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The IoT Powerhouse

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Sercomm Speaker



Jörg Lehnich

Senior Director Radio Access Business
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+25 years of experience in strategy & business development
of RF networks, devices and solutions

Another module?

Yes!



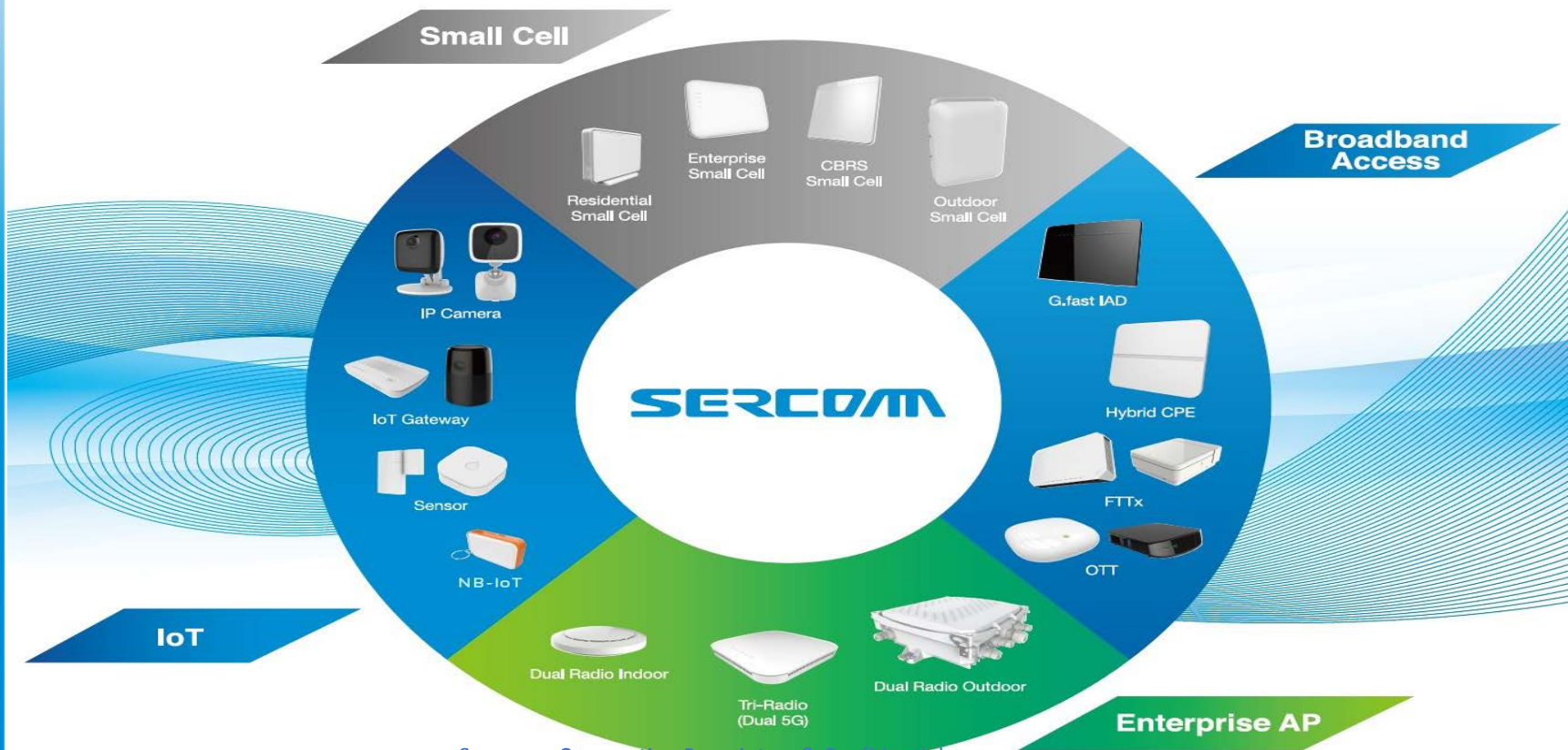
..... and so much more.

Company Profile



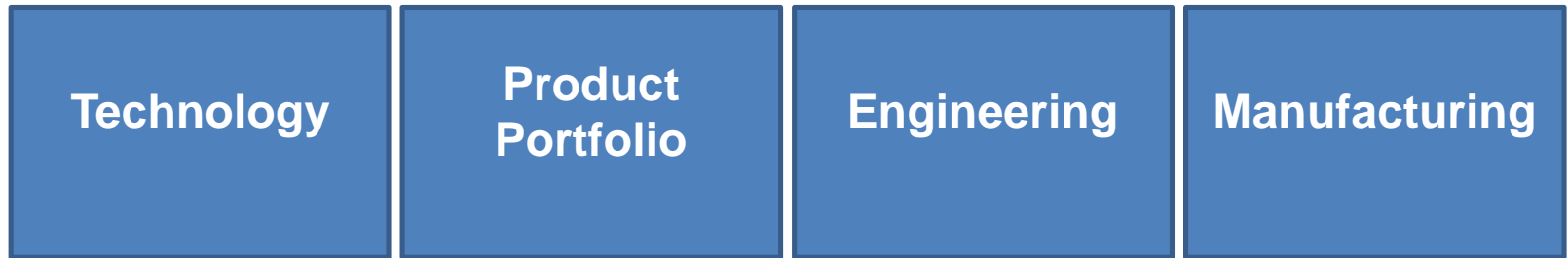
- Established Year 1992
- IPO Year 1999 (TWSE:5388)
- Locations
 - Headquarters Taipei, Taiwan
 - Design Center Taipei & Suzhou (1,200+ Engineers)
 - Manufacturing Suzhou, China
Hsinchu, Taiwan
 - Global Branches California, USA
New Jersey, USA
Tokyo, Japan
Paris, France
Frankfurt, Germany
Milan, Italy
Moscow, Russia
- 2017 Revenue US\$1.295 Billion
- Total Employees 6,000+

Sercomm Broadband Services Convergence



Strategy

Be the Leader to Support the LPWA Device Ecosystem, by leveraging:



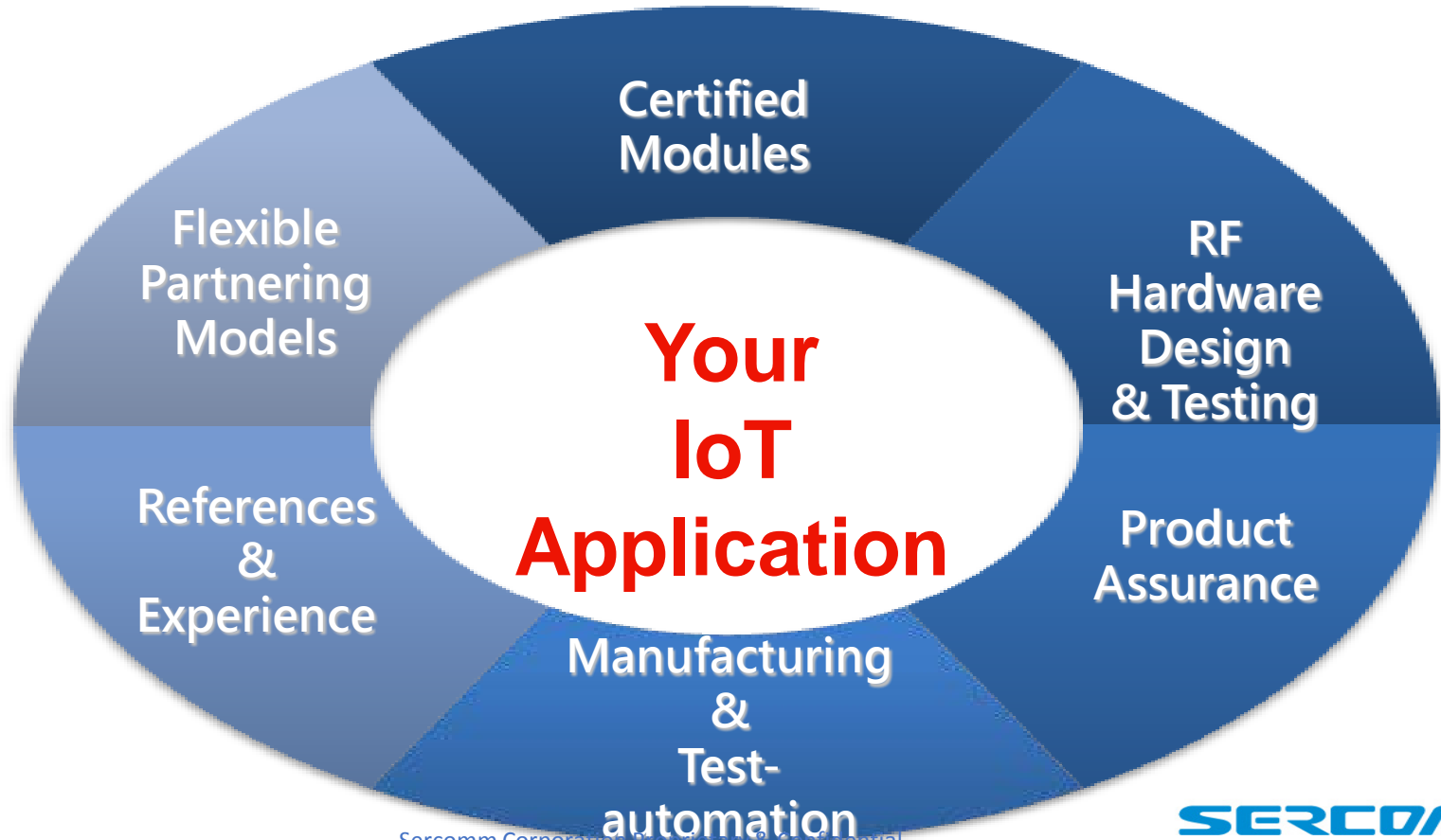
- NB-Iot, LTE-M
- Chipset agnostic
- Small cells
- Smart home

- Modules
- Devices
- Pre-certification testbed

- RF
- Embedded solutions
- Co-located with manufacturing

- Rapid prototyping
- Flexibility
- scalability

Sercomm IoT Value Proposition



Our Base : TPB23 NB-IoT Module

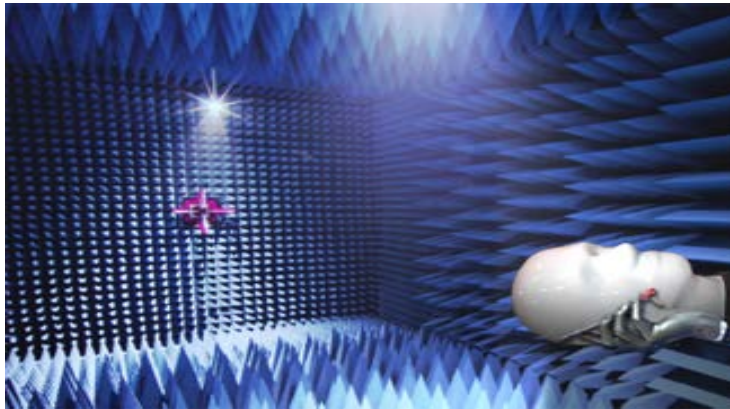
- **Hi-Sillicon/Hi-2115 (Boudica v150)**
- **Dimension:** 19.9x23.6x2.2mm
- **Form Factor:** LCC, 94 pads
- **Band:** B3, B5, B8, B20
- **Interfaces**
 - UART
 - USIM
 - ANT
 - Reset
- **Operating Voltage:** 3.1~4.2V
- **Power Consumption**
 - Tx: 260mA @3.6V, 23dBm
 - Rx: 75mA @3.6V
 - Idle: 6mA@3.6V
 - PSM: 5μA@3.6V



RF design, engineering and test

ETS OTA Antenna Chamber

- Dimensions: 7.32x3.66x3.66m
- 700 MHz – 10 GHz
- gain, efficiency, radiation pattern
- TRP, TIS, NHPRP, NHPIS, EIRP



RF/EMI Fully Anechoic Chamber

- Dimensions: 11.1x6.1x6.4m
- Up to 26.5 GHz
- EN 300 328 and EN 301 893
- FCC CFR 47 part 15, subpart C & E



Sercomm Manufacturing capability

- **Certificates :**
 - ISO 9001, ISO 14001, OHSAS 18001, TL 9000, CMMI3
 - Telco certified by most Tier 1 operators
- **Capacity :**
 - 3.5 Million units per month
- **R&D / manufacturing are co located for max flexibility**
 - Manufacturing: 5,600+ / R&D: 600+

Plant I: 25,160 m²



Plant II-A: 39,088 m²



Plant II-C: 8,000 m²



Plant III: 23,000 m²



Use Case 1 : NB-IoT @Smoke/Flood Detector



The Advantage of The NB-IoT Smoke Detector

1. Connected to cloud for instant monitoring service
2. Direct connection to base station, no extra gateway cost
3. Better penetration and less power consumption than 2G
4. Long battery life

Use Case 2 : NB-IoT @Smart Lock



BLE

① Get key from owner

NB-IoT

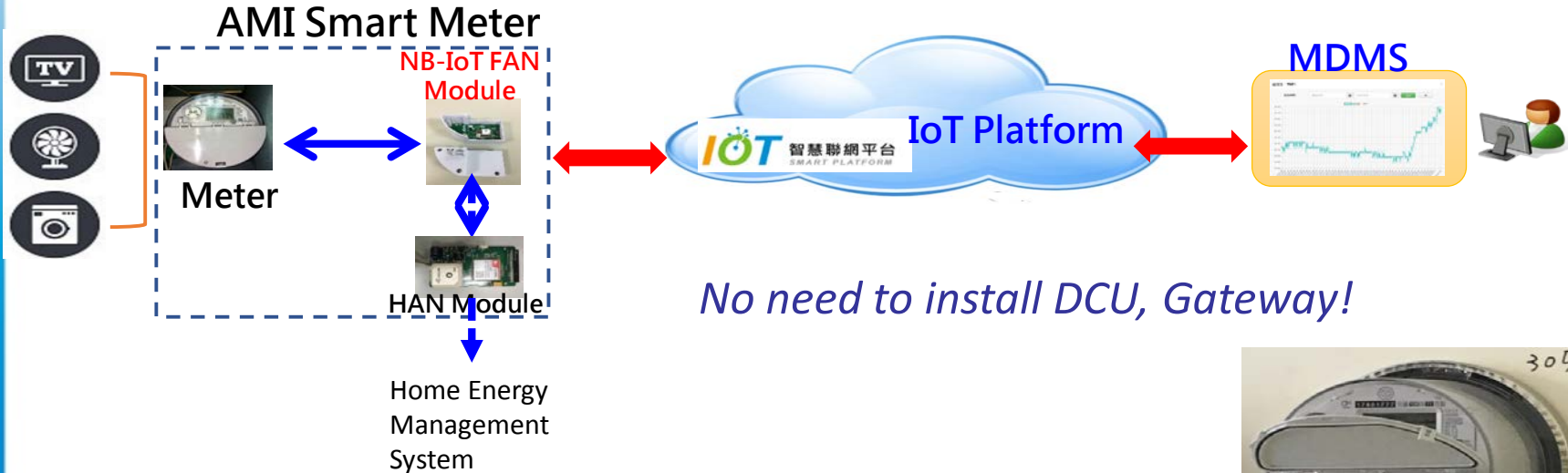
② Verify the Key



Advantage :

1. Instead of forward door key face-to-face, send the key through the air
2. Use case for holiday house/Airbnb/rental house application
3. key will never loss

Use Case 3 : NB-IoT @Smart Grid



■ FAN Module:

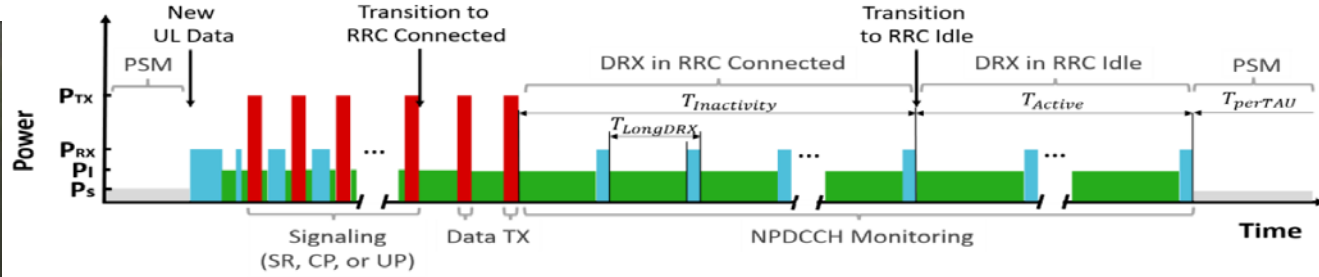
- Transmit meter data and event to MDMS
- Forward meter data to HAN module for Smart Home application



Use Case 4 : NB-IoT @Gas Meter



@ RSRP=-105dBm



Power consumption in: P_{TX} Transmission, P_{RX} Reception, P_I Inactive, P_S Deep sleep

Description	Current (mA)	Pulse Time (s)	Interval	Year Consumption (mAh)
PSM (MCU+NB-IoT Battery)	0.0035	Continuous	Continuous	306.6
Wake-up	44.38	17.14	4 times/day	231.37
Data Transmit	51.53	10	4 times/day	156.74
RRC Idle	2.61	8.86	4 times/day	7.03
Total				702mAh

Battery spec: 8500mAh

Flexible Partnering Models

■ Module

- SDK on the module
- EVK board for the PoC design
- Technical expert on the RF/EMI design of the end product
- Review & optimise HW design

■ Communication Module

- E2E communication module based on the customer requirement
- Technical expert on the Antenna and EMI design of the end product

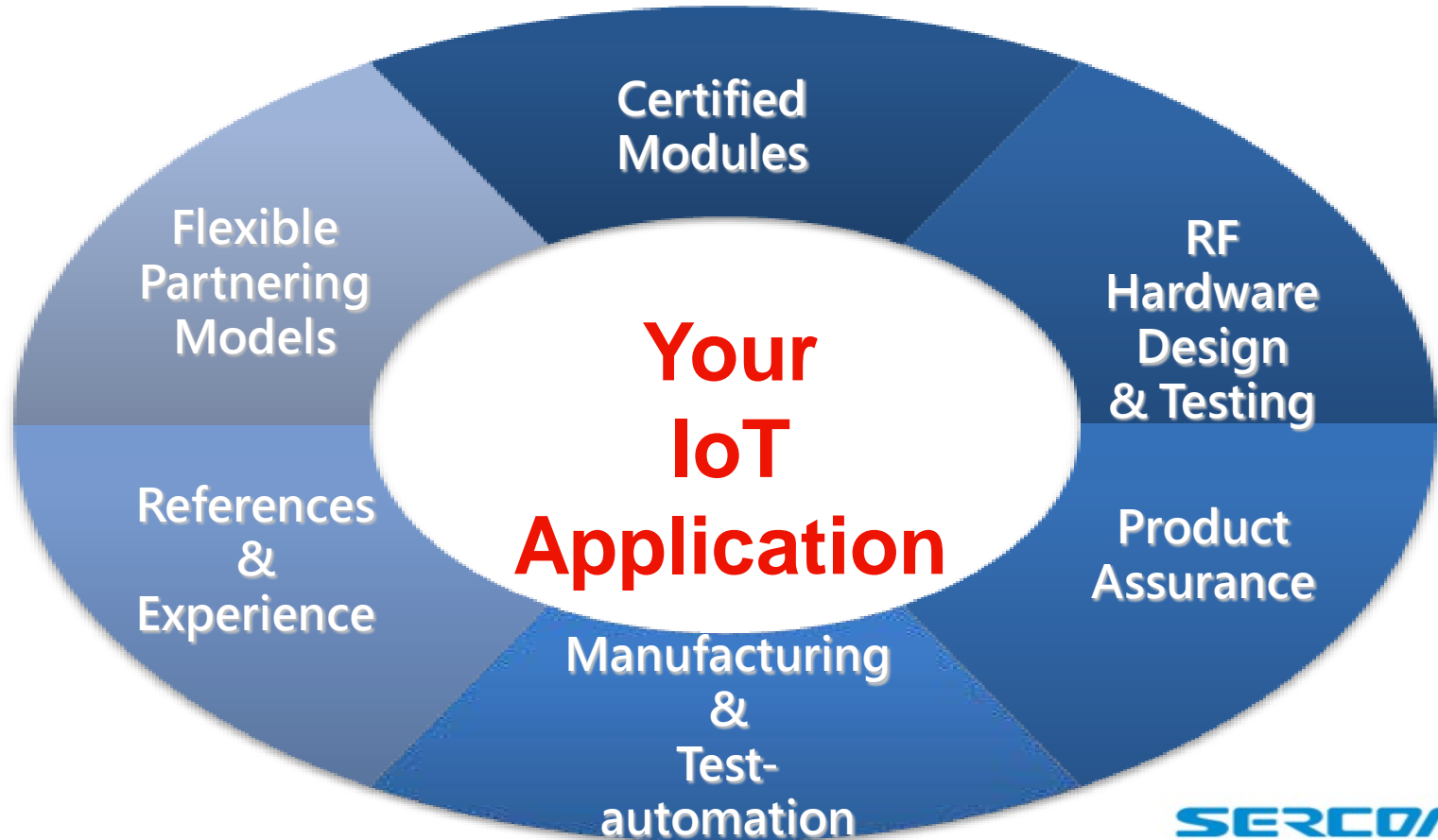
■ Device ODM / OEM / JDM

- E2E device design and manufacturing service
- Certification & Logistic service

■ Integration to the Service

- Standard COAP and MQTT protocol to integrate into IoT platform

Sercomm IoT Value Proposition



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