



# Cleantech Forum **Asia**

**Singapore** | November 13-14, 2018



Cleantech Forum **Asia** | Singapore

Jules Besnainou

Director, Cleantech Group



Cleantech Forum **Asia** | Singapore

# Digital Technologies: Their Potential Influence on Next Generation Energy



## Plan for the afternoon

### 1. **Cutting-edge digital tech: how are large energy players adapting?**

- Matthew Friedman, CDO, Sembcorp Industries
- Sau Sheong Chang, MD, SP Digital

### 2. **AI in energy: from prediction to action?**

- Three companies: Evercomm, Equota, Canvass Analytics
- Three reviewers: Idinvest, Sembcorp, SP Digital

### 3. **Blockchain in energy: getting to scale?**

- Three companies: Electrify.asia, Positive Energy, Enosi
- Two reviewers: Sembcorp, SP Digital



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Cutting-edge digital tech: how are  
large energy players adapting?



## How are large energy players adapting?



**Sau Sheong Chang**

MD, SP Digital



**Matthew Friedman**

Chief Digital Officer, Sembcorp Industries

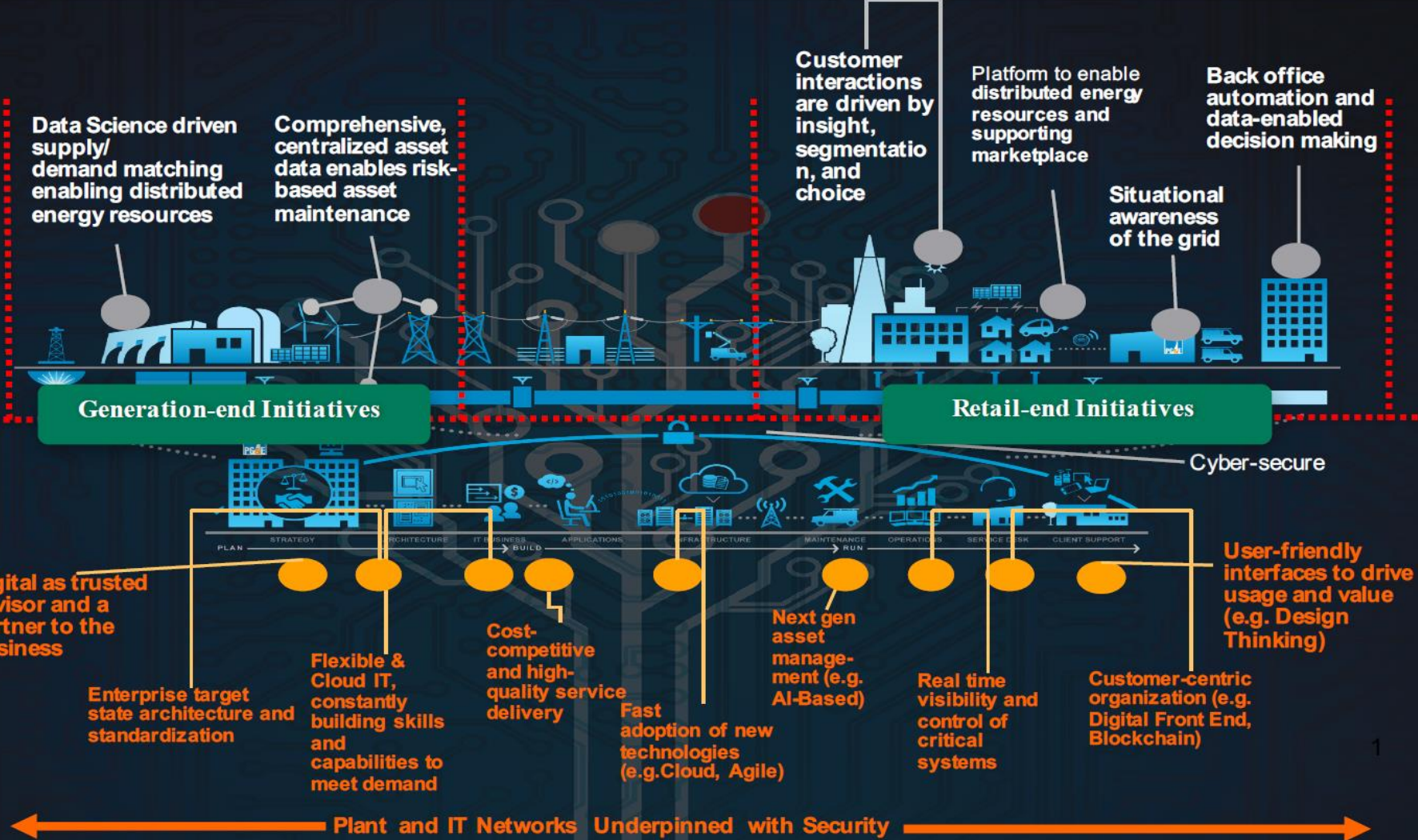


Moderator:

**Jules Besnainou**

Director, Cleantech Group







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# AI in energy: from prediction to action?





## AI in energy: from prediction to action?

### Project development/ Customer acquisition

- Marketing and sales of DER
- Meteorological models for optimized asset location
- Optimized design and engineering



### Generation

- Predictive maintenance of generation assets
- Performance improvement
- Intermittency forecasts
- Security of generation assets



### Transmission & Distribution

- Grid optimization
- Microgrids and VPP management
- Storage-based flexibility
- Predicting demand
- Distribution Automation and Control (DMS)



### Consumption/ Retail Energy

- Optimized building management
- Smart home
- Consumption Disaggregation
- Transactive Energy





## AI in energy: from prediction to action?



**Velan TS**

Director - Energy Partnerships, EverComm



**Julien Mialaret**

Operating Partner, Idinvest Partners



**Humera Malik**

CEO, Canvass Analytics



**Sau Sheong Chang**

MD, SP Digital



**Ethan (Yanchao) Xia**

Product Director, EQuota Energy Technology



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An aerial photograph of a city skyline at dusk, featuring numerous skyscrapers with illuminated windows. A semi-transparent teal rectangular overlay covers the middle portion of the image, serving as a background for the text.

# *EQUOTA*

*REVAMP ENERGY WITH AI + BIG DATA*

Ethan Xia   Partner | Product

[yanchao.xia@equotaenergy.com](mailto:yanchao.xia@equotaenergy.com)



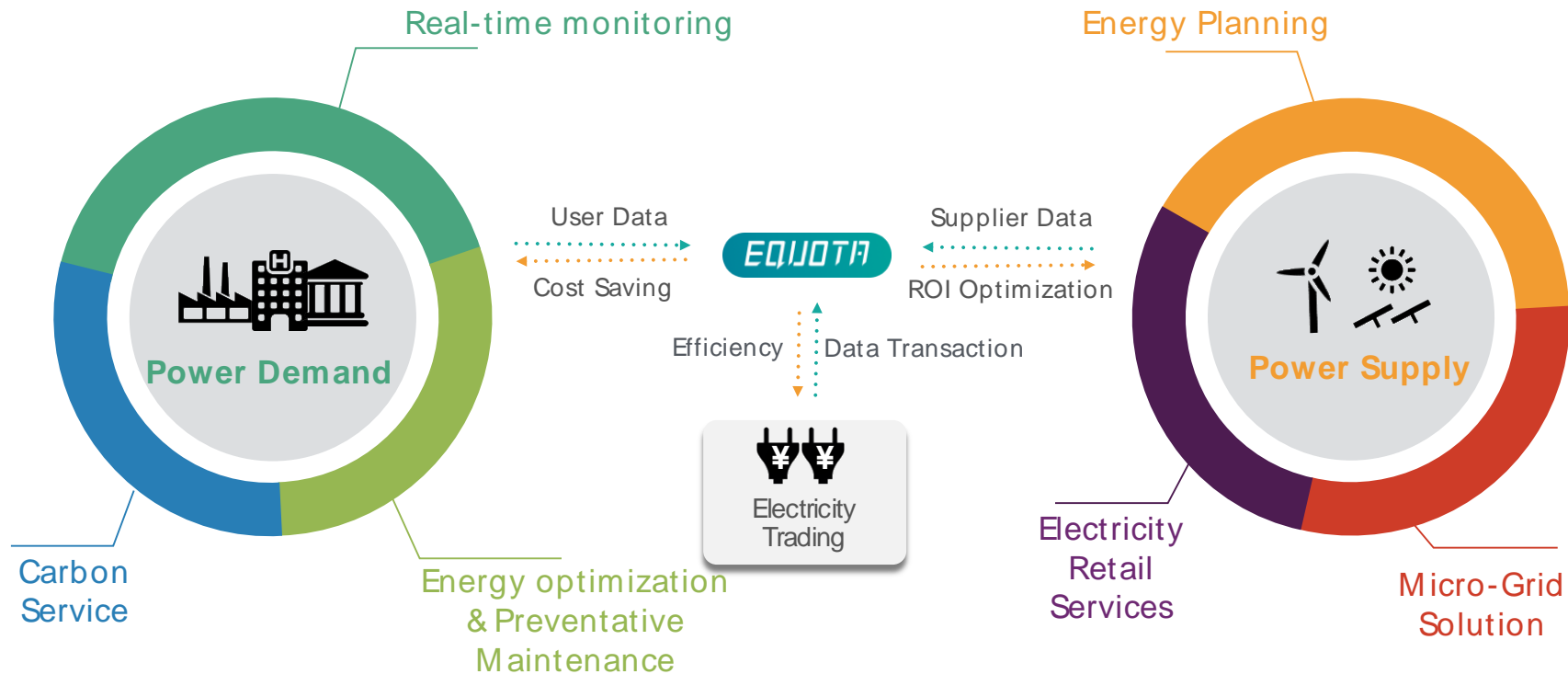
# About EQuota

EQUOTA



- Integrated Energy SAAS
- AI and Big Data Analytics
- International Patent
- MIT Founding Team

- Start up world cup 2018: Champaign China
- 2018 new energy leader: Asian clean energy forum
- Member of Microsoft Accelerator
- Member of Tencent Accelerator



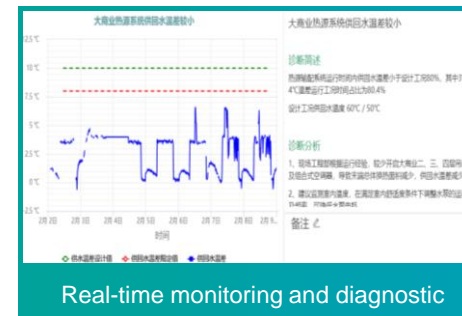
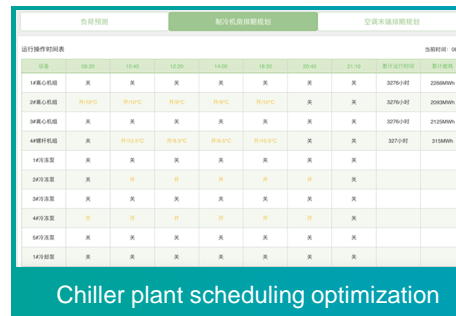
# Case study – Wanda Plaza

Wanda group: A Fortune Global 500 company focusing on commercial real estate, with 270 plazas in China

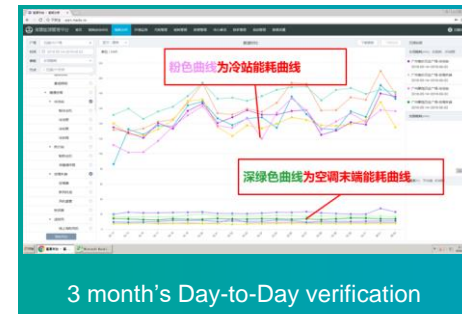
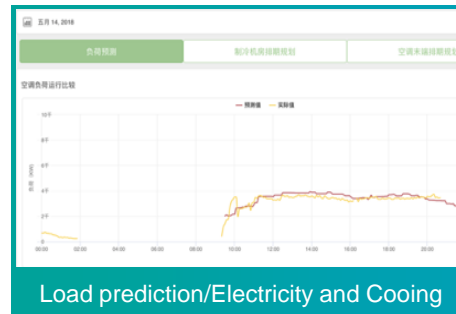
## Project summary

- 191,500 sqm comprised of shopping malls, hotels and entertainments.
- EQUOTA scope of service: 50,963 sqm (Shopping mall)
- Location: Guangzhou, China
- Annual energy consumption: ~860,000 USD
- Energy cost on cooling: ~450,000 USD

## Energy efficiency and equipment diagnostic



Estimated Energy cost saving:  
65,000 USD/Year



- Other references include IHG, HYATT, New World, etc.

## Case study – China Power Micro-grid project

SPIC: A Fortune Global 500 company, one of China's biggest power generation company (423 billion kWh last year)

### Project summary

- High-technology park consisting multiple power generation facilities. (PV, Wind power, Combined Cooling Heating and Power)
- EQuota scope of service: Energy real-time monitoring, load prediction and energy optimization through various approaches
- Location: Beijing, China



- Other references include DEWA, EDP, etc.

### Energy efficiency and equipment diagnostic





# EQuota Future Development

*EQUOTA*



1. **Build strategic partnership globally**
2. **Expand sales channels**
3. **Seeking Series A investors**



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Director - Energy Partnerships, EverComm



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Product Director, EQuota Energy Technology



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Director, Cleantech Group

# AI driven Asset Performance Management

## *Digital Technologies: Next gen energy*



Prepared for  
*Cleantech Asia Forum (13<sup>th</sup> -14<sup>th</sup> Nov 2018)*

# About EverComm

Helping organization(s) and/or government(s) to **Identify, Achieve and Scale Operational Best Practices** effectively through optimizing available technologies.

## History:

- Founded in Aug 2013, HQ in Singapore
- Target Industry: SMART Campus, Manufacturing, Data Centre
- Research-focused Energy IoT (Internet-of-Things)
- Product accredited by IMDA of Singapore
- Founding member of Singapore Complex Equipment Consortium

## Innovation Experience:

- **Govt Innovation GRANTS won:**
  - TECS by Enterprise Singapore.
  - GREEN DC Innovation Grant by IMDA.
  - SIIRD grant by EDB and Israel Innovation Authority.
  - Hotel Innovation Challenge by STB.

*DPM of Singapore, Mr. Teo Chee Hean  
Visited Our Office at NTU*



*COS 2018 Debate, Mr S Iswaran,*



*SSIA Complex Equipment  
Consortium, SMS Koh*



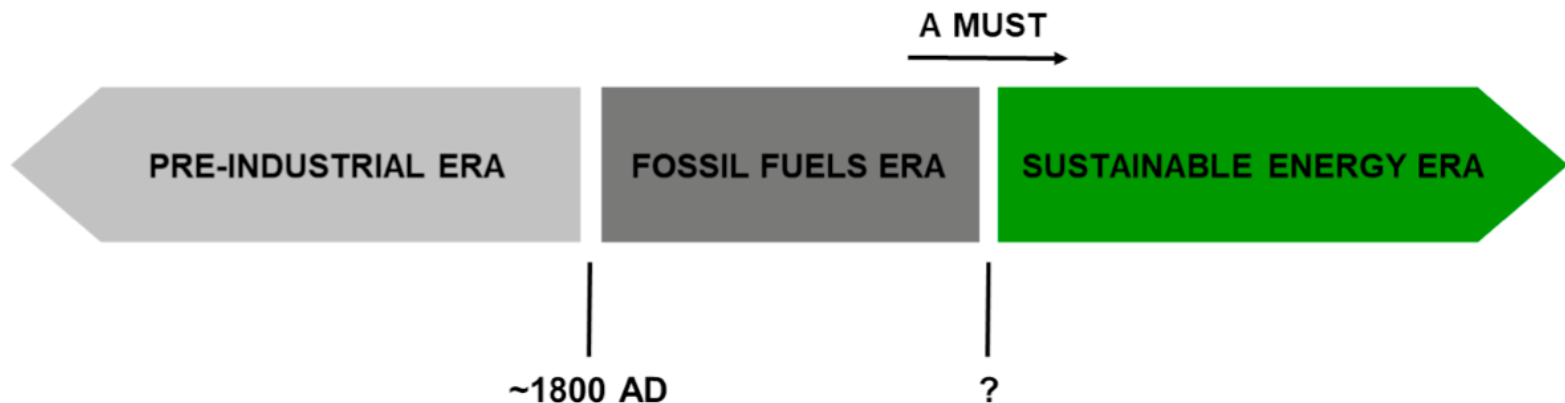
*Representing Singapore for ASEAN+3  
Young Entrepreneurs Forum*





# Our Mission

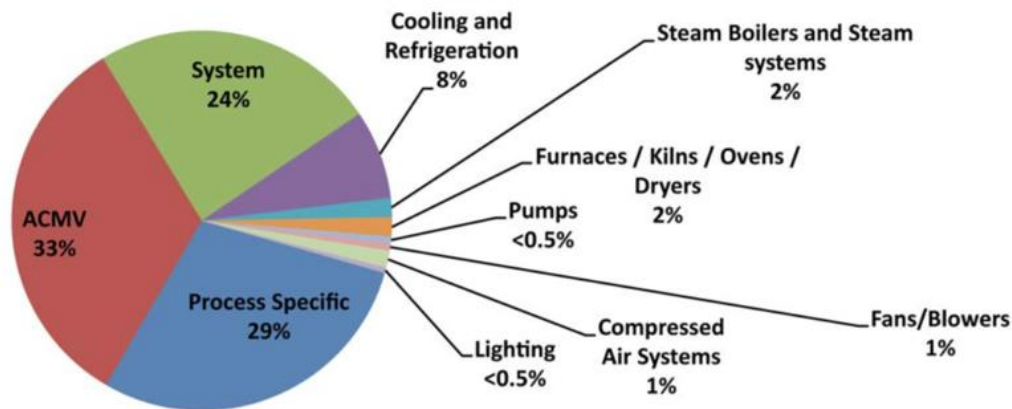
Helping organizations/govt to identify, achieve and scale energy efficiency best practices effectively through optimizing available technologies.



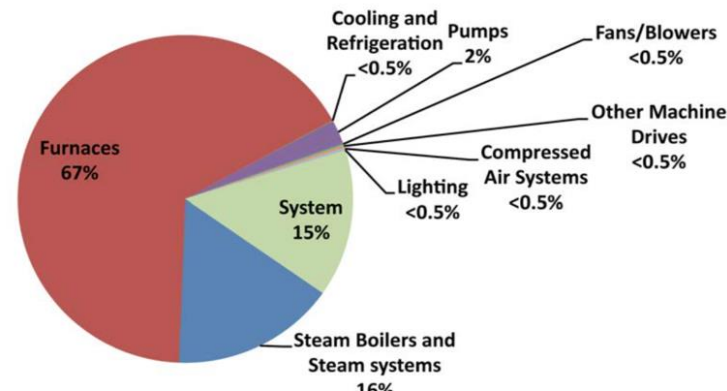
**How can we help government and enterprises through this transition?**

# Challenge: Energy usage profile

## Manufacturing: Semiconductor

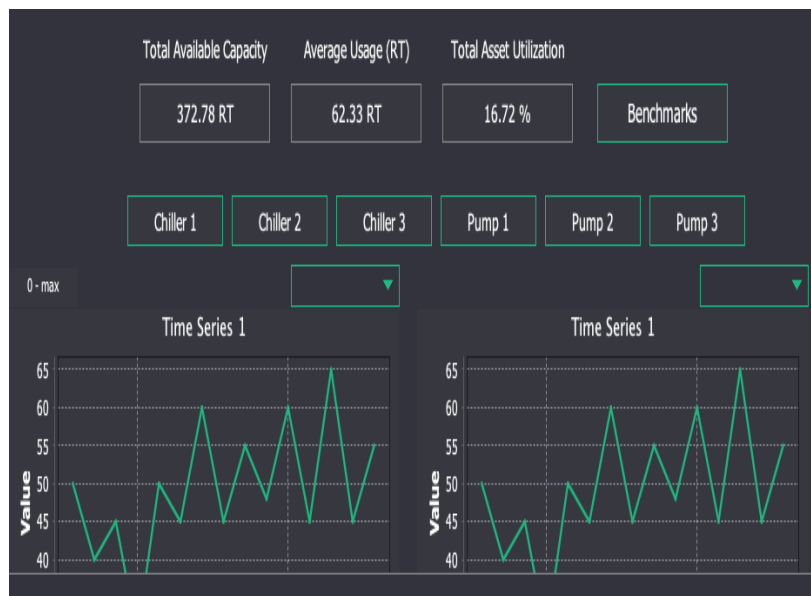


## Manufacturing: Oil & Gas

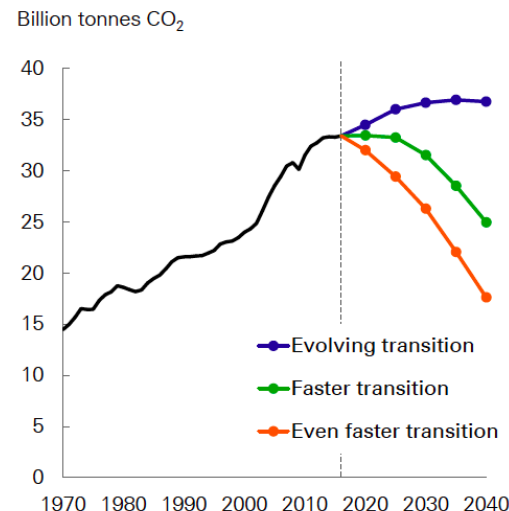


*Energy usage profile is complex for human to “measure & analyse”*

# Accelerate Fuel Switching



Carbon emissions



Source: 2018 BP Energy Outlook

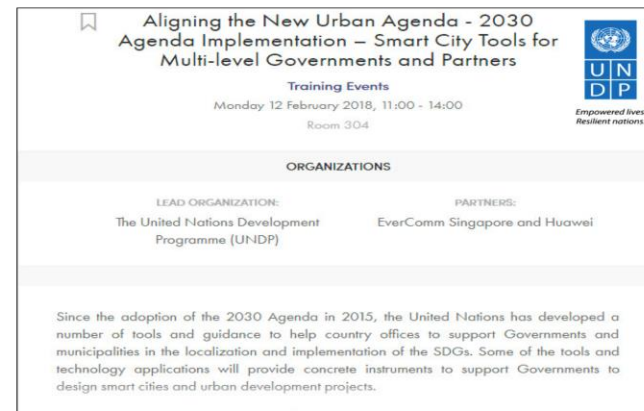
**AI driven energy profiling *accelerates* the Renewable energy switching**



# Case Study: Smart City Tools (Align ICT with SDGs)

Using Machine Learning to Simplify Operation & Streamline Knowledge Creation (Deployed for Singapore Govt Agency and Ministry)

Showcased New Smart City Tools In Collaboration with UNDP HQ at World Urban Forum (WUF9)



Thermal Mgmt

Operations Mgmt

Energy Mgmt

IT Mgmt

Equipment Mgmt

Sustainable Development Goals (SDGs):

- 17 Goals, 169 Targets, 232 Indicators

R&D Operation in:



With Customer in:



# **EVERCOMM UNI-TECH SINGAPORE PTE LTD**

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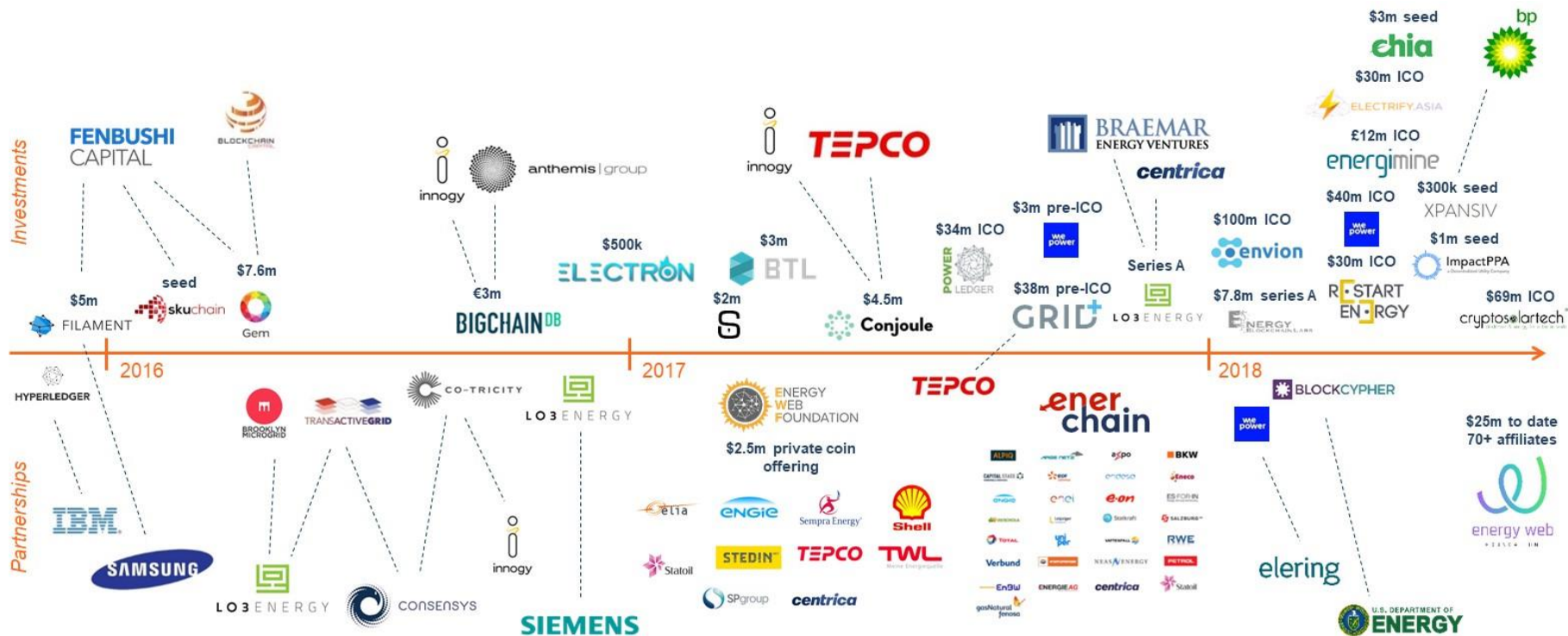
Director, Cleantech Group



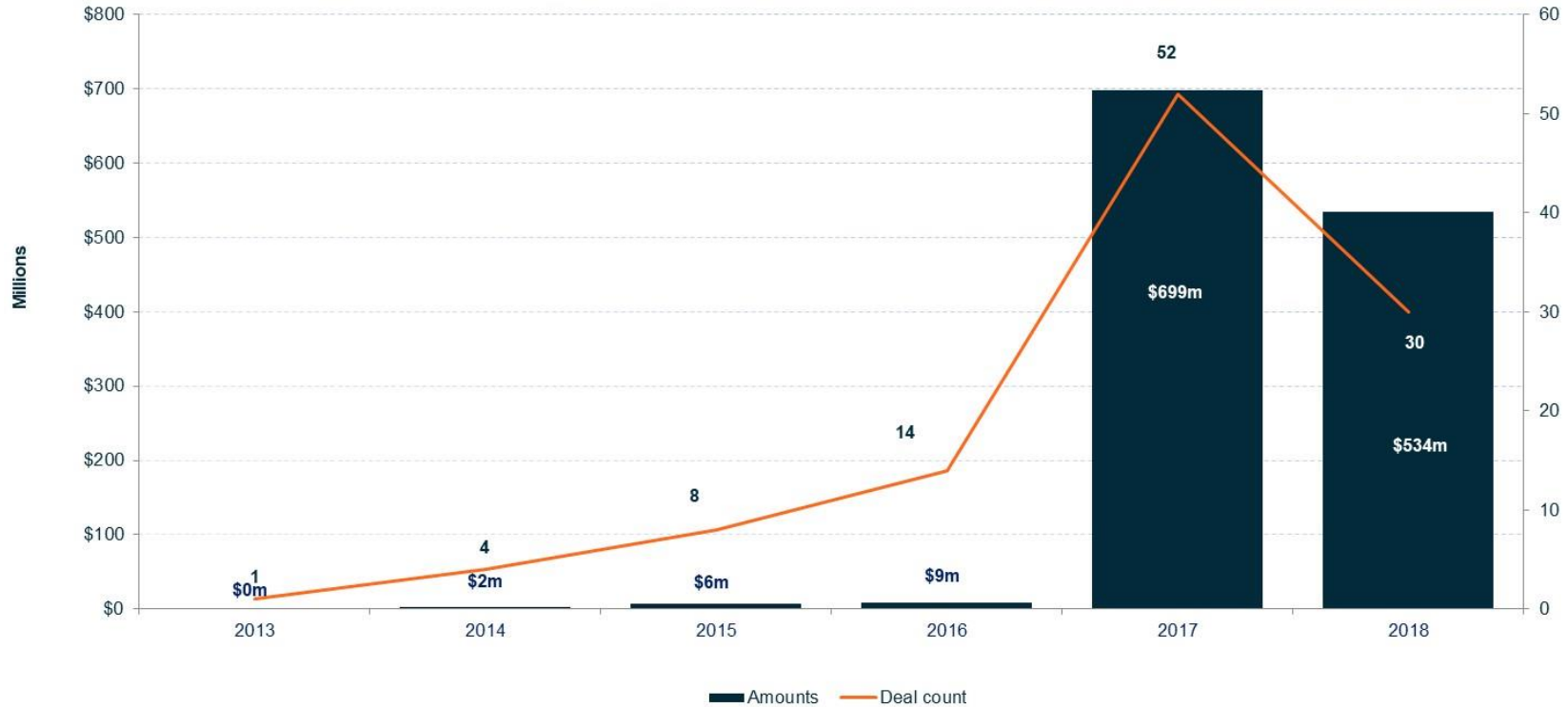
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# Blockchain in energy: getting to scale?

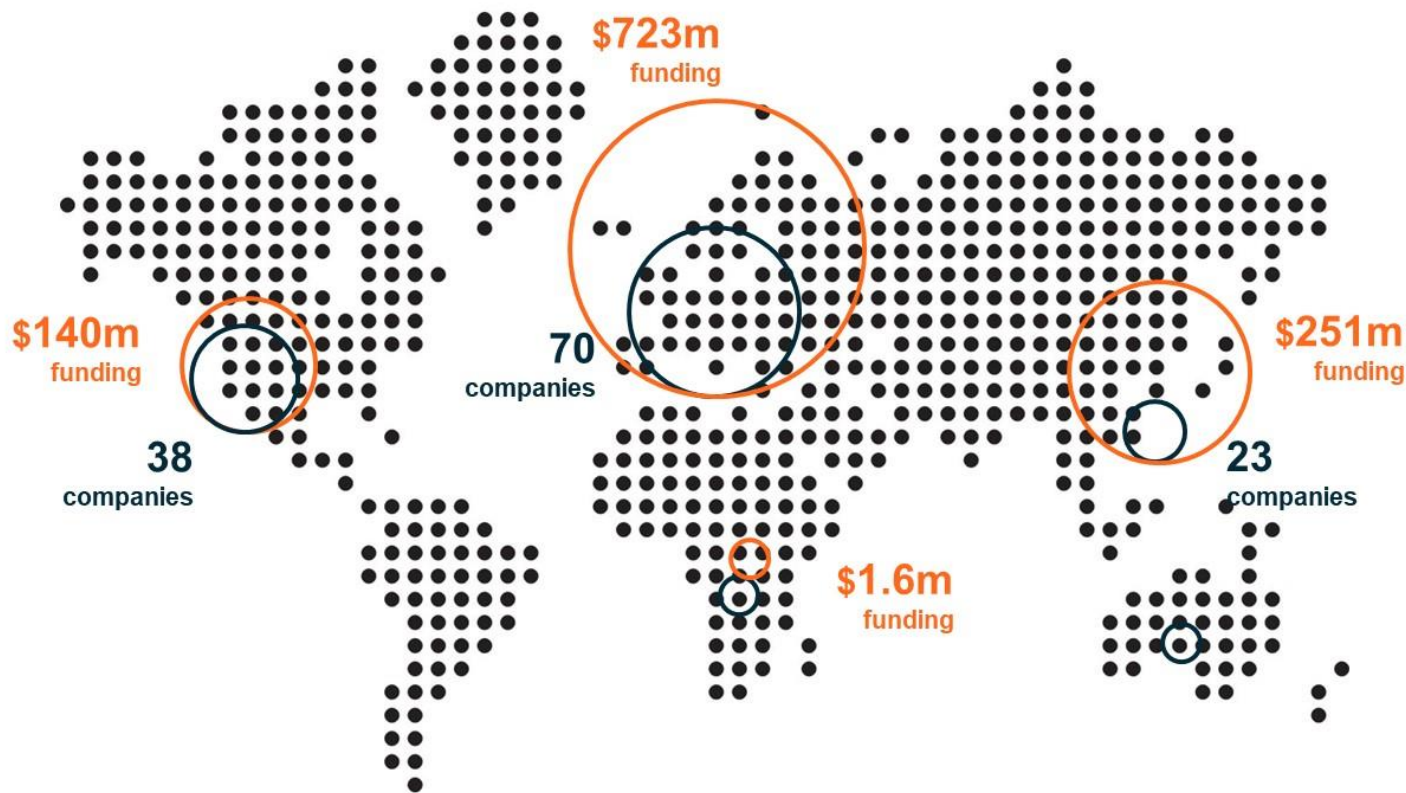
# Blockchain in energy: getting to scale?



# Blockchain in energy: \$1.3b raised



# Blockchain in energy: Asia Pacific on the rise







## Blockchain in energy: getting to scale?



**Nicolas Payen**

CEO & Co-Founder, Positive Energy



**Martin Lim**

COO, Electrify.asia



**Paul Fox**

Strategic Advisor, Enosi Foundation

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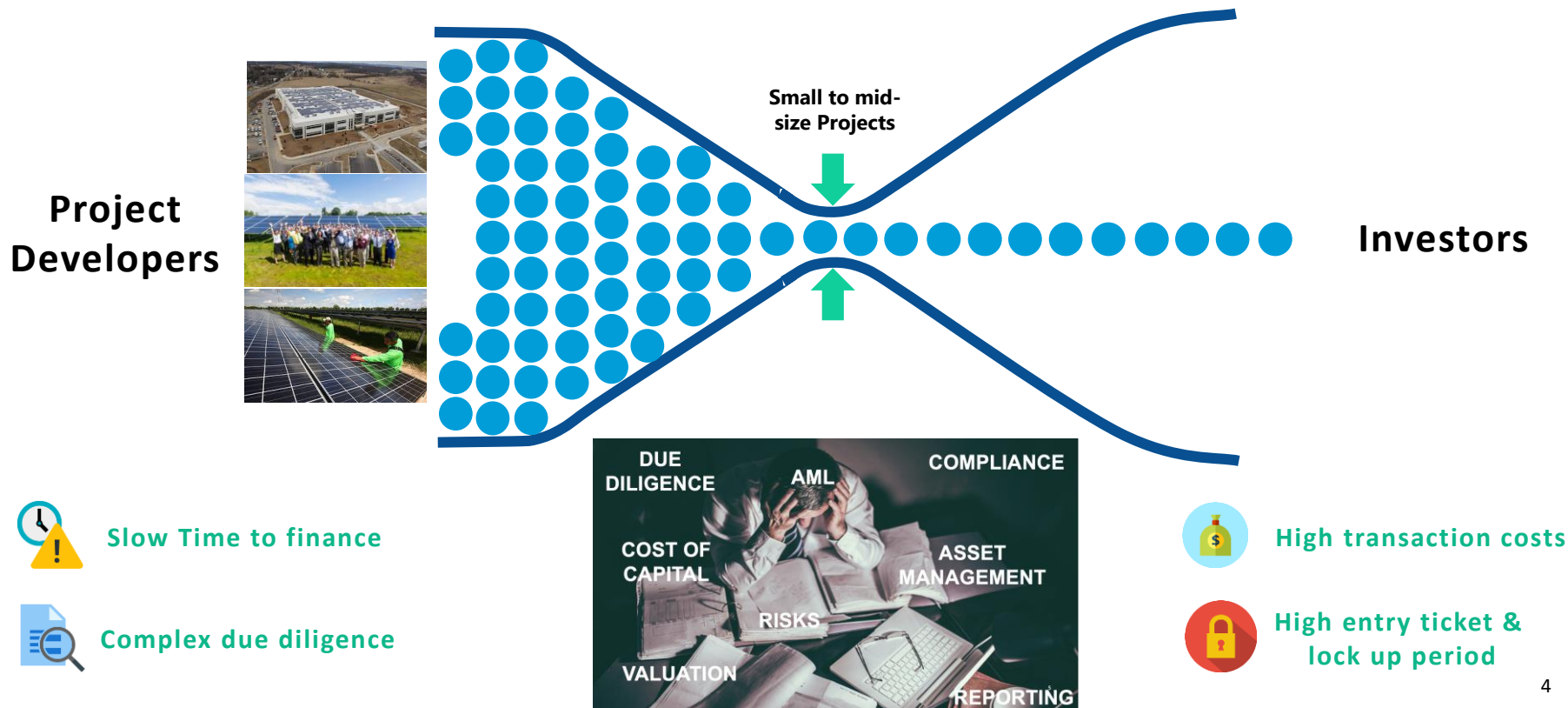
**Jules Besnainou**

Director, Cleantech Group



CleanTech Forum Asia  
November, 2018

# Current funding system has created a bottleneck for Distributed Generation

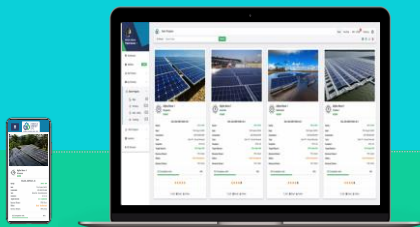




# Our Digital platform

## DEAL DISCOVERY TOOL

Match-making  
Community of investors



## DUE DILIGENCE COLLABORATION TOOL

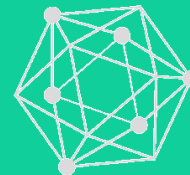
Standardized Due Diligence  
Virtual Data Room  
Financial model

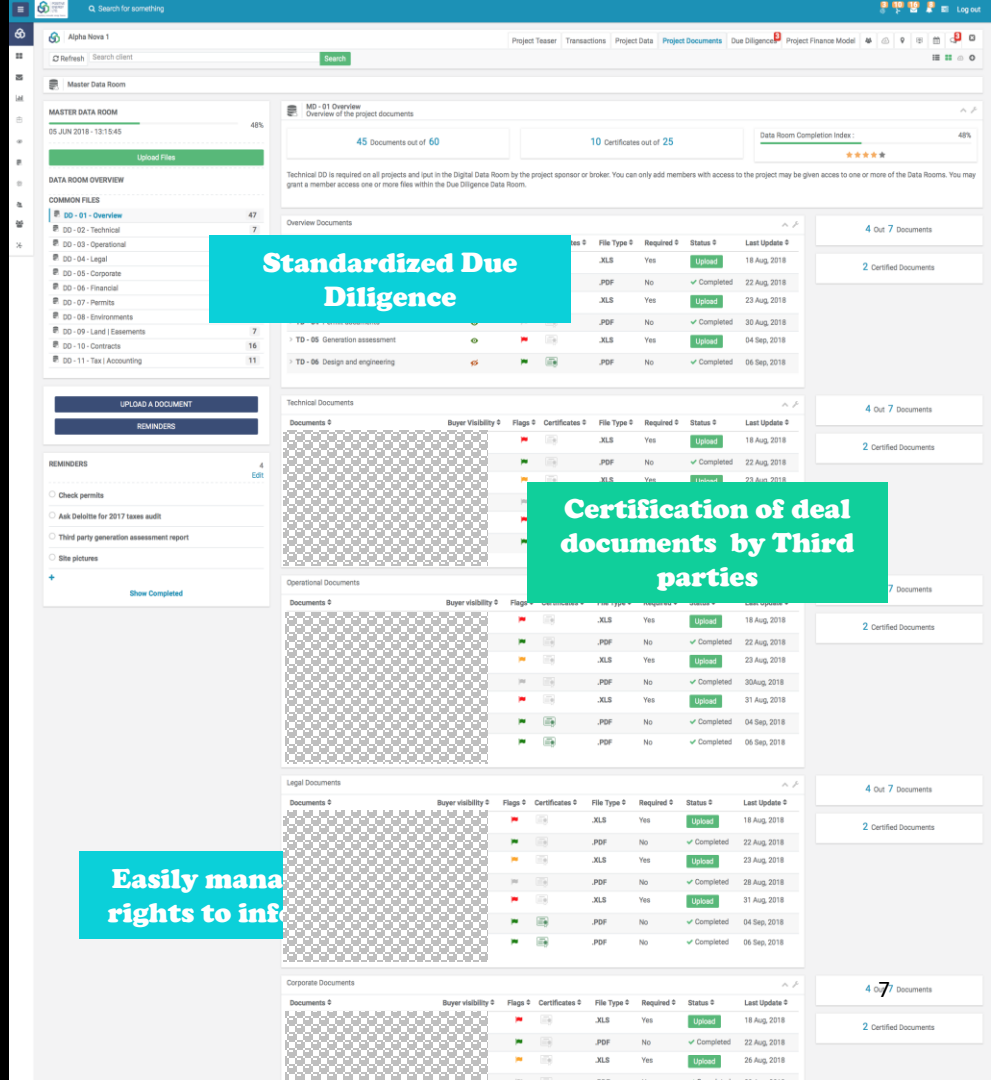
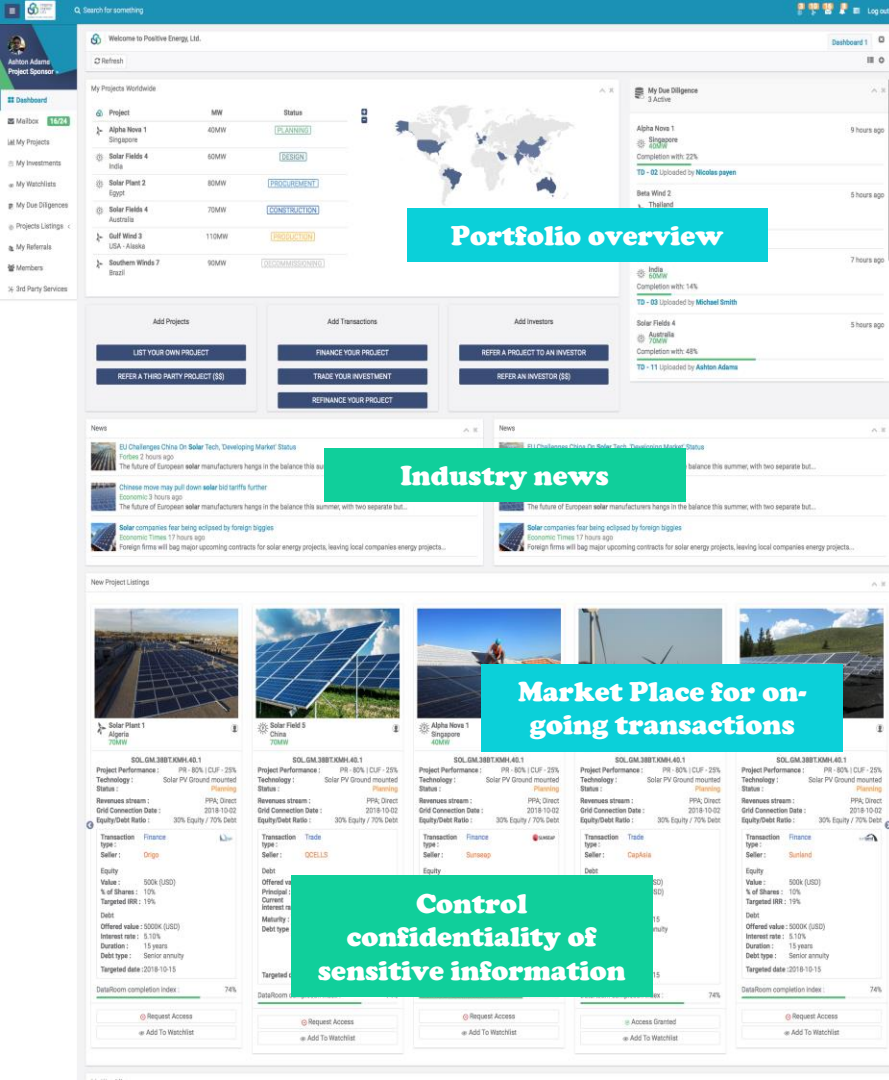
## 360° ASSET MANAGEMENT TOOL

One repository for Technical, Operation,  
Legal, Financial & Taxes documents  
Asset monitoring

## TRUSTED INVESTMENT PROCESS

KYC / AML  
Traceability and Audit trail  
Blockchain enabled  
Third parties audit companies management





# Market & Traction.

Target List  
2500+

In contact

Under NDA

LOI



100MW

Looking for investments  
Including 2 platforms  
more than 100 C&I assets

Revenues model based  
on success fees  
accepted



2021 Asia market for  
Small to Mid-size  
projects



Nbr. of small cap  
Renewable Energy  
projects in Asia in 2021



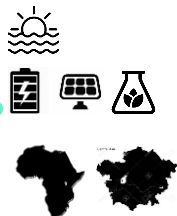
Leading platform  
for sustainable  
infrastructure financing and  
trading

**RAISING OUR  
SEED ROUND  
NOW!**



Market place  
Due Diligence

Remote Monitoring



**500 assets listed  
Equivalent to 1,4GW**

Digital cash flow mgmt.



AI for asset valuation  
AI for O&M  
optimization  
Asset tokenization

Trading platform  
Solar and Wind index  
Added value services  
based on asset data

**POSITIVE ENERGY  
CAPITAL  
Open-ended fund**

Our vision

2021

2023



# Simplifying investments in renewable energy drives **environmental, social and community** benefits

## **Accelerate deployment of renewable energy**

*Reducing CO<sub>2</sub> emissions and enabling access to electricity*



## **Distributing Investments**

*Smaller, local investors can participate in renewable projects*



## **Democratising Industry**

*Access to financing enables local SME or national champion to compete*





POSITIVE  
ENERGY  
LTD.

simplifying renewable energy finance



THANK YOU

GET IN TOUCH WITH US

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## Blockchain in energy: getting to scale?



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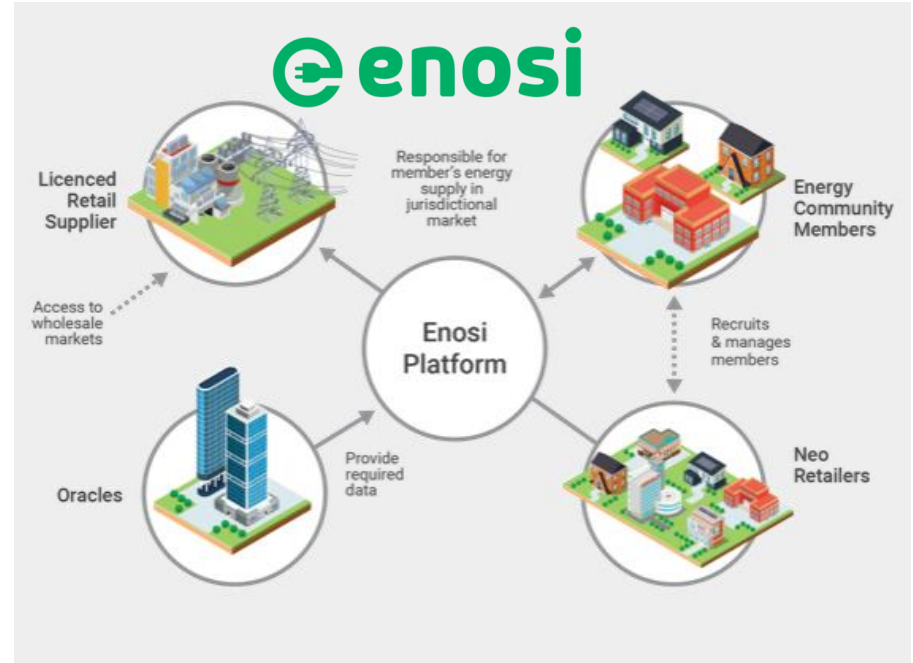
# e enosi Genesis and Community



[paul.fox@tech2mkt.com](mailto:paul.fox@tech2mkt.com)

# Anyone can become an energy retailer

- Drivers of retail oligopoly:
  - Economies of scale
  - Wholesale market risk.
- Neo-retailers band together:
  - Aggregate buying power
  - Mutualise risk.
- Retailer lends license to cooperative.
- Staked tokens ensure buffer and good behaviour.



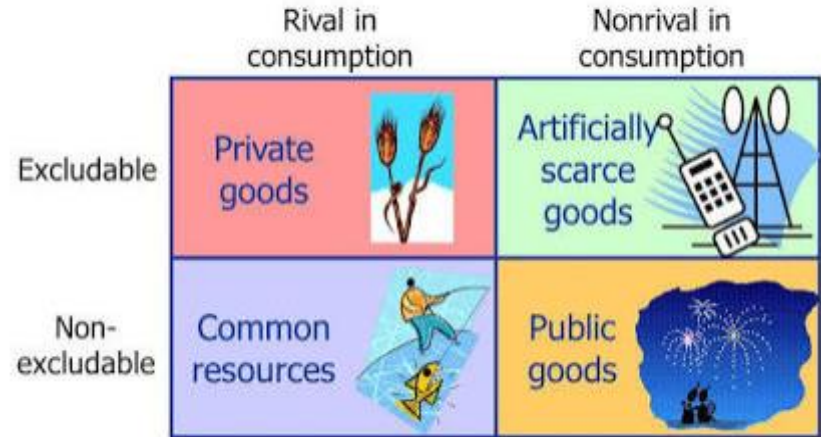
# Myths and possible realities

Myth	Reality (?)
Tokenised energy	kWh = kWh, kW = kW
Fast, efficient, private, real time transactions on chain	M2M on Level 2 plus settlement.
Consumer energy wallet	New intermediaries (neo-retailers) manage service and keys
Consumer peer-to-peer trading	Peer-to-pool, i.e. communities and for-profits.
Gigawatts of crowdfunded solar	Tokenised small scale solar, e.g. community, village. Big stuff still debt funded.
Blockchain microgrids	Blockchain virtual microgrids
Voluntary energy provenance	Regulated carbon tracking
Incumbents best route to adopt blockchain	Regs for more competitive markets (after demonstration). Neo-retailers, neo-traders, neo-regulators (curators). New markets for public goods, like voltage, flexibility, capacity.



# Next: the “big 4” market failures

- Concentration of Market Power, e.g. “Big 3” or “Big 4”.
- Failure to provide public goods e.g. system reliability.
- Externalities from exploitation of commons, e.g. air, water, climate by incumbents.
- Asymmetry of information, i.e. usage and price data





## Blockchain in energy: getting to scale?



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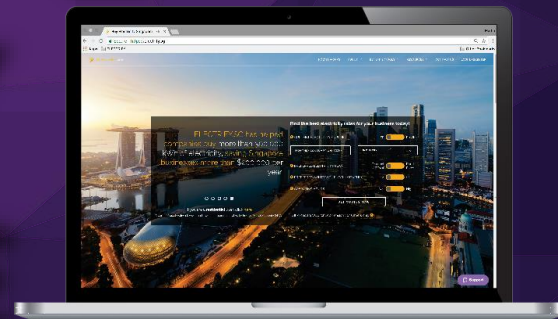
ELECTRIFY.ASIA

BE THE POWER

# SOUTHEAST ASIA'S FIRST ELECTRICITY MARKETPLACE



ELECTRIFY.ASIA

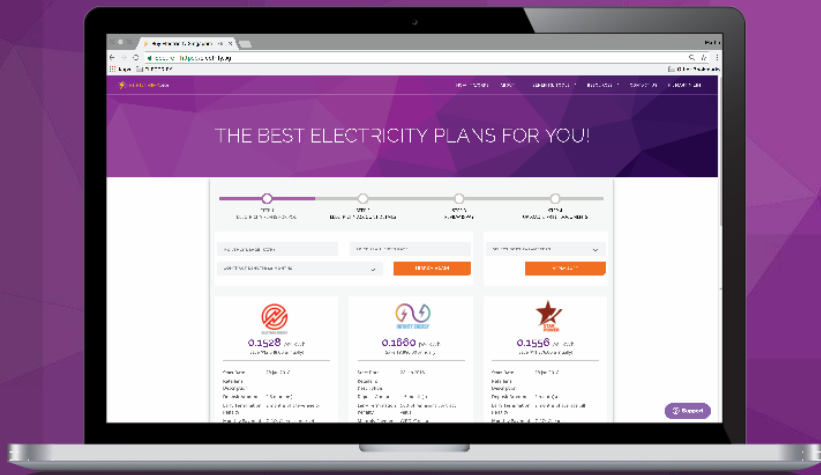




# PLATFORM AND FUNCTIONS

## MARKETPLACE

Retail electricity marketplace



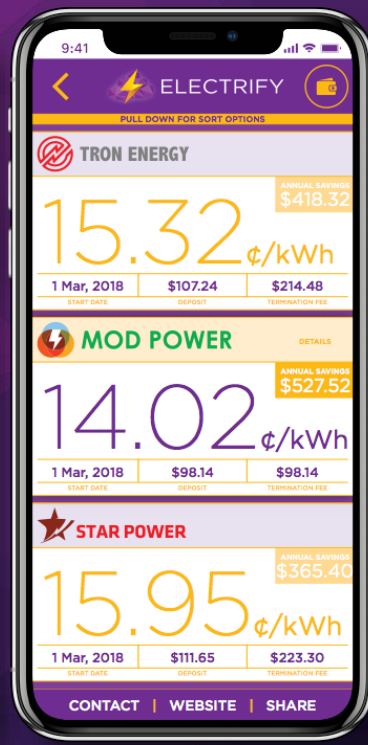
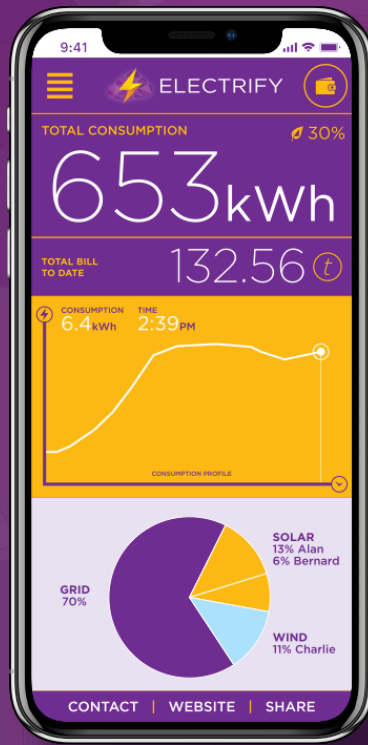
## SYNERGY

P2P and VPP platform for main-grid applications





# SYNERGY USER INTERFACE







# POWERPOD IOT GATEWAY

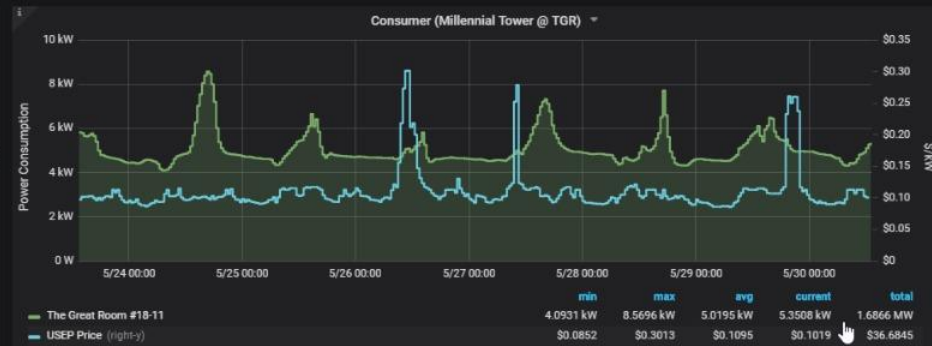
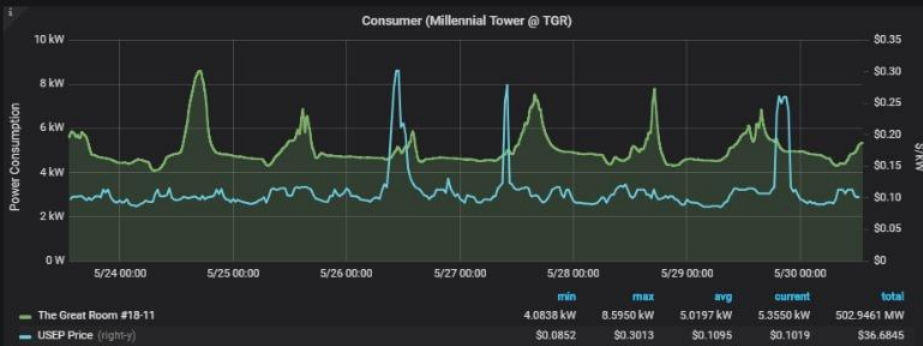
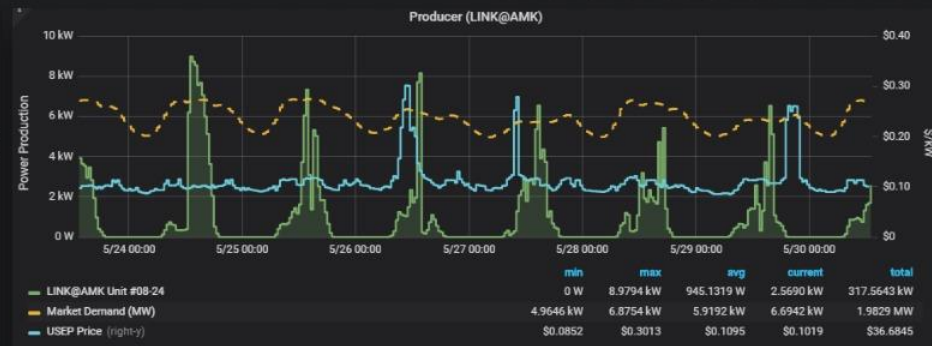
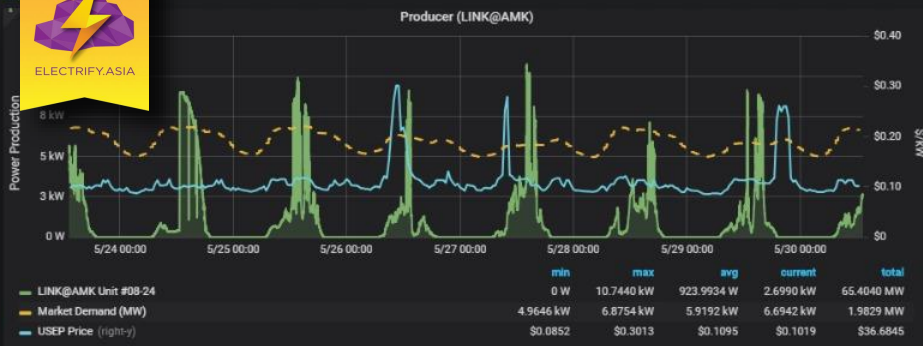


SOUTHEAST ASIA'S FIRST RETAIL ELECTRICITY MARKETPLACE



# Synergy Dashboard -

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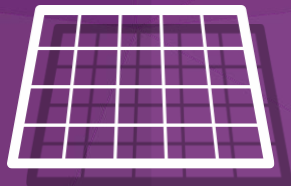




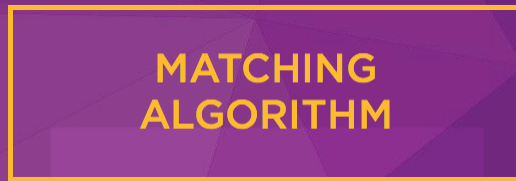
# P2P MATCHING ENGINE

## MATCHING ALGORITHM FOR SYNERGY

SURPLUS POWER  
GENERATED



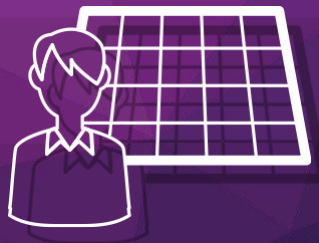
MATCHING  
ALGORITHM



EXCESS IN POWER  
CONSUMPTION



OPTIMUM PAIRING OF  
SUPPLY AND DEMAND





## CURRENT PROJECTS

- Pilot project in Kyushu with **Take Energy** (Solar IPP + Retailer) for Virtual Power Plant use case
  - To use the *Synergy* platform to procure exported solar from rooftop systems to supply to Retail Customers
- Exploring the commercialisation of P2P energy trading in Tokyo, with **TEPCO**
  - Provide innovative service offering to retail customers with different electricity retailers

JAPAN



TakeEnergyCorporation





# SOUTHEAST ASIA



ELECTRIFY



# Narada





ELECTRIFY.ASIA

# THANK YOU

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## Blockchain in energy: getting to scale?



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Thank you