing an in-house trainer community.

Hosted by **Human Resources Online**, the **Employee Experience Awards Singapore** honours organisations that have excelled at focusing on employee experience to help retain and excite the best people, creating value and maintaining a competitive edge. It focuses on 3 pillars - learning, leadership and engagement. As the organisers of the Awards advocate, "A win at the Employee Experience Awards is an important acknowledgement from the industry that the organisation is taking the lead in listening, engaging and supportin its most valuable asset: people."

To build a better future, radical change is needed.

To build a better future, radical change is needed, the kind of change that can only be powered by people – people who feel supported, encouraged, and free to think bigger. We provide the inspiration you need to connect to the unexpected in your self, then give you space to share your brilliance.

Find your place with Infineon at:

https://www.infineon.com/careers

Getting to Know SSIA Secretariat -

CHAN XING YUN

What first got you into the semiconductor industry?

Being quite new to the working world, I was trying to look for different industries to work in to find one where I feel fulfilled me the most. I was always a science person at heart and getting the opportunity to leave my mark in a related industry is exciting to me.

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

I did not know about SSIA until I joined in May this year. Working here has presented me with the opportunity to learn about semiconductors, both in the science and the business, and to engage in the growth and well-being of the industry here in Singapore. I decided to join because there is a need to show the life and vibrancy of the industry to engage and attract talents, and I wanted to be a part of it.

What were your biggest challenges and excitements as an employee in the semiconductor industry? How did you deal with these?

I feel quite strongly about the work that SSIA does to bolster the industry; sometimes I think to myself that in another life, I could have been the young engineer that is impacted positively by our initiatives. As I am new to this industry, there is plenty for me to learn and understand to do the best work I can, which I am excited to engage in.

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

Working in a trade association is vastly different from any of the roles I have worked in so far. I have taken up jobs in hospitality, F&B, media, and print & packaging, and interestingly the one

After a Christmas choir performance in 2019 at the Esplanade Concourse

I find with the most similarities to my role at SSIA is my job in designing for F&B. There are always events, keeping up with social posts, and helping with the event on the day itself. The design collaterals I had to handle were also in a similar vein: event visuals, posters, banners, EDMs, and more.

Can you tell us about your main role in SSIA?

Being a graphic designer by trade and by schooling, most of my job at SSIA is to work on the design of all collaterals we put out, from the main visuals of our biggest events to the choice of icons on our website. Between events I also participate in some communications work, handling our social accounts and EDMs, and working on our website. With this I hope to present the energy and passion of the industry through my work.

Some leather products I had made for a university project

What do you enjoy most about working in SSIA?

I enjoy making things happen, and working in SSIA allows me to experience that. Every day I create something: a web banner, an event brochure, a website page, a poster; I get to see the impact of my work as it goes live and reaches the audience.
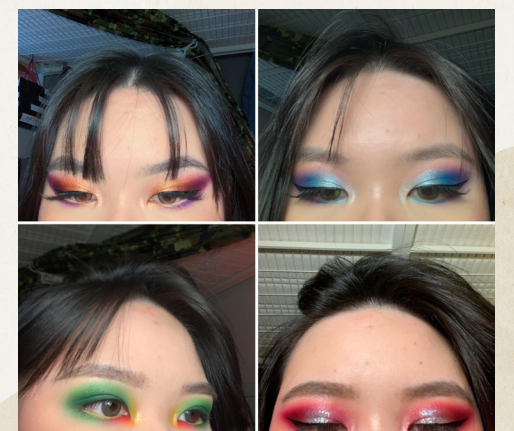
Let's talk about something personal. Can you share with us a bit more about your hobby?

I have ADHD so hobbies come and go very often. Being a crafty person, I have dabbled in leather work, sewing, embroidery, make up, painting, and even duct tape wallets back when I was in school. My current fast hobby is

My most recent set of nails

Some eye looks I have done over the years

doing my nails, which includes doing gel extensions as well as planning and painting the designs on top. I do have one lifelong hobby which is singing in choirs; I am currently in my

alumni choir from my Junior College days, and some project choirs that organise performances that take place anywhere from street side to Esplanade Concert Hall.

SSLA – Enabling Leaders for our Semiconductor and Electronics Industry

Singapore Semiconductor Leadership Accelerator (SSLA) programme is designed to enable leaders for the Semiconductor and Electronics Industry, part of talent development program supported by Singapore Economic Development Board (EDB).

Based on the last 7 runs, more than 160 participants from 32 companies have participated.

Let's hear from our SSLA alumnus about their growth journey in the semiconductor industry.
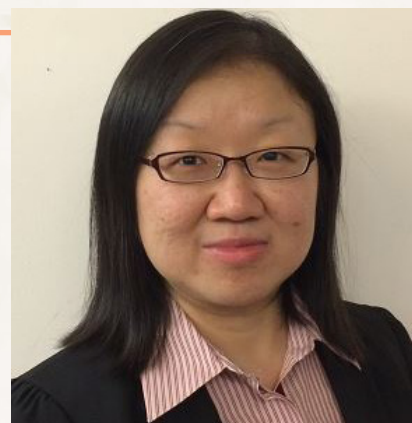
CHONG PEI FEN
Quality Engineering Director, Micron Technology
SSLA alumni - Run 3

Pei Fen is currently in charge of the NAND wafer fab manufacturing quality at Micron Singapore. Having spent more than 20 years in the semiconductor industry, her experience covers wafer fab and assembly/test manufacturing quality, new product introduction, yield management and operations planning.

What is the biggest change to you or your career after attending SSLA? How did SSLA help you?

Insights from mega trends and global semiconductor industry shared during the course reinforced the need for me to continue to innovate and stay ahead of the market trends to meet future business needs. It shapes me on the growth mindset which is crucial to stay competitive in the industry.

What are the key take-away from the programme that you would like to share with others?

The SSLA program presented a macro view of the global environment with special emphasis on the semiconductor industry to the participants. It highlighted the importance of macro trends impact and implication of digital disruptions to the industry in Singapore. The executive presentation training, industry leaders' sharing and industry innovation center visit held during the program opened up the horizon for the participants. More importantly, the interactive workshops with semiconductor case studies provided a good platform for participants from different semiconductor companies within the semiconductor industry in Singapore to network and share ideas freely. It broadened our views and equipped us with skillsets and knowledge to navigate the industry landscape. I would recommend this course to the upcoming leaders in the semiconductor industry.

GARY CHOW
Sales Director, Lam Research
SSLA alumni - Run 3

As the world gets smaller through immediate accessibility and instant connectivity, communication is more defining than ever before. Accurate information sharing and alignment across organisation contributes to successful partnerships between suppliers and customers; more so for those with global presence. My role supporting and managing global customers demands that. And participating in SSLA helps greatly.

What is the biggest change to you or your career after attending SSLA? How did SSLA help you?

I feel that SSLA is a catalyst fostering the growth of semiconductor ecosystem in Singapore. The program brings together representatives (students) throughout the industry. Within the classroom, the lecturers share their vast experiences followed by the 'students' exchanging and reflecting theirs. Such open sharing boost relationships and thus strengthens the ecosystem. Besides gaining classroom knowledge, there are networking opportunities too. Through this program, I have enlarged my social circle to include fellow industry players from other runs. And we have regular golf games to keep the 'ecosystem' going.

What are the key take-away from the programme that you would like to share with others?

There are lots to be benefited from SSLA program. The open sharing of ideas, thoughts, reflections and laughter are just tip of the iceberg. Sadly, the week long program does not lend justice to the range of strong contents and also to the lecturers who are captivating and yet entertaining. For those planning to join this program, do not expect this to be a teacher-student classroom setting. Participate actively, challenge to learn and importantly, have FUN. Oh…and don't get me started on the drinking sessions. Cheers!!

SINGAPORE SEMICONDUCTOR LEADERSHIP ACCELERATOR PROGRAMME

Programme Dates

Run 8   : ~February/March 2023 (Virtual & Onsite)

Run 9   : ~July/August 2023 (Virtual & Onsite)

Run 10 : ~First Half 2024

Please contact **secretariat@ssia.org.sg** for more information.