

## SUSS-SmartMesh Workshops cum Blockchain Challenge 2020

### Workshops Agenda

This 8-day workshop series consists of lectures, demos, and hands-on labs on a variety of topics. We will explore new tools, such as blockchain, mesh networks, and a HyperMesh architecture, and learn how they can be part of solutions to address inclusivity issues.

#### **Background and Terminology:**

**SmartMesh** is a token-based next-generation protocol for the HyperMesh architecture.

**MeshBox** is an ecosystem project of SmartMesh which provides the hardware platform for the SmartMesh protocol and various inclusive applications. It is a hardware box device capable of Spectrum blockchain mining, backhauling to internet access, decentralized data storage, edge-computing and storage, and IoT bridging to the Internet.

**Spectrum:** the SmartMesh public blockchain

**SMT:** SmartMesh Token, the base coin on the Spectrum public blockchain. After staking SMT on a Spectrum node (Laptop, server, MeshBox) the miner will earn SMT. Also, SMT can be used to pay for MeshBox services such as Internet access.

**MESH:** A MeshBox token; used to pay for MeshBox services such as IoT data transfers, decentralized data storage, decentralized parallel computing, etc.

**Photon Network:** A layer-2 smart-contract on Spectrum, designed by SmartMesh to realise peer-to-peer, fast and secure transfers of cryptocurrencies with highly scalable Transactions-per-Second (TPS) metric. Also, for inclusive applications in which internet is intermittent, Photon can be operated in off-chain, and off-internet modes.

**Tango:** A mobile application that acts as a crypto-wallet for Spectrum tokens, supporting Spectrum and Photon transfers. Also, supports SMT mining management, payment gateway for internet access on MeshBox, and a chatroom functionality.

**Atmosphere:** SmartMesh's cross-chain interoperability architecture that allows interoperability with other blockchain ecosystems and associated tokens

**SmartMesh HyperMesh Architecture:** The next-generation cyber-physical architecture that provides seamless interworking of Spectrum Blockchain, Photon Payment Network, MeshBox edge computing/storage, Internet backhaul, Wifi mesh routing, and Internet of Things LPWAN connectivity. On the HyperMesh architecture, various applications such as inclusive connectivity, inclusive payment systems, and inclusive energy can be integrated.



## Day 1 (23 June) Tuesday

### Introduction to Blockchain and SmartMesh Ecosystem, enabled by MeshBox

- **Hands-on: First Contact with Blockchain**

#### Learning Objectives:

1. Describe the evolution from Internet-of-Information to Internet-of-Value
2. Explain how blockchain technology improves different aspects of society including business, legal, engineering, and governance
3. Appraise how SmartMesh Ecosystem projects help to incentivise the adoption of grassroots, shared infrastructure through the SMT/MESH token economy
4. Set up Huobi login and account as well as SmartMesh Tango app

*\* On this day, participants will also be briefed by Dedoco on blockchain-based identity and opt-in for Dedoco ID.*

| Time          | Agenda   |
|---------------|--|
| 09:00 – 09:30 | <b>Opening Remarks</b> <ul style="list-style-type: none"> <li>- Associate Professor Allan <u>Chia</u> Beng Hock, Dean, School of Business</li> <li>- Professor David <u>Lee</u> Kuo-Chuen, Professor, School of Business</li> <li>- Mr Henry <u>Wang</u> Qiheng, CEO, SmartMesh Foundation</li> </ul>  |
| 09:30 – 10:30 | <b>WS-1 Lecture</b> <ul style="list-style-type: none"> <li>- Mentimeter Surveys (Peter Yan, CEO, MeshBox Foundation)</li> <li>- Blockchain Basics (SUSS FinTech and Blockchain Team)</li> </ul>  |
| 10:30 – 10:45 | <b>Break</b>   |
| 10:45 – 12:00 | <b>WS-1 Lecture</b> <ul style="list-style-type: none"> <li>- Blockchain Basics (SUSS FinTech and Blockchain Team)</li> </ul>   |
| 12:00 – 12:30 | <b>[BC-Track]</b> Blockchain Challenge (BC) and Q&A  |
| 12:30 – 13:30 | <b>Break for Lunch</b>   |
| 13:30 – 14:45 | <b>WS-1 Lecture</b> <ul style="list-style-type: none"> <li>- Hands-on Proof-of-Work (SUSS FinTech and Blockchain Team)</li> </ul>  |
|               | <b>Dedoco Attendance tracking moved to Friday.</b><br><b>High Attendance rate will be reflected in the SMT Airdrop amount</b>  |
| 15:00 – 15:15 | <b>Break</b>   |
| 15:15 – 16:30 | <b>WS-1 Demo: First Contact with Blockchain</b> <ul style="list-style-type: none"> <li>- [D01a] Huobi login and account setup</li> <li>- [D01b] SmartMesh Tango App setup with Wallet and Spectrum basics</li> <li>- Attendees disclose to SmartMesh: Spectrum wallet address for airdrop</li> </ul> <b>WS-1 Lab: Hands-On – Split into Two Tracks:</b> <ul style="list-style-type: none"> <li>- <b>[Android Track]</b> Android Smartphone users</li> <li>- <b>[IoT Track]</b> IoT Smartphone users</li> </ul> |
| 16:30 – 17:00 | <b>[BC-Track]</b> Blockchain Challenge and Q&A   |



## Day 2 (26 June) Friday

### Inclusive Connectivity

- **Hands-on: Setting up MeshBox Network for Internet Access**

#### Learning Objectives:

1. Describe the difficulties in deploying networks for internet access in underserved areas and how Space-Ground Integration Network can solve the problem
2. Appraise the solution that uses SmartMesh blockchain to incentivise individuals and communities to promote inclusive connectivity
3. Use the Tango app to pay for internet access for MeshBox
4. Practise Tango Spectrum staking and mining

*\* On this day, participants will also be setting up their Blockchain-Enabled Secured Identity with Dedoco.*

| Time          | Agenda  |
|---------------|---|
| 09:00 – 09:30 | <b>Opening Remarks</b>  |
| 09:30 – 10:45 | <b>WS-2 Lecture: SmartMesh Ecosystem and Inclusive Connectivity</b> <ul style="list-style-type: none"> <li>- Internet architecture and lack of connectivity</li> <li>- SmartMesh ecosystem overview</li> <li>- HyperMesh Network Architecture</li> <li>- HyperMesh Applications</li> <li>- Relationship with 5G Cellular SmartMesh Ecosystem</li> </ul> |
| 10:45 – 11:00 | <b>Break</b>  |
| 11:00 – 12:00 | <b>Invited Talk</b><br>Interoperability in Collaborative Blockchain Networks with JEDTrade and SmartMesh  |
| 12:00 – 12:15 | <b>Dedoco Blockchain Certificate introduction</b><br>Gather interest from attendees to opt-in on Dedoco Blockchain Certificate of Attendance (COA). <b>SmartMesh</b> will airdrop SMT and MESH tokens to Tango Wallet users based on Attendance.  |
| 12:15 – 12:30 | <b>[BC-Track]</b> Blockchain Challenge and Q&A  |
| 12:30 – 13:30 | <b>Break for lunch</b>  |
| 13:30 – 14:30 | <b>Invited Talk</b><br>5G/6G Era Satellite Communications and the Community of Shared Future for Mankind by Mark Guo Zhengbiao  |
| 14:30 – 15:15 | <b>WS-2 Demo: Setting up the MeshBox Network</b> <ul style="list-style-type: none"> <li>- [Dedoco] Setup Attendees' Blockchain-Enabled Secured ID</li> <li>- [D02a] MeshBox Setup and Configuration (connection with Hotspot)</li> </ul>  |

|                      |   |
|----------------------|---|
|                      | <ul style="list-style-type: none"> <li>- [D02b] Paying for Internet Access on MeshBox using Tango</li> <li>- [D02c] Tango Spectrum Staking (880,000 SMT) and Mining</li> </ul> <p>WS-2 Lab: Students' Hands-On: Postponed due to Covid-19 gathering restrictions<br/><b>IF time permits: WS-2 Lecture (Continued)</b></p> |
| <b>15:15 – 15:30</b> | Break   |
| <b>15:30 – 16:30</b> | <b>Invited Talk</b><br>Secure Scuttlebutt Decentralized Communication, by Jan Winkelmann  |
| <b>16:30 – 17:00</b> | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>  |

## Invited Talk: JED Trade

### Interoperability in Collaborative Blockchain Networks with JEDTrade & SmartMesh

#### Abstract:

A successful collaborative network is built on transparency among involved parties, be it between a supplier and vendor, or a buyer and seller. However, how do we build trust for networks in remote areas where access to basic technology may even pose as a problem? Even as consumers, we are becoming increasingly aware of what we eat, whether our food is indeed premium and organic as claimed on the packaging itself. So, how is it possible to verify the authenticity of certificates issued in a transaction, even more so in rural areas, to keep our minds assured? The term interoperability suggests using computer systems and technology to exchange data and information, addressing the issue of communication regardless of locations within your network. Just like the organic goods we consume come from farms located in areas ideal for crops to grow and unlikely to be easily accessed, difficulties in tracking and verifying certificates arises. However, with business process run on blockchain, utilizing JED ES enables the issuance of documents and validation of signatures or attestations, leveraging on the nature of blockchain's decentralized network which allows improved traceability.

#### Speaker:

**Hendrik Tanjaya Tan**

**Technical Lead (Projects), JED Trade**

Hendrik Tan is a technologist who embraces blockchain technology. As the technical lead of projects, he is responsible for managing and developing the blockchain use cases for Jupiter Chain and other JEDTrade projects. He has been involved in what the technology can bring in the real estate vertical, and data privacy. He speaks at conferences and meetups with blockchain theme. He has more than 15 years of experience delivering technology solutions in the telecom industry, working with clients in EMEA and APAC regions; British Telecom, Saudi Telecom, and Singtel being some of them. He is also a trainer for the blockchain course in conjunction with SP PACE Academy.

**Invited Talk: Horizonbase**

**5G/6G Era Satellite Communications and the Community of Shared Future for Mankind**

**Speaker:**

**Mark Guo Zhengbiao**

**CEO of Horizonbase Communication and the Chairman of Cubesat Students China**

**Invited Talk: Least Authority**

**Secure Scuttlebutt Decentralized Communication**

**Abstract:**

Scuttlebutt is a decentralized social network and application platform. It makes some interesting engineering choices which sets it off from most other tools in the distributed web sector. Specifically, members of the network use trust in order to reduce computational cost and avoid a single "shared truth", as used in blockchain. The introduction covers the technical basics as well as a discussion of the trust and cooperation Scuttlebutt draws on and a demonstration of how it looks from a user perspective.

**Speaker:**

**Jan Winkelmann**

**Security Researcher & Engineer, Least Authority**

Jan's interests lie in distributed systems and cryptography. As a software developer, he has worked on IPFS and currently works on Secure Scuttlebutt. As a student, he designed and analyzed key exchange protocols.



## Day 3 (30 June) Tuesday

### Inclusive Payment System

- **Hands-on: Interoperable Payment System on Blockchain**

#### Learning Objectives:

1. Discuss the pain points in remittance, especially for financially-excluded community
2. Appraise remittance solutions on blockchain using MeshBoxes and SmartMesh
3. Use the Tango app to transfer SMT between wallets through Spectrum and Photon
4. Illustrate the flow of transactions on the Spectrum public blockchain

| Time          | Agenda  |
|---------------|---|
| 09:00 – 09:15 | <b>Opening Remarks – SUSS</b>   |
| 09:15 – 10:00 | <b>WS-3 Lecture</b> <ul style="list-style-type: none"> <li>- Homework Results (to be shared in Mentimeter)</li> <li>- Spectrum Blockchain Differentiation</li> <li>- Photon Differentiation</li> <li>- Payment Network ROI and Recap of Grassroots ROI</li> <li>- Remittance Options and Costs</li> <li>- Ambassadors for promoting Living Labs [8]</li> </ul>  |
| 10:00 – 10:15 | <b>Break</b>  |
| 10:15 – 12:00 | <b>WS-3 Lecture</b> <ul style="list-style-type: none"> <li>- Continued</li> </ul>   |
| 12:00 – 12:30 | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>  |
| 12:30 – 13:30 | <b>Lunch</b>  |
| 14:00 – 16:30 | <b>WS-3 Demo : Blockchain in Action</b> <ul style="list-style-type: none"> <li>- [IM03a] Using Tango transfer SMT between Wallets through Spectrum.</li> <li>- [IM03b] Transfer SMT between Tango and Huobi.</li> <li>- [IM03c] Observe transactions on the Spectrum public blockchain</li> <li>- [IM03d] Using Tango to transfer SMT through Photon (online and offline)</li> <li>- Compare differences.</li> <li>- [IM03e] UBI Smart Contract (Airdrop)</li> <li>- [IM03f] How to start creating BC App, derived from Tango App</li> </ul> <b>WS-3 Lab : Students' Hands-On</b> <ul style="list-style-type: none"> <li>- Concurrent with above</li> </ul> |
| 16:30 – 17:00 | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>  |



**Day 4 (3 July) Friday**

**With emphasis on Ethereum Deep Dive, by Akomba and Skilltree**

| Time          | Agenda   |
|---------------|--|
| 09:00 – 09:20 | <b>Invited Talk on SUSS SBIZ Business Analytics Programme</b><br>A/P James Tan Swee Chuan, Head, Business Analytics Programme                              |
| 09:20 – 10:30 | <b>Workshop brief administrative announcements</b><br><b>Invited Talk:</b> Ethereum Deep Dive (1/4)<br>Ethereum Scalability Research and Options (Lecture) |
| 10:30 – 10:45 | <b>Break</b>   |
| 10:45 – 12:00 | <b>Invited Talk:</b> Ethereum Deep Dive (2/4)<br>Introduction to Ethereum Smart Contract Development (Lecture)   |
| 12:00– 12:30  | <b>[BC-Track]</b> Blockchain Challenge and Q&A   |
| 12:30 – 13:30 | <b>Lunch</b>   |
| 13:30 – 15:00 | <b>Invited Talk:</b> Ethereum Deep Dive (3/4)<br>Solidity development: Hands- on workshop: Creating ERC-20 tokens (Lab)                                    |
| 15:00 – 15:15 | <b>Break</b>   |
| 15:15 – 16:30 | <b>Invited Talk:</b> Ethereum Deep Dive (4/4)<br>Creating and Working with ERC-721 Non-Fungible Tokens (Lab)   |
| 16:30 – 17:00 | <b>[BC-Track]</b> Blockchain Challenge and Q&A   |

## **Invited Talk: Akomba Ethereum Deep Dive**

**Speaker:**

**Andras Kristof**

**Founder, Akomba Labs**

Andras is an entrepreneur and a blockchain technology/smart contract expert. After a successful exit from viki.com, he founded Akomba in 2013, and developed and deployed Asia's first Bitcoin ATM. Akomba is a deep tech research and development company. It is helping other companies, and developing products in the privacy technology and blockchain space.



**Day 5 (7 July) Tuesday**

### **Inclusive Identity: Secured KYC and Certificates**

- **Hands-on: Creating Token of Participation on MeshBox**

#### **Learning Objectives:**

1. Contrast traditional centralised data storage via cloud and decentralised data storage
  2. Discuss the provision of secure identity via multi-factor authentication with the integration of Internet-of-Things (IoT)
  3. Examine secured public data storage via blockchain that is viewable with a publicly available key
  4. Experiment secured private data storage using a decentralised data storage protocol
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### **Inclusive Education**

- **Hands-on: Edge Computing and Storage for Inclusive Education**

#### **Learning Objectives:**

1. Describe the process of educational content served from MeshBoxes
2. Experiment with tokenising competency of participation linking with assessment results
3. Inspect the Unifinity Education Technology platform
4. Explain edge storage
5. Appraise how edge-storage works to achieve inclusive education

| Time          | Agenda   |
|---------------|--|
| 09:00 – 10:00 | Workshop brief administrative announcements<br><b>Invited Talk: Dedoco</b><br>Blockchain Issued Certificates: Proofs of Education and Employment – by Ernie Teo  |
| 10:00 – 10:15 | <b>Break</b>   |
| 10:15 – 11:45 | <b>Invited Talk: Netki</b><br>Validated Identity as a Basis for Trust -- by Justin W. Newton   |
| 11:45 – 12:00 | <b>Break</b>   |
| 12:00 – 12:30 | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>   |
| 12:30 – 13:30 | <b>Lunch</b>   |
| 13:30 – 15:00 | <b>Invited Talk: Unifinity</b><br>Tokenizing The Education system by supporting the Inclusive Education System towards Digital Transformation – by Veronica Andrino  |
| 15:00 – 15:15 | <b>Break</b>   |
| 15:15 – 15:30 | <b>WS-5 Lecture</b> <ul style="list-style-type: none"> <li>- From Homework PPTs</li> <li>- Educational Content served from MeshBoxes</li> <li>- Tokenise competency of participation linking with Multiple-Choice-Questions results &gt; 70% [7]</li> <li>- Token purchase of courses [5]</li> </ul> |
| 15:30 – 16:30 | <b>Invited Talk: Least Authority</b><br>Tahoe-LAFS Decentralized Data Storage -- by Ramakrishnan Muthukrishnan   |
| 16:30 – 17:00 | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>   |

## Invited Talk: Dedoco

### Blockchain Issued Certificates: Proof of Education and Employment

#### Abstract:

The use of blockchain for issuance of trusted yet decentralised credentials have always been a subject of interest. Such a credential should allow for one to verify the validity of these credentials easily and yet be able to protect the personal privacy of the credential holder. In this talk, we examine the various approaches taken to create such credentials on blockchain and how they are being used. We will also demonstrate a certificate of attendance that is deployed on SmartMesh Spectrum for this workshop.

#### Speaker:

**Ernie Teo**

**Co-Founder, Dedoco and Vice-Chairman, Blockchain Association Singapore**

Ernie Teo is an economist and game theorist with a focus on technology, fintech and blockchain. He is co-founder of Dedoco, a document process solution that is built on blockchain to prevent tampering of the documents and create an audit trail for authentication and validation (signing). Ernie is also Vice Chairman of Blockchain Association Singapore and Adjunct Senior Lecturer at the National University of Singapore Business School where he teaches Fintech and Blockchain. Ernie is active in the blockchain community in Singapore, giving talks and seminar both in the industry and at universities. He has also published in the area of blockchain and fintech, most recently in the 2018 IEEE International Conference on Cloud Engineering. A pioneer of blockchain education in Singapore, he conceptualized and taught the first blockchain course as a part of a degree program at the

National University of Singapore. He received his PhD in Economics from the University of New South Wales, Australia and also held academic positions in Nanyang Technological University and Singapore Management University.

## **Invited Talk: Netki Validated Identity as a Basis for Trust**

### **Abstract:**

One of the great values of blockchain is its ability to facilitate trust-less transactions, yet the modern world is built on interconnected networks of trust. The root of trust is always identity. In this session we will discuss the importance of identity and how what "identity" means is deeply tied to the specific use case involved. We will cover:

1. What things are important when validating identity and how to do so effectively in your platform?
2. What are some of the concerns around validating, storing and securing identity, and what are the trade-offs of various approaches?
3. A case study of how we designed and built the BIP 75 Bitcoin standard to solve the specific problem of "Travel Rule" compliance for crypto currency and other digital asset companies.

Students should come away from this session with an understanding of how identity may apply to projects they are working on, how to integrate identity into their platform, and what are the current and emerging trends around identity validation and what are some of the things to watch for around them.

### **Speaker:**

**Justin Newton**  
Netki CEO

## **Invited Talk: Unifinity**

### **Tokenizing The Education system by supporting the Inclusive Education System towards Digital Transformation**

#### **Abstract:**

Unifinity is a decentralized app (Dapp), running on the block-chain, which aims to be the easiest gateway for schools, teachers, parents and students to re-organize and upgrade their educational platforms. Our mission is to combine in one place everything needed to monitor students' attendance and performance in order to help them plan for their future. It includes a bill payment portal and a reward platform that will provide incentives to the students every time they complete a course online or offline. Our Vision is to create a rewards platform that will use block-chain technology to incentivize users to pursue their studies, help universities to organize their student filing system, and provide students with reliable certification of academic achievement.

#### **Speaker:**

**Veronica Ardrino**

**Unifinity Founder and CEO**

Veronica is a crypto advocate who aims to educate and to empower the masses with the real use case of Blockchain Technology. She was the Founder of Adsolve. Co, providing business solutions to diverse industries. Veronica is an experienced Business Strategist, Blockchain Project Consultant, OTC Trader, Crypto Advocate & Influencer, and current Director of Financial IT for Media Relations Asia Pacific, a US Company Business and Fintech News and Magazine.

## **Invited Talk: Least Authority**

### **Tahoe-LAFS Decentralized Data Storage**

#### **Speaker:**

**Ramakrishnan Muthukrishnan**

**Security Researcher & Engineer, Least Authority**

Ramakrishnan (Ramki) has been programming in the industry for about 19 years, mostly working with low level operating system software. He has worked in big and small companies and has been an active participant in the Free Software movement as a hobbyist.



**Day 6 (09 July) Thursday**

**Inclusive eCommerce -- Livestock-backed Financing with Sentinel Chain**

- **Hands-on: Spectrum and Photon Deep Dives**

**Learning Objectives:**

1. Describe the pain points of the underserved in supply chain
2. Examine (via case study) how cryptocurrency allow for the circulation of a local currency and keep the wealth in the community, allowing local businesses to prosper
3. Explain the Atmosphere Cross-Chain Interoperability and its role in supply chain

| Time                 | Agenda  |
|----------------------|---|
| <b>09:00 – 09:30</b> | <b>SUSS Invited Speakers</b>  |
| <b>09:30 – 10:15</b> | <b>Invited Talk</b><br>Livestock-backed Financing with Sentinel Chain -- by Roy Lai and Fahad Ifaz  |
| <b>10:15 – 10:30</b> | <b>Break</b>  |
| <b>10:30 – 12:00</b> | <b>WS-6 Lecture and Lab:</b> <ul style="list-style-type: none"> <li>- Spectrum Deep Dive Lecture</li> <li>- [IM06a] Spectrum Deep Dive Lab</li> </ul>   |
| <b>12:00 – 12:30</b> | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>  |
| <b>12:30 – 13:30</b> | <b>Lunch</b>  |
| <b>13:30 – 14:30</b> | WS-6 Lecture (Continued)  |
| <b>14:30 – 14:45</b> | <b>Break</b>  |
| <b>14:45 – 16:15</b> | WS-6 Lecture and Lab: <ul style="list-style-type: none"> <li>- Token Commerce Demo</li> <li>- [IM06b] Tahoe-LAFS on MeshBox Live Demo</li> <li>- Tokenising old textbooks from last year to be sold through tokens [4]</li> <li>- Photon Deep Dive Lecture</li> <li>- [IM06c] Photon Deep Dive Lab</li> <li>- MeshBox will airdrop MESH tokens to Student’s Tango Wallet</li> </ul> |
| <b>16:15 – 16:30</b> | <b>Break</b>  |
| <b>16:30 – 17:00</b> | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>  |

## **Invited Talk: Sentinel Chain Livestock-backed Financing with Sentinel Chain**

### **Abstract:**

80% of the global food supply are contributed by smallholder farmers. However, in many parts of the world, smallholder farmers have no access to affordable working capital to sustain their farming activities. To address this problem, InfoCorp has designed a solution that allows smallholder farmers to use their livestock as collateral for loans using a cross-chain architecture comprising of 3 blockchains - FarmTrek, Sentinel Chain and Ethereum.

FarmTrek is an agri-tech solution designed to address livestock traceability using RFID, NFC smartphone and a non-Turing complete in-country private blockchain. Sentinel Chain is a fin-tech solution designed to as a consortium side-chain to Ethereum that allows livestock asset on FarmTrek to be used as collaterals for offshore financing. This talk to give an introduction to the purpose and architecture of Sentinel Chain. The agenda for the talk includes:

- Using FarmTrek for livestock traceability (10 min)
- Using Sentinel Chain for livestock-backed financing (10 min)
- Sentinel Chain Use Case - iFarmer (10 min)
- Q&A (15 min)

### **Speakers:**

#### **Roy Lai**

**CEO of InfoCorp and Founder of Sentinel Chain**

Mr Roy Lai is the Founder and CEO of InfoCorpTechnologies, a Singapore-based blockchain company, that addresses financial inclusion by enabling small holder farmers to use their livestock as collateral for loans. Under Roy's leadership, InfoCorp has won the first prize of Singapore Fintech Award (ASEAN SME) by the Monetary Authority of Singapore and the United Nations' Women Fintech MSME Innovation Fund in 2019. In 2018, Roy was also a winner of the Singapore Entrepreneur of the Year Award (Social Contribution) by Singapore Rotary Club and Singapore Association of Small & Medium Enterprise. In the same year, Roy also founded the Sentinel Chain blockchain for cross-border livestock-backed financial transactions. Prior to InfoCorp, Roy worked in the inter-bank payment industry and was instrumental in delivering FAST, an ambitious real-time inter-bank payment network, across 14 Singapore banks in 2014. Roy brings with him more than 25 years of international experience in technology and financial sectors. Roy is also a Research Fellow at the Singapore University of Social Sciences where he teaches blockchain programming curriculum.

#### **Fahad Ifaz**

**CEO and Co Founder of iFarmer**

Fahad Ifaz is the CEO and Co Founder of iFarmer, which aims to provide end-to-end solutions for the farmers and Agri MSMEs. Fahad has almost 10 years of experience in International Economic Development with organizations like the World Bank, CARE International, Swisscontact and Palladium. He has worked extensively in South Asia, designing and managing projects to improve the social and economic condition of the people at the bottom of the pyramid. He has worked in countries like Bangladesh, India, Nepal, Myanmar, Cambodia, Nigeria, Thailand and more. Prior to starting iFarmer, Fahad was managing a multimillion-dollar project in Myanmar to improve access to

finance and markets of smallholder farmers in the South-east of Myanmar. He holds an undergraduate degree in International Business and Economics and has a MSc in Economics.



**Day 7 (14 July) Tuesday**

**Transparent Charity**

- **Hands-on: Anti-Corruption Charity and Aid Distribution; Atmosphere Deep Dive**

**Learning Objectives:**

1. Discuss the pain points due to corruption and non-transparent donations
2. Appraise how blockchain and smart contract can be used to track and disintermediate in-kind donations and provide transactions transparency
3. Describe how real-time delivery issues hinder in-kind food donations
4. Examine the usage of smart contract for Universal Basic Income using SMT

| <b>Time</b>           | <b>Agenda</b>  |
|-----------------------|--|
| <b>09:00 – 09:30</b>  | Workshop brief administrative announcements  |
| <b>09:30 – 10:30</b>  | <b>Invited Talk: Dimuto <i>Gary Loh (TBD)</i></b>  |
| <b>10:30 -- 10:45</b> | <b>Break</b>   |
| <b>10:45 – 12:00</b>  | WS-7 Lecture: <ul style="list-style-type: none"> <li>- From Group Presentations</li> <li>- <b>Atmosphere Deep Dive Lecture</b></li> <li>- <b>[IM07a] Atmosphere Deep Dive Lab</b></li> <li>- In-Kind Donation via Secured Supply Chain Demo, with IoT Introduction for Proof of Delivery</li> </ul>  |
| <b>12:00 – 12:30</b>  | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>   |
| <b>12:30 – 13:30</b>  | <b>Lunch</b>   |
| <b>13:30 – 14:30</b>  | <b>Invited Talk: Huobi University</b><br>The Tide of Industrial Blockchain: Huobi's Practice on Blockchain Application   |
| <b>14:30 – 15:15</b>  | WS-7 Demo : Anti-Corruption Charity and Aid Distribution <ul style="list-style-type: none"> <li>- [IM07b] Using Tango transfer MESH between Wallets through Spectrum.</li> <li>- [IM07c] Observe transactions on the Spectrum public blockchain</li> <li>- [IM07d] Using Tango to transfer MESH through Photon (online and offline)</li> <li>- Using SMT tokens to buy charitable goods donated In-kind [2]</li> </ul> WS-7 Lab : Students' Hands-On – Concurrent with Above |
| <b>15:15 – 15:30</b>  | <b>Break</b>   |
| <b>15:30 – 16:30</b>  | <b>Invited Talk: AID:Tech -- <i>by Joseph Thompson -- TBD</i></b>  |
| <b>16:30 – 17:00</b>  | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>   |

## **Invited Talk: Huobi**

### **The Tide of Industrial Blockchain: Huobi's Practice on Blockchain Application**

#### **Abstract:**

Huobi University, as a progressive institution, focuses on education and research in the frontier areas of the digital economy, including new applications of blockchain technology, new systems of digital finance and new distributed-business models. Its fundamental mission is to train top entrepreneurs in the fields of blockchain and the digital economy, and consequently, more than 1,000 trainees have graduated from Huobi University. Courses are offered in more than ten cities worldwide, including Beijing, Shanghai, Hangzhou, Shenzhen, Haikou, Silicon Valley, Tokyo and Seoul. Moreover, the institution enjoys strategic partnerships with the University of Gibraltar and other schools that emphasize the power of global outreach. Thus, Huobi is amply deserving of the "Leading Education Brand of Technology" award it received from Tencent Education.

#### **Speaker:**

##### **Yu Jianing (George)**

Dr. Yu serves concurrently as the president of Huobi University, deputy director of the Blockchain Committee of the China Communications Industry Association, Member of the China Computer Federation's Blockchain Committee and special expert of the Blockchain Pilot Zone within the Hainan Pilot Free-Trade Port.

The respected economist Yu Jianing (George), Ph.D. in economics. He has achieved renowned for his study in the realm of the digital economy and blockchain industry. Dr. Yu served as the director of the Institute of Industrial Economics at the Information Center of Ministry of Industry and Information Technology, where he was instrumental in the drafting and study of wide-ranging policies, having devoted many years to policy research.

Dr. Yu is recognized throughout the realm of IT as a top blockchain expert. In addition to winning the Global Blockchain Leader award, he's been included among the "Top Ten Blockchain Figures in China" and was named the "Blockchain Industry Leader in China" for 2019. He has been invited to teach blockchain courses at some of the world's most prestigious schools, including Peking University, Tsinghua University, University of Hong Kong and China Europe International Business School. He has also lent his expertise as a participant in the blockchain programs of CCTV and BTV. His views have been widely reported by CCTV (Focus Report and Economic News), Xinhua News Agency, Economic Daily, Economic Information Daily, China National Radio, People's Daily Online, CNR News, Coindesk and other global media venues.



**Day 8 (17 July) Friday**

**Inclusive Climate Change Mitigation**

- **Hands-on: Transactive IoT in the HyperMesh Infrastructure; Mesh Mining Deep Dive**

**Learning Objectives:**

1. Describe the impact of climate change on the underserved
2. Explain the idea behind green blockchain solutions and their importance
3. Appraise solutions for greenhouse-gas drawdown and how the solutions can benefit from IoT-enabled MeshBox and green blockchain solutions
4. Experiment with transaction IoT in the HyperMesh Infrastructure
5. Explain edge-computing

| <b>Time</b>          | <b>Agenda</b>   |
|----------------------|---|
| <b>09:00 – 09:30</b> | <b>SUSS Invited Speakers (TBD)</b>  |
| <b>09:30 – 10:15</b> | WS-8 Lecture: Inclusive Climate Change Mitigation <ul style="list-style-type: none"> <li>- Group Presentations (TBD based on time constraint)</li> <li>- <b>MESH Mining Deep Dive Lecture</b></li> <li>- <b>[IM08a] MESH Mining Deep Dive Lab</b></li> <li>- Cyber-Physical Systems and Transactive IoT</li> <li>- Transactive Energy</li> <li>- Climate Change Disaster Mitigation</li> <li>- Transactive IoT</li> </ul> |
| <b>10:15 – 10:30</b> | <b>Break</b>  |
| <b>10:30 – 11:30</b> | <b>Invited Talk</b><br>Software-Defined IoT : Massively Scaling the Last-Mile -- by Andy Wang   |
| <b>11:30 – 12:00</b> | WS-8 Lecture (Continued)  |
| <b>12:00 – 12:30</b> | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>  |
| <b>12:30 – 13:30</b> | <b>Lunch</b>  |
| <b>13:30 – 15:15</b> | WS-8 Demo: Transactive IoT in the HyperMesh Infrastructure <ul style="list-style-type: none"> <li>- [IM08b] GTI Website Login and Exploration of IoT Sensors</li> <li>- If allowed, go over MeshBox configuration Labs</li> </ul> WS-8 Lab: Students’ Hands-On (TBD)  |
| <b>15:15 – 15:30</b> | <b>Break</b>  |
| <b>15:30 – 16:30</b> | <b>Invited Talk: Alita Network</b><br>Combining Mesh Networks and Edge Computation for Federated Data Processing – by Hongyu LUO  |
| <b>16:30 – 17:00</b> | <b>[BC-Track] Blockchain Challenge and Q&amp;A</b>  |

## **Invited Talk: Beijing GTI IoT Technologies**

### **Software-Defined IoT: Massively Scaling the Last-Mile**

**Abstract:**

By 2025, there will be 150-Billion IoT devices streaming data to the cloud. The majority of these are low-power embedded devices with only kilobytes of memory. This presents major challenges to massively scaling these devices. In this talk, we will describe how software-defined architecture is solving this problem and enabling new capabilities such as low-power AI. This is manifested in integrating GTI's low-power IoT products with MeshBox to enable pervasive sensing and remote monitoring at the edge.

**Speaker:**

**Andy Wang**

Andy Wang received his B.S. degree in Electrical Engineering from the University of Maryland College Park in 1998, and his M.S. and Ph.D. degrees in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology in 2000 and 2005, respectively. He joined Analog Devices as an IC design engineer in 2005, working on high-speed communication chipsets for video and networking applications. He co-founded GTI IoT Technology Co, LTD in 2011 and serves as its CTO, working on next-generation low-power IoT solutions.

## **Invited Talk: Alita Network**

### **Combining Mesh Networks and Edge Computation for Federated Data Processing**

**Abstract:**

Alita Network is the federated computing network with privacy-preserving MapReduce data processing framework which supporting Android and openwrt on smart devices. Mobile phones with alita-app installed can work as computing nodes, processing private data without passing them to the cloud. Alita Network interoperates with the Aggregation Server deployed in MeshBox to form a federated computing network with privacy-preserving features.

**Speaker:**

**LUO Hongyu**

**Founder of Alita Network**

More than ten years of experience in distributed computing and big data. Former Alibaba cloud senior expert; seven years of Alibaba Cloud job experience; was responsible for the Alibaba Cloud data computing platform; responsible for product development and commercialization of the 11.11 massive data parallel processing platform, supporting thousands of enterprises for cloud and bigdata driven transformation.