

## SMART DATA AND THE FOOD & FMCG INDUSTRY

28 November 2017 | 8:30am - 4:30pm | Singapore



### Introduction

On behalf of the Food Industry Asia (FIA) and the Agency for Science, Technology and Research (A\*STAR), we warmly welcome you to the workshop on "Smart Data and the Food & FMCG Industry."

Data science and data analytics are recognised as having large potential for the food and FMCG industry sectors, where a wealth of information and insights could be harnessed from big data.

For the food and FMCG industry, data science and data analytics could be applied to consumer insights (e.g. mining consumer data), product development (e.g. optimising product design and quality control data), food security and safety (e.g. monitoring supply chain data for food safety).

This workshop will explore:

- Areas of interest for data science and analytics for food and FMCG companies
- What problem statements would food companies like to address with data science and analytics?
- The current challenges and constraints faced by industry to explore such opportunities
- Identify opportunities for R&D collaboration between A\*STAR, food and FMCG industry

Speakers and panellists from the food and FMCG industry, service providers, academia and A\*STAR will present insights on latest research findings to have a broad level engagement to raise awareness on data science and analytics opportunities and seed collaboration between the food industry and public sector researchers.

### About the Organisers



Food Industry Asia (FIA) is a non-profit industry association that was established in July 2010, to serve as a leading think tank for the food industry and a trusted partner in regional development in Asia.

FIA's goal is to harness the expertise of major food and beverage companies and respond to the region's complex challenges in food safety, regulatory harmonisation and effective approaches to public health. Our members share common values on sustainability, food security and the responsible promotion of balanced diets and lifestyles. Together, we promote the role of public private partnership as a cost-effective mechanism for delivering socio-economic outcomes.

At the heart of our philosophy lies a belief that the private sector can play a more positive role in civil society if it has a seat at the table. To this end, FIA is committed to working collaboratively with governments and policy makers throughout Asia, either directly or through existing local industry groups.



The Agency for Science, Technology and Research (A\*STAR) is Singapore's lead public sector agency that spearheads economic oriented research to advance scientific discovery and develop innovative technology. Through open innovation, we collaborate with our partners in both the public and private sectors to benefit society.

As a Science and Technology Organisation, A\*STAR bridges the gap between academia and industry. Our research creates economic growth and jobs for Singapore, and enhances lives by contributing to societal benefits such as improving outcomes in healthcare, urban living, and sustainability.

We play a key role in nurturing and developing a diversity of talent and leaders in our Agency and Research Institutes, the wider research community and industry. A\*STAR oversees 18 biomedical sciences and physical sciences and engineering research entities primarily located in Biopolis and Fusionopolis.

**AGENDA**  
**Smart Data and the Food & FMCG Industry**  
 Tuesday, 28 November 2017  
 8:30am – 4:30pm  
 Exploration Theatre, Level 4, Matrix Building  
 30 Biopolis Street, Singapore 138671

Time	Programme
<b>8:30am</b>	<b>Registration</b>
<b>9:00am</b>	<b>Welcome and Introductions</b>
<b>9:10am</b>	<p><b>Keynote Address</b>  <b>Smart Data and Technology Innovation, the New Normal for food and FMCG</b>            Mr John Keogh, President and Principal Advisor, Shantalla Inc.</p> <p><i>Innovation in technology is pushing us into the future at a rapid pace. Advancements like predictive analytics, artificial intelligence, increased connectivity and automation of all kinds are changing business as usual.</i></p> <p><i>Find out more on the current technologies that are most relevant for FMCG companies and how they incorporate the use of blockchain, big data and IoT usages. John will also discuss the path forward where the 'new normal' means we have to operate and think differently, internally and within our supply chains.</i></p>
<b>9:45am</b>	<p><b><u>The Industry Perspectives</u></b>  <b>The Journey from Farm to Fork: powered by Data &amp; Analytics</b>            Mr Loo Soo Kiat, Director - Data &amp; Analytics (Deals Advisory), PwC</p> <p><i>More and more organisations are exploring the use of technology and innovation, especially in Data &amp; Analytics, to improve various aspects of the food value chain. Yet, many companies are still grappling with what this truly entails.</i></p> <p><i>Mr Loo Soo Kiat aims to demystify the application of Data &amp; Analytics using real-life case studies. Through case studies, find out more on the use of Data &amp; Analytics tools and techniques at each step of the Farm-to-Fork journey.</i></p>
<b>10:15am</b>	<p><b>Leveraging data science for innovation at Thomson Reuters</b>            Ms Sanjna Parasrampur, Head, Thomson Reuters Lab, Asia Region</p> <p><i>"Big data" as a concept is complex and requires a specialized skillset, environment and tools. This creates significant barriers for businesses to effectively harness the power of big data and drive innovation.</i></p> <p><i>Ms Sanjna Parasrampur will give an insight on how Thomson Reuters is driving technology advancement by providing trusted content, technology capabilities needed to navigate the data implosion and how it leverages innovation to identify opportunities to business value for industry professionals.</i></p>
<b>10:45am</b>	<b>Refreshment Break</b>

Time	Programme
11:15am	<p><b>Olay Skin Advisor – Diagnostic and Personalized Skin Care via Artificial Intelligence</b> Dr Ankur Purwar, Group Scientist, P&amp;G</p> <p><i>The mass beauty aisle is often crowded and confusing and experiences with beauty counselors in specialty department stores can be overwhelming. In both cases, women are walking away less than satisfied with their shopping experience and not certain that their products are exactly right for their skin. Part of this dissatisfaction stems from the fact that women want personalized attention and recommendations, and the expectation of what “personalized” means has changed.</i></p> <p><i>Dr Ankur Purwar will discuss more on the newly developed Olay Skin Advisor, a web-based skin analyst and advisor tool that uses AI to address this problem.</i></p>
11.45am	<p><b><u>Panel Discussion</u></b> <b>Current state and application of Data Analytics in FMCG Industry</b> <i>The panel will discuss their views on current state, impact and opportunity to deploy data science and analytics in the FMCG industry.</i></p> <p>Panellists:</p> <ul style="list-style-type: none"> <li>• Mr John Keogh, President and Principal Advisor, Shantalla Inc. -- Moderator</li> <li>• Mr Žiga Drev, Co-founder &amp; COO, Origintrail</li> <li>• Mr Loo Soo Kiat, Director - Data &amp; Analytics (Deals Advisory), PwC</li> <li>• Mr Garick Kea, Executive Director, Consumer Insights, Nielsen Singapore</li> <li>• Dr Sebastian Maurer-Stroh, Senior Principal Investigator, Bioinformatics Institute (BII), A*STAR</li> <li>• Dr Yang Yinping, Senior Scientist, Social and Cognitive Computing Department, Institute of High Performance Computing (IHPC), A*STAR</li> </ul>
12:30pm	<p><b>Lunch</b></p>
1:30pm	<p><b><u>Public Research Perspectives</u></b> <b>Novel computational approaches for assessing the allergenic potential of proteins for the food industry</b> Dr Sebastian Maurer-Stroh, Senior Principal Investigator, Programme Director Human Infectious Diseases, Bioinformatics Institute (BII), A*STAR</p> <p><i>Food allergies caused by proteins are globally on the rise while at the same time novel or alternative protein sources enter the market and need to be tested for safety. Previous FAO/WHO guidelines for computational assessment of allergenic potential of proteins based on single hexamer peptide hits and linear sequence window identity thresholds produced a large number of false positives.</i></p> <p><i>Using a benchmark set of known allergens and likely non-allergens sharing the same structural fold, Dr Sebastian Maurer-Stroh aims to show that the 3D epitope similarity method increased accuracy of classification by 2-fold compared to the classical linear window approach. He would also demonstrate how testing for allergenic potential of proteins using a novel computational workflow early in food production planning and product development can dramatically reduce costs and risks for food companies.</i></p>

Time	Programme
2:00pm	<p><b>Blockchain: The disruptive technology beyond crypto currency</b> Dr Su Le, Research Scientist, Institute for Infocomm Research (I2R), A*STAR</p> <p><i>Since the introduction of Bitcoin, the blockchain technology behind the crypto-currency has attracted significant industrial attention over the recent years. This disruptive technology has reached far beyond the application in financial sector, but widely spread across the entire industrial ecosystem. The nice properties of blockchain, such as distributed ledger, integrity-protected and authenticity-verified records, could potentially bring huge operational cost savings for the enterprise.</i></p> <p><i>Dr Su Le will provide a brief introduction to the technology behind blockchain and its categorization with a case study. He will also share the challenges faced for blockchain technology deployment.</i></p>
2:30pm	<p><b>Big-Data driven analytics and Supply Chain Management (SCM) in the connected world</b> Dr Fu Xiuju, Senior Scientist, Computing Science Department, Institute of High Performance Computing (IHPC), A*STAR</p> <p><b>Social Intelligence – Fine-grained Sentiment &amp; Emotion Analytics</b> Dr Prasanta Bhattacharya, Scientist, Social and Cognitive Computing Department, Institute of High Performance Computing (IHPC), A*STAR</p>
3:00pm	<p><b>Refreshment Break</b></p>
3:20pm	<p><b>Smart data for FMCG advanced manufacturing</b> Dr Bertil Brandin, Strategic Development Director, Advanced Remanufacturing and Technology Centre (ARTC), A*STAR</p> <p><i>The FMCG industry is increasingly focusing on Advanced Manufacturing solutions in which big and smart data are playing an important role. Dr Bertil Brandin will introduce the model factory of A*STAR Advanced Remanufacturing and Technology Center (ARTC) with corresponding system architectures designed to support big and smart data applications required in future manufacturing.</i></p>
3:40pm	<p><b><u>Panel Discussion</u></b> <b>New Opportunities for Data analytics for FMCG Industry</b> <i>The Panel will discuss the current state of R&amp;D in data science and analytics, and new opportunities for application and deployment in FMCG sector, as well as the opportunities for public-private R&amp;D collaboration.</i></p> <p>Panellists:</p> <ul style="list-style-type: none"> <li>• Mr Steven Bartholomeusz, Director, Advocacy &amp; Communications, FIA -- Moderator</li> <li>• Ms Bharathi Viswanathan, Group CIO, Asia Pacific Group, The Coca-Cola Company</li> <li>• Mr Zachary Cordes, Head of Agriculture, Thomson Reuters</li> <li>• Dr Ankur Purwar, Group Scientist, P&amp;G</li> <li>• Dr Su Le, Principal Investigator, Institute for Infocomm Research (I2R), A*STAR</li> <li>• Dr Fu Xiuju, Senior Scientist, Computing Science Department, Institute of High</li> </ul>

	Performance Computing (IHPC), A*STAR <ul style="list-style-type: none"><li>• Dr Carlos Toro, Technical Lead – Technology Architect, Smart Manufacturing Group, Advanced Remanufacturing Technology Center (ARTC), A*STAR</li></ul>
<b>4:20pm</b>	<b>Summary</b>
<b>4:30pm</b>	<b>Close</b>

**SPEAKERS' BIOGRAPHIES**

**Smart Data and the Food & FMCG Industry**

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**KEYNOTE ADDRESS:**

**SMART DATA AND TECHNOLOGY INNOVATION, THE NEW NORMAL FOR FOOD AND FMCG**



**Mr John Keogh**  
**President and Principal Advisor**  
**Shantalla Inc**

John operates at the intersection of the public & private sectors globally. He provides confidential advisory to governments, inter-governmental agencies, industry, industry associations and solution provider executives across several key areas related to policy, strategy, operations and technology. He is a sought-after advisor and speaker on supply chain integrity, transparency and consumer trust. ‘

He holds an MBA in Management, an MSc with distinction in Business and Management research and is a doctoral candidate at Henley Business School. John has held executive roles as Director European Supply Chain, Global Chief Information Office, Global VP of Supply Chain & Senior Vice President at GS1 Canada.

**THE INDUSTRY PERSPECTIVES –**

**THE JOURNEY FROM FARM TO FORK: POWERED BY DATA & ANALYTICS**



**Mr Loo Soo Kiat**  
**Director**  
**Data & Analytics (Deals Advisory)**  
**PwC**

Soo Kiat is a Director of Data & Analytics who has over 14 years of experience in providing business advisory services to clients in the US and Asia on matters ranging from strategy to execution. He is focused on solutions that are underpinned by data and analytics, combined with his commercial experience to derive insights that bring about impactful and measurable business transformations.

Soo Kiat's experience in working with data extends across a variety of use cases, spanning across all functional areas within an organization: from strategic planning and business case development to billing systems integration and operational process improvement and enhancement – all powered by data and analytics.

## LEVERAGING DATA SCIENCE FOR INNOVATION AT THOMSON REUTERS



**Ms Sanjna Parasrampurria**  
**Head**  
**Thomson Reuters Lab, Asia Region**

Sanjna Parasrampurria spearheads Thomson Reuters Labs in Asia based in Singapore. Thomson Reuters Labs aims to create innovative products using artificial intelligence techniques of NLP, machine learning as well as data visualizations for the professional markets.

Sanjna is experienced in leading large corporations and startup companies through periods of strong monetization growth and digital transformation across Asia. She is passionate about bringing the power of data-driven decision making to B2B enterprise and mid-market companies. Sanjna is an active angel investor, advisory board member and a strong advocate of women in tech. She is also an Entrepreneur in Residence at INSEAD and a mentor and advisor to various startups and innovation efforts in the Region.

She holds an MBA from INSEAD (France), a post-graduate masters in finance and a graduate degree from Narsee Monjee College of Commerce & Economics (Mumbai-India).

## OLAY SKIN ADVISOR – DIAGNOSTIC AND PERSONALIZED SKIN CARE VIA ARTIFICIAL INTELLIGENCE



**Dr Ankur Purwar**  
**Group Scientist**  
**Procter & Gamble (P&G)**

As a Group Scientist in Beauty Technology Division at P&G Singapore, Ankur leads efforts linking perceptual noticeability to technical measures for appearance understanding. His research interests include computer vision, image processing, machine learning and methods to measure skin and hair conditions. He is lead technologist for Olay Skin Advisor. Ankur holds a PhD in Applied Mathematics with focus on Medical Imaging Analysis from Indian Institute of Technology Kanpur India.

**PANEL DISCUSSION – CURRENT STATE AND APPLICATION OF DATA ANALYTICS IN FMCG INDUSTRY**



**Mr John Keogh -- Moderator  
President and Principal Advisor  
Shantalla Inc**



**Mr Žiga Drev  
Co-founder & COO  
Origintrial**

Žiga Drev is a Co-founder and COO of [OriginTrail](#), a blockchain company that is building the first purpose-built protocol for safe data sharing in supply chains. Žiga is managing OriginTrail's traceability projects in China in the field of food safety. His expertise includes introducing GS1 standards, which improve the scalability of the service across the food industry. OriginTrail's project with Yimishiji, Chinese online food marketplace, recently received Walmart's Food Safety Innovation Spark Award.



**Mr Garick Kea  
Executive Director, Consumer Insights  
Nielsen, Singapore**

Garick is the Executive Director for Consumer Insights in Nielsen Singapore. His vertical experience includes banking, FMCG, government, hospitality, retail and technology.

Prior to Nielsen, Garick was the Regional Insights Director for Asia and General Manager for Singapore at ISENTIA (An ASX 200 Media Intelligence Company). Before ISENTIA, Garick headed the Market & Consumer Insights function for BlackBerry in Asia Pacific. His research experience cuts across qualitative to quantitative methods, local to global initiatives and consumer to enterprise studies.

Garick was in academia before joining the industry. Recognised by the industry, Garick has won awards and has often been invited be a speaker, panellist, award judge and guest lecturer. He is an Associate Fellow with the Institute on Asian Consumer Insight at Nanyang Technological University. He is also a reviewer to several journal publications and conferences. In the community domain, he is a District Councillor for North West Community Development Council in Singapore.

Garick holds a Master of Philosophy (Marketing) and has also completed a Harvard Leadership program.



**Dr Sebastian Maurer-Stroh**  
**Senior Principal Investigator**  
**Programme Director Human Infectious Diseases**  
**Bioinformatics Institute (BII)**  
**A\*STAR**

Coming from Austria, via Belgium to Singapore, Dr. Sebastian Maurer-Stroh is senior principal investigator in the A\*STAR Bioinformatics Institute (BII) in Singapore since 2007. With more than 125 publications in the field and an h-index of 42, he is known for developing computational tools for protein sequence and structure analysis and contributing to virus surveillance and disease outbreaks analyses in Singapore and the global WHO influenza surveillance network. He also has a strong track record for industry collaborations ranging from local SMEs to large multinationals on sequence analysis and a major research programme on prediction of allergenicity potential of proteins. His protein function analysis skills are also supporting the A\*STAR Biotransformation Innovation Platform positioned at the academic-private interface.



**Dr Yang Yinping**  
**Senior Scientist**  
**Social and Cognitive Computing Department**  
**Institute of High Performance Computing (IHPC)**  
**A\*STAR**

Yang Yinping is a Senior Scientist leading the Digital Emotions Programme in A\*STAR's Institute of High Performance Computing (IHPC). Her long-standing research efforts centre on the understanding and enhancement of negotiation processes in markets and organisations. More recently, she focuses on the study of sentiment, emotion and personality and the development of data processing tools to extract these constructs from online digital platforms. Her work has led to the commercial development and adoption of new technologies for sentiment analysis, opinion mining and e-negotiations.

Dr Yang's earlier research has received multiple international awards including best paper / prototype awards from the 42nd Hawaii International Conferences on System Sciences and the 19th Annual International Workshop on Information Technology and Systems. Her research has been published in leading journals including IEEE Intelligent Systems, Journal of Management Information Systems, Journal of Global Information Management, Behaviour & Information Technology, and Journal of Strategic Information Systems.

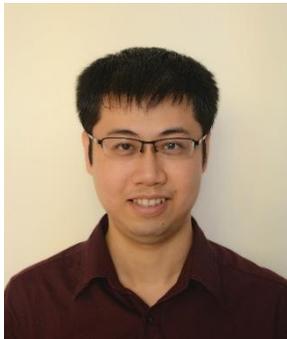
Prior to joining A\*STAR, she obtained Bachelor of Computing (Hons) and Ph.D. in Information Systems from the National University of Singapore. She is an Adjunct Faculty in the School of Information Systems at the Singapore Management University in years 2012-2015. She has been actively serving in various professional committees and editorial boards in international conferences and journals including serving as an associate editor for the journals of Group Decision and Negotiation and E-Commerce Research and Applications.

**PUBLIC RESEARCH PERSPECTIVES –  
NOVEL COMPUTATIONAL APPROACHES FOR ASSESSING THE ALLERGENIC POTENTIAL OF  
PROTEINS FOR THE FOOD INDUSTRY**



**Dr Sebastian Maurer-Stroh**  
**Senior Principal Investigator**  
**Programme Director Human Infectious Diseases**  
**Bioinformatics Institute (BII)**  
**A\*STAR**

**BLOCKCHAIN: THE DISRUPTIVE TECHNOLOGY BEYOND CRYPTO CURRENCY**



**Dr. Su Le**  
**Research Scientist**  
**Institute for Infocomm Research (12R)**  
**A\*STAR**

Dr. Le Su received the B.Sc. degree from Nanyang Technological University, Singapore in 2010, majored in Mathematical Sciences. He completed the Ph.D. degree from the same school in 2014 with research focus in the area of applied cryptography. He is now working as a Research Scientist in Cyber Security Cluster, Institute for Infocomm Research, A\*STAR, Singapore. His current research interests include blockchain innovation, privacy-preserving technique, applied cryptography, and network security.

**BIG DATA DRIVEN ANALYTICS AND SUPPLY CHAIN MANAGEMENT (SCM) IN THE CONNECTED  
WORLD**



**Dr Fu Xiujiu**  
**Senior Scientist, Computing Science Department**  
**Institute of High Performance Computing (IHPC)**  
**A\*STAR**

Dr Xiuju Fu is Senior Scientist at Department of Computing Science, Institute of High Performance Computing. She received her Ph.D. in School of EEE from Nanyang Technological University, Singapore. Her research interests include logistics and supply chain management, public health management, modeling/simulation and data mining applications. She has over 40 papers published in reputable conferences and journals. She serves as PI and Co-PIs for several grant projects in the past years.

## SOCIAL INTELLIGENCE – FINE-GRAINED SENTIMENT & EMOTION ANALYTICS



**Dr Prasanta Bhattacharya**  
**Scientist**  
**Social and Cognitive Computing Department**  
**Institute of High Performance Computing (IHPC)**  
**A\*STAR**

Prasanta Bhattacharya is a Scientist with the Social and Cognitive Computing Dept. at the Institute of High Performance Computing (IHPC), A\*STAR Singapore, where he works on behavioral analytics and social network analyses. Prasanta holds a Ph.D in Information Systems from the Department of Information Systems and Analytics, National University of Singapore, where he studied computational social science with a special focus on data-driven behavioral analytics on large social networks. His current research agenda aims at understanding the role of social network data in emerging behavioral contexts like digital marketing, micro-finance, healthcare and urban systems. Prasanta actively collaborates with leading industry partners from around the world, and has presented his research in major computer science and information systems conferences worldwide.

## SMART DATA FOR FMCG ADVANCED MANUFACTURING



**Dr Bertil Brandin**  
**Strategic Development Director**  
**Advanced Remanufacturing and Technology Centre (ARTC)**  
**A\*STAR**

Dr Bertil Brandin is based in Singapore. He spent over nine years in Asia developing the engineering and maintenance services business of ABB, a leading international OEM, holding various service related management positions. He implemented ABB's new service strategy across the South Asia, significantly increasing its service business. In China, Bertil started-up the outsourced maintenance businesses of ABB, winning and executing the first external outsourced maintenance contract for one of the world largest pulp and paper production lines at the time.

He holds a Ph.D. in Electrical Engineering from the University of Toronto, Canada, a Bachelor degree from the University of New South Wales, Australia, and an MBA from IMD, Switzerland.

He is a member of the Electrical Engineering Advisory Committee of Singapore's Ngee Ann Polytechnic Council and of the Institute of Electrical and Electronics Engineers (IEEE). He has authored over thirty-three refereed papers in international journals and conferences, and has been granted six patents.

**PANEL DISCUSSION – NEW OPPORTUNITIES FOR DATA ANALYTICS FOR FMCG INDUSTRY**



**Mr Steven Bartholomeusz -- Moderator**  
**Policy Director**  
**Food Industry Asia (FIA)**

Steven leads all advocacy and communication efforts including membership and partnership development to deliver FIA's value proposition to its members.

He is an experienced communications professional with over 16 years international and regional experience managing issues and stakeholders and delivering communications strategy in the oil and gas industry, hydropower and public utilities, and more recently the food and beverage industry. Prior to this he spent three years as the news manager for a private radio station in Sri Lanka and a correspondent for the Voice of America.

Steven is originally from Sri Lanka and has a B.A in Mass Communication (Broadcasting) from Winona State University, Minnesota, USA.



**Ms Bharathi Viswanathan**  
**Group Chief Information Officer, APAC**  
**The Coca-Cola Company**

Bharathi is a passionate business technologist with over 20 years of experience in the intersection of IT and the business of consumer products. She has been focused on driving agile and analytically enabled digitization of commercial and brand building operations across all markets of Asia. She has extensive experience in CRM, digital marketing, BI, sales force automation, analytics, eCommerce and on large-scale shared services outsourcing.

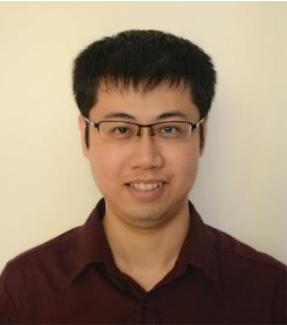
Prior to Coca Cola, Bharathi has worked in Procter & Gamble and has spent the past 20 years across Japan, Singapore and India in a variety of different IT and shared services roles.

Bharathi is an Electrical Engineer from the Indian Institute of Technology, Chennai with a MBA from the Indian Institute of Management, Kolkata.



**Mr Zachary Cordes**  
**Head of Agriculture**  
**Thomson Reuters**

Zach Cordes is the Head of Agriculture at Thomson Reuters and is responsible for the business strategy across Thomson Reuters desktop and data feed products for the agriculture industry. Zach has over 10 years of experience in the information and analytics business. He was most recently in a Product Management role where he drove the development of agriculture news, pricing, weather, and research capabilities within the Thomson Reuters products.

	<p><b>Dr Ankur Purwar</b> <b>Group Scientist</b> <b>Procter &amp; Gamble</b></p>
	<p><b>Dr Su Le</b> <b>Research Scientist, Institute for Infocomm Research (I2R)</b> <b>A*STAR</b></p>
	<p><b>Dr Fu Xiujiu</b> <b>Senior Scientist, Computing Science Department</b> <b>Institute of High Performance Computing (IHPC)</b> <b>A*STAR</b></p>
	<p><b>Dr Carlos Toro</b> <b>Technical Lead – Technology Architect</b> <b>Advanced Remanufacturing Technology Center (ARTC)</b> <b>A*STAR</b></p> <p>Dr. Carlos TORO received both his Ph.D. And M.Sc in Computer Science from the University of the Basque Country (Spain) and his Bachelor in Mechanical Engineering from EAFIT University (Colombia). In 2003 he moved to Spain and started working in applied research on Advanced Manufacturing with focus on the implementation and support of Industrie 4.0 and IIoT and artificial intelligence. Since 2017 he joined A*STAR being the lead architect of the Factory of the Future (FoF) initiative at ARTC. FoF will be implemented based on breakthrough technologies like: edge computing, IIoT, and Cyber Physical Systems and aims to bring ground breaking technologies into the shop floor.</p>