

Creating Values with Startups

providing one-stop IoT
software/hardware design,
manufacturing and
verification services



<http://www.iisc.org.tw/en/index.php>

lisC Creating Values with Startups

Leverage the strengths of Taiwan's ITRI and ICT industry to provide one-stop IoT software/hardware design, manufacturing and verification services

IoT
Service Hub



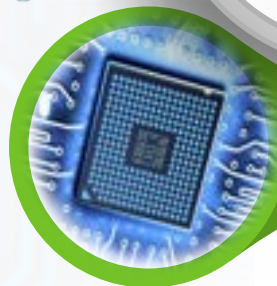
IoT Integrated Service Center

Executor:



AI on Chip,
NVM Computing,
Heterogeneous
Integration

Subsystems



Focus on AIoT
Application Projects



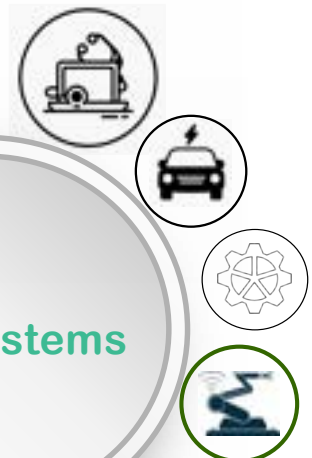
One-Stop
Services



Innovative
Business Model

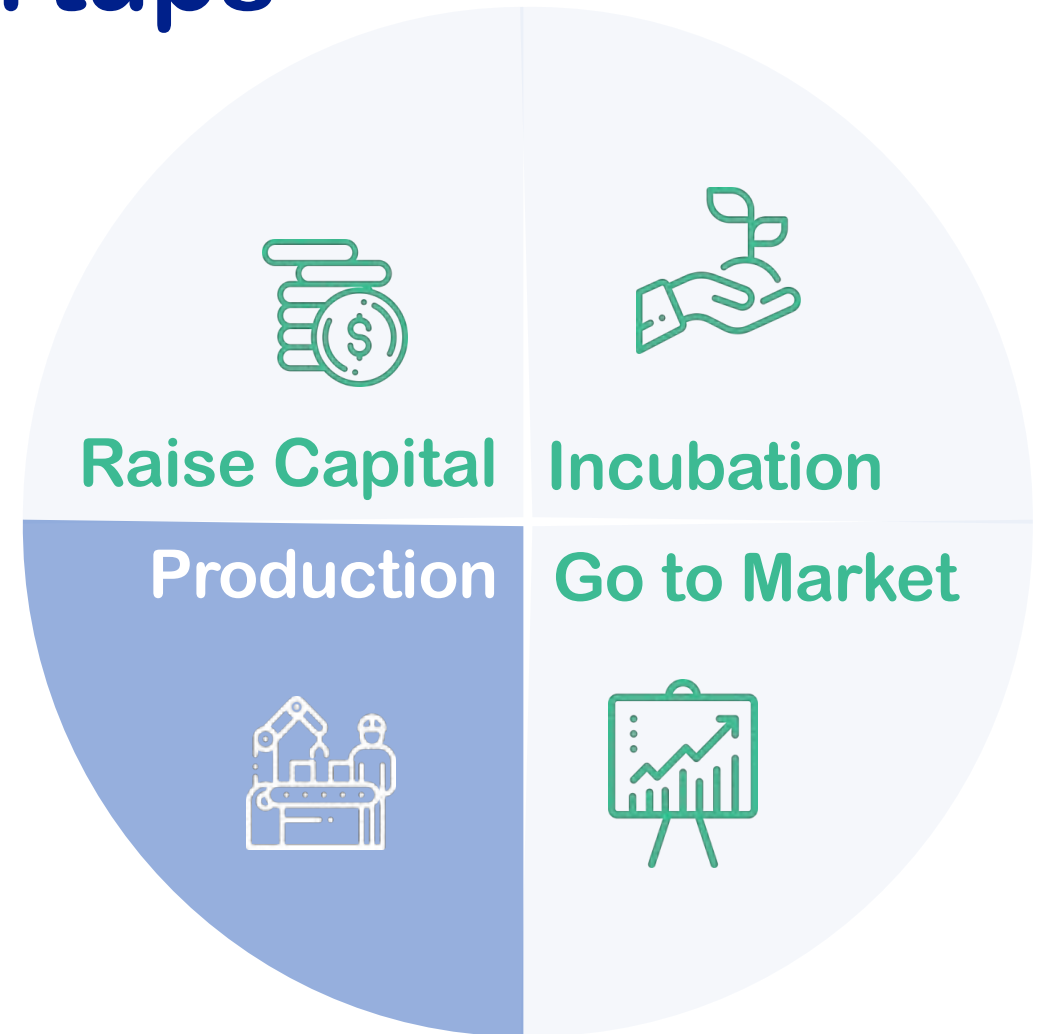


Market
Development



Value Creation of Startups

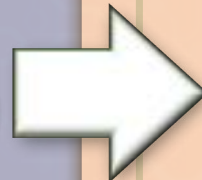
a successful startup
is all about
materializing creative ideas
and
commercializing the products



$0 \rightarrow 1$ $1 \rightarrow 100$ > 100

IDEAS

- Incubation
- Accelerator
- Fast Prototyping
- Work Space
- Venture Capital

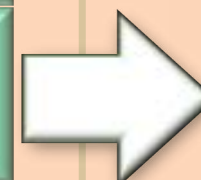


Commercialization

Product Optimization

Field Verification

Pilot Production



Market

- Mass Production

- Marketing

positioning of  lisC
in serving IoT Startups

0 → 1



> 100

EVT



Prototype

DVT



Engineering Sample
ME Tooling
PCB Layout
Certification

PVT



Pilot Run
Testing Fixture
PCB Fabrication
Reliability Test

MP



Mass Production
Yield Rate
Failure Analysis

Shipping



Marketing strategies
Sales channels
Logistics

Backed up by ITRI, the birth place of TSMC and many world class high-tech companies.

Superior, cost-effective electronic manufacturing (EMS) ecosystem in Taiwan, with “Zero” tariff.

EVT: Engineering Validation and Testing

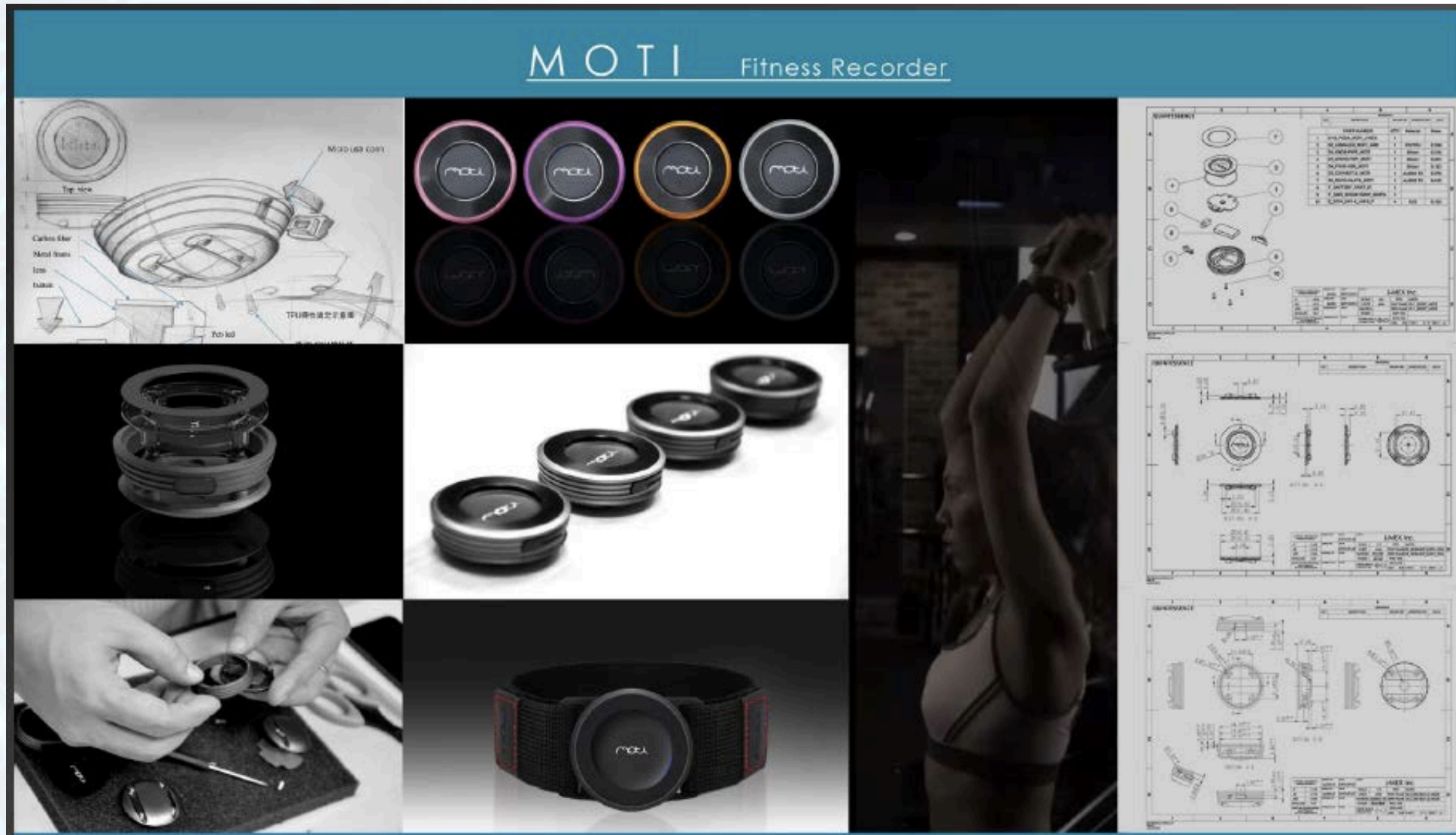
DVT: Design Validation and Testing

PVT: Production Validation and Testing

Selective Project 1: Industrial Design



Selective Project 2: Industrial Design



Selective Project 3: Pilot to Mass Production by EMS

- SMT Line X 15 (13.3 Million/day)



Auto Printer
DEK



Hi-Speed Mounter
Panasonic & Juki



Hi-Speed Mounter
Panasonic & Juki



General Purpose
Panasonic & Juki



Reflow
RoHS / REACH

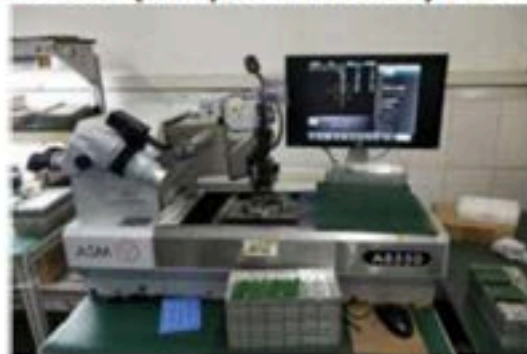


AOI Inspection
TRI

- TH Line X 8 (5 million/day)



- COB (Chip on Board) Line X 2



- Assembly Line X 14



- Press Crimp Automatic Line X1



Selective Project 4: Pilot to Mass Production by EMS

Temp. & Humidity Test



Drop Test



Electrical Safety Analyzer



RoHS Test



X Ray



Burn-in Room



Pulling Test

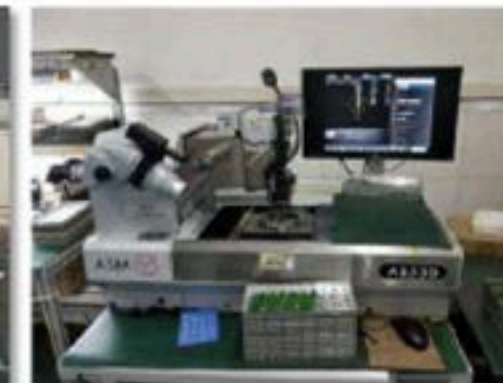


Vibration Test



Selective Project 5: Pilot to Mass Production by EMS

- ✓ Pattern Generator
- ✓ Oscilloscope
- ✓ Spectrum Analyzer
- ✓ WLAN / Bluetooth Tester
- ✓ Network Analyzer
- ✓ Plotter
(SMT Auto Programmer)
- ✓ High Precision Digital Scope
- ✓ ICT(In-Circuit Test) Tester
- ✓ Solder Paste Thickness Meter
- ✓ Laser Marking Machine
- ✓ 2.5D Optical Vision Machine
- ✓ FDM 3D Printer
- ✓ Desktop 3 Axis CNC
- ✓ Vacuum forming
- ✓ Ultrasonic Cleaning Machine



Certified Manufacturing Facilities of EMS

ISO 9001**ISO 14001****ISO 9001****ISO 9001****Accelerator****CSR-Intertek****IATF 16949****AQT 9006**

Services Provided by lisC

Technical Services

consulting services in product design, optimization, and manufacturing

- SiP Design Service
- Flexible Chip Substrate
- Heterogeneous Integration
- Innovative Product Commercialization

Application Services

supporting appropriate IC components or modules, circuit design and pilot run.

- Open source IC / Application library
- Shuttle service (MPW)
- Prototype system validation and new product development for startups

Field Verification

diversified test fields for examining design and functionalities, increasing product value through user experience, data analysis, and value-added functions.

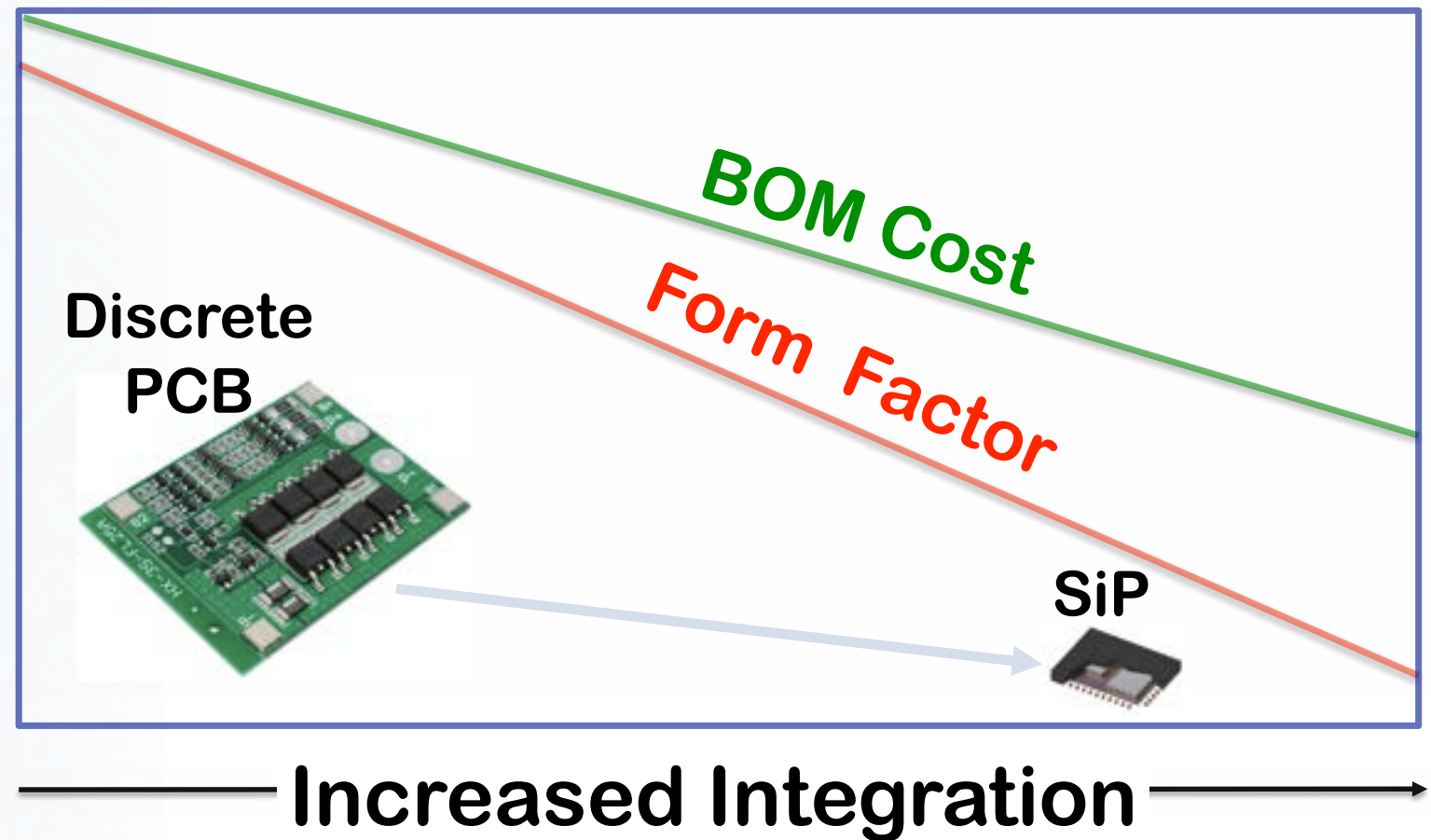
- Health & medical-electrical system
- Automobile electronics
- Energy-saving system
- Diversified intelligent IoT

Technical
Services

System-in-Package (SiP) Services

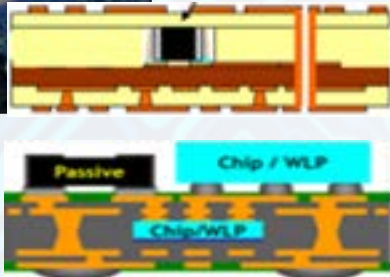
Why SiP?

- Protects EE design
- Secures investment
- Empowers new business model

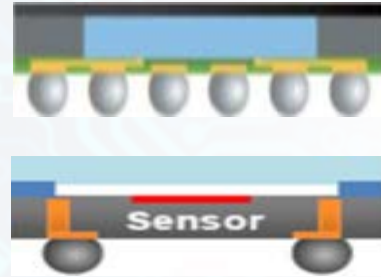


Technical
Services

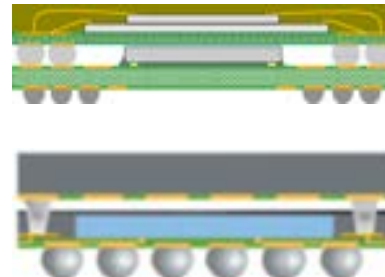
SiP Designs & Simulations at IisC



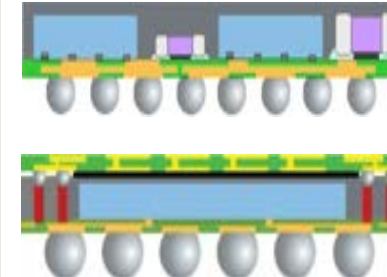
embedded
passive & active



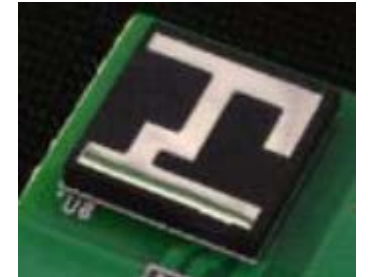
wafer level
package



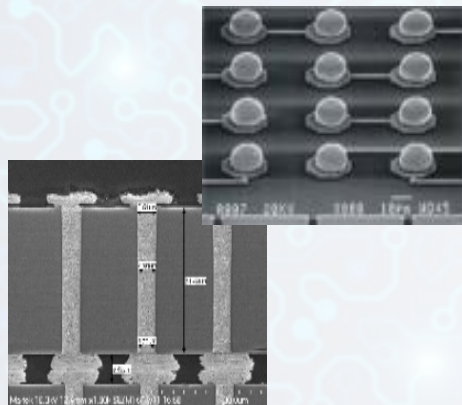
stacking
package



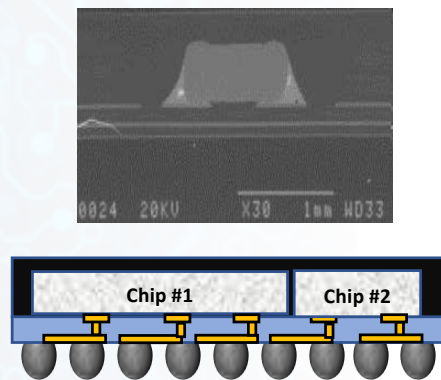
fan-out
package



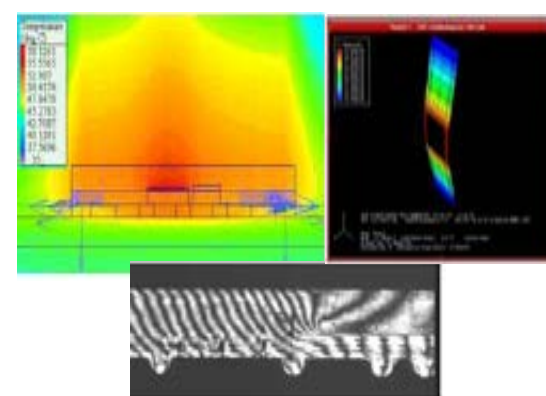
antenna on
package



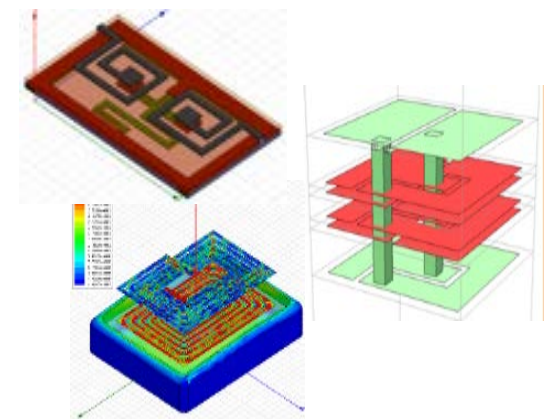
wafer process



assembly/
reliability



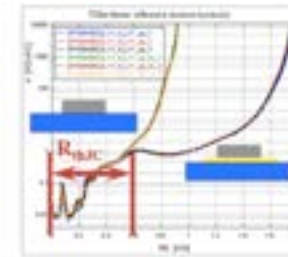
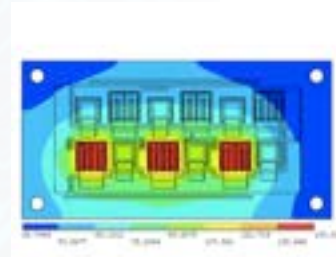
thermal/stress
design



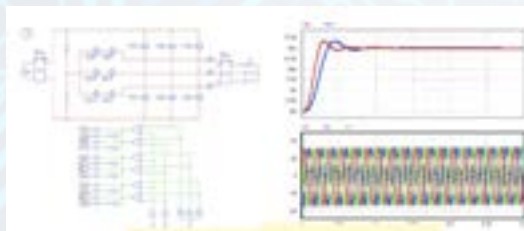
electrical
design

Technical Services

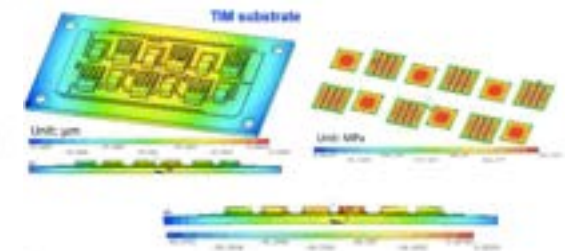
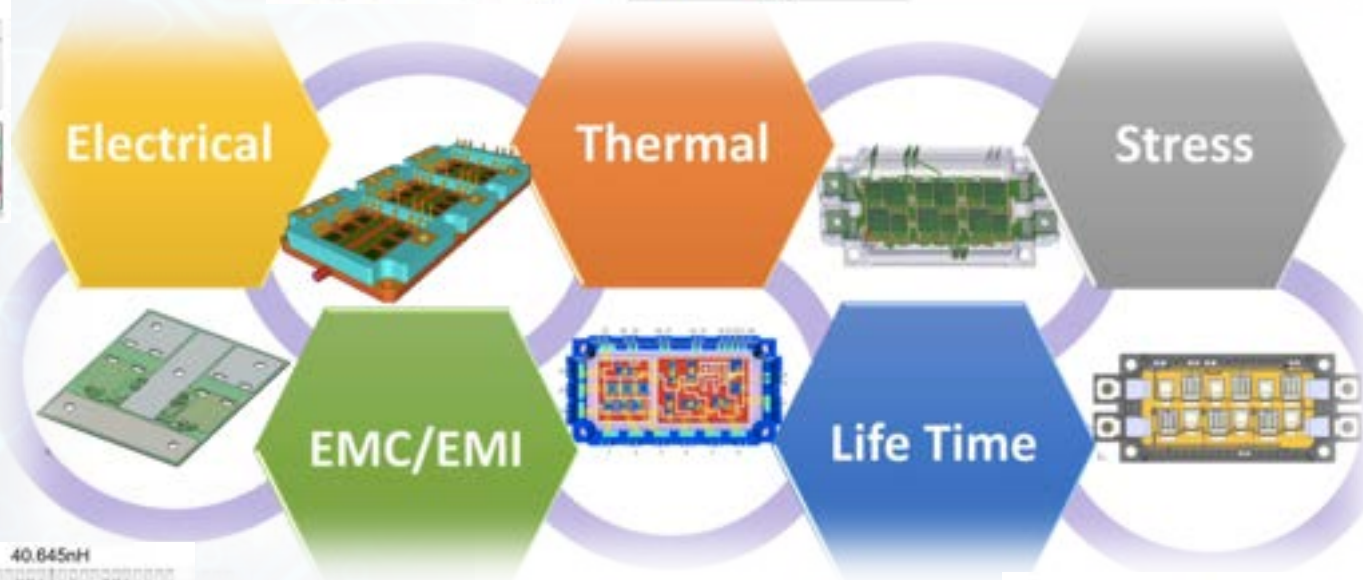
SiP/PiP Simulation and Testing Environment



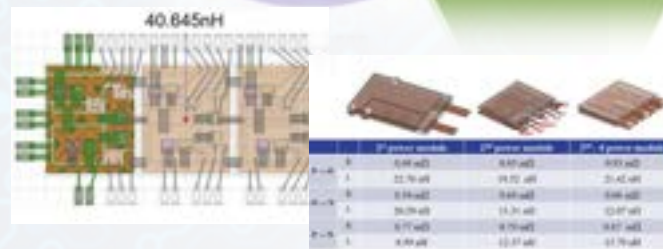
temperature distribution & R_{thJC} measurement



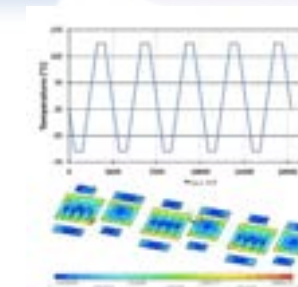
conduction & switching losses



thermal stress



RLC extraction



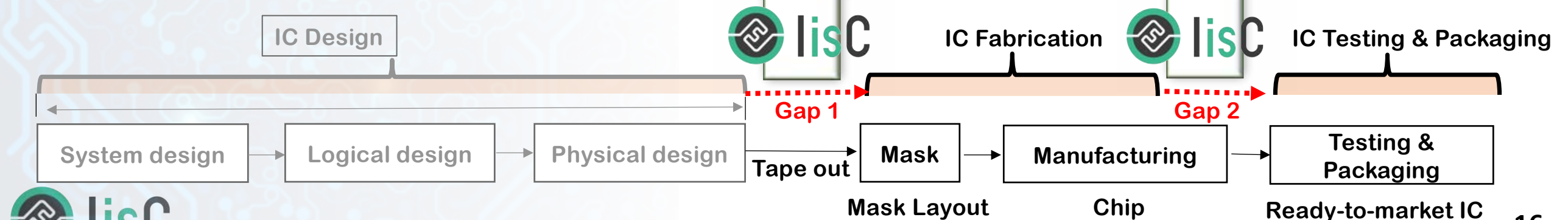
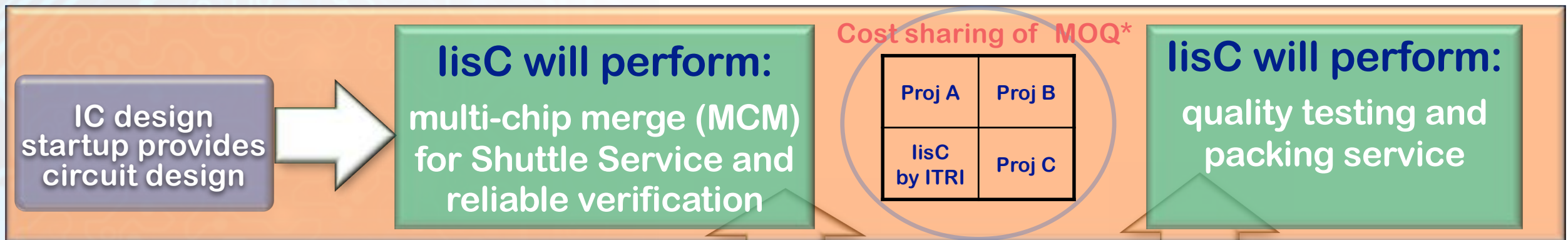
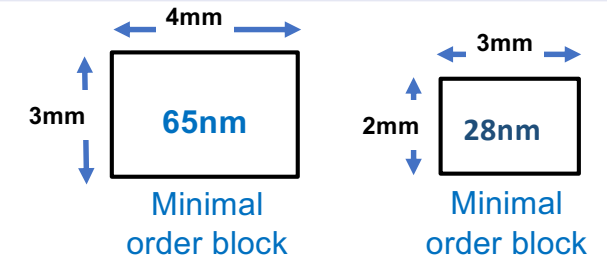
reliability estimation



Multi-Project Wafer (Shuttle Service) for IC Design Startup

MPW providers:

TSMC : 0.5 μ m ~ 28nm
VIS : 0.5 μ m ~ 0.18 μ m
Nuvoton : 0.6 μ m ~ 0.35 μ m



*MOQ: minimum order quantity,



Sample Case 1

G Co.: Embedded AI built-in Smart Receptacle

Before

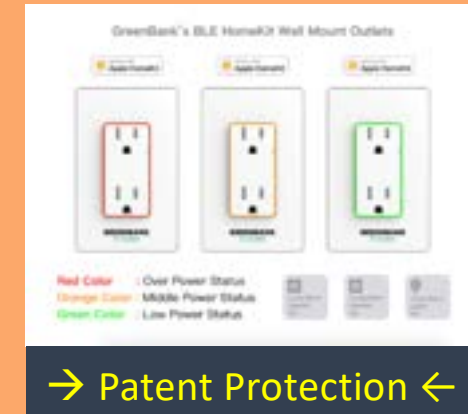


- Standalone device
- No power management
- No overloading alarm

Benefits

- HomeKit compliant enabling Apple-certified home appliance
- New design to broaden market segment (consumer + construction)
- Strengthening competitiveness with newly applied patents

After



- Embedded Smart Receptacle w/ App monitoring



Sample Case 2

K Co.:

Wearable VR/AR Control with Flexible Electronics

Before



- Rigid sensing PCB
- Bulky control board design

Benefits

- Optimizing design with reliable FPC
- Re-design flexible housing, improving comfort and usability
- Cost reduction in main chips up to 25%

After



- Better integration with glove and control unit, improving comfort and sensibility
- Low power chip solutions



Sample Case 3

D Co.: Power Boost Control Module SiP/SiM

Before

原尺寸: 5.5 cm × 5.5 cm



Li-Ion charger

+

原尺寸:
4.64 cm × 25.7 cm



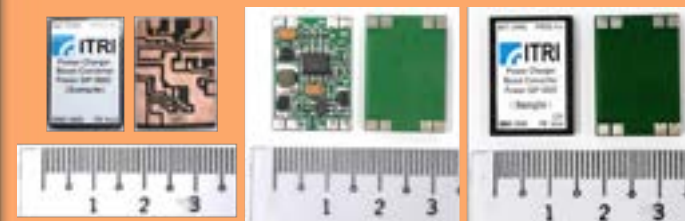
DC-DC 模組

- 2-PCB design, sizes are not suitable for IoT product design.

Benefits

- Size (dimension and thickness) reduction up to 60%
- Single package with full functions
- Cost reduction in main chips up to 25%

After



Lead frame type
(SiP)

Substrate type
(SiM)

Substrate type
(SiP)

- Much reduced packaging size with complete functions in single SiM or SiP



Leverage the strengths of
Taiwan's ITRI and ICT industry to
provide one-stop IoT
software/hardware design,
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