

High-Frequency/Analog Semiconductor Business Research (HAB) Association

— Promote new business development and open innovation in analog technology field —

Mission

We aim at promoting open innovation and creation of new industries in the analog technology field, which is the key technology of the industry, expected to be the core in the future, such as environment, energy, IT and materials. Therefore, we aim at building a venture ecosystem for promoting technology venture and fostering pre-venture.

◆ Activities

- 1) Analog Technology Trend Seminar held at Kyoto (4 times/year)
 - Sharing latest technology / new business trend information and promising technology venture information and building a human network
- 2) Promotion of open innovation
 - Drafting a new technology development project and supporting WG activities promoting new business development with the technology
 - Supporting to draft WG, receiving the requests from members for new business development by open innovation
- 3) Promotion of Business Cooperation between Japan and Taiwan

(Alliance Promotion Committee between Taiwan/Japan)

 - Supporting business alliance for the new business development with Taiwanese companies, cooperating with ITRI
- 4) Creation / Promotion of Analog Technology Venture
 - Collection and introduction of promising technology venture information (Technical Venture Committee)
 - Support spin-off (curve out) strategic creation of venture
 - Evaluation on the new business utilizing HAB research association network, and introduction of VC as necessary
 - Management of Analog Technology Venture Fund (under planning)

1. Analog Technology Trend Seminar in 2017 and 2018

The number of times /Years	Theme	Holding place
The 47th 6.16,2017	Trend of wide gap power semiconductor technology	Kyoto
The 48th 9.26,2017	Trend of Short Wavelength Optical Semiconductor Technology	Kyoto
The 49th 10.25.2017	Now and Future of the Business Cooperation for Japan and Taiwan	Kyoto
The 50th 12.5.2017	Analog Technology Trend Seminar ; Commemorating the 50th time	Kyoto
The 51h 5.9.2018	Introduction of promising technology venture from Kyoto	Kyoto
The 52th 9.21.2018	Image sensor and its application system	Kyoto
The 53th 12.4.2018	Trends of Next Generation Wireless Communication Systems	Kyoto
The 54th 1.22.2019	High-tech circumstances of China and correspondence of Taiwan and Japan	Kyoto

2.Promotion of open innovation

HAB Association

Mission:

- 1. Human networking
- 2. Sharing latest technology information

Meetings & Seminars

- 1. Presenting business trends
- 2. Presenting technology seeds
- 3. Introducing ventures

Working Group (WG) Activities

- 1. Closed activities
- 2. Assistance for activities

[Regular membership]
 companies/universities
 individuals/public
 institutions
 [Supporting membership]
 [Student membership]

Key Technology: More than Moore Semiconductor Technologies
 Key Devices: Wide Gap Semiconductors/ADC/MEMS/ Image Sensors

Planning industry-government-acade collaboration proj

WG
Medical equipment, Sensors, Networks
 ADC, Image Sensors
 MEMS

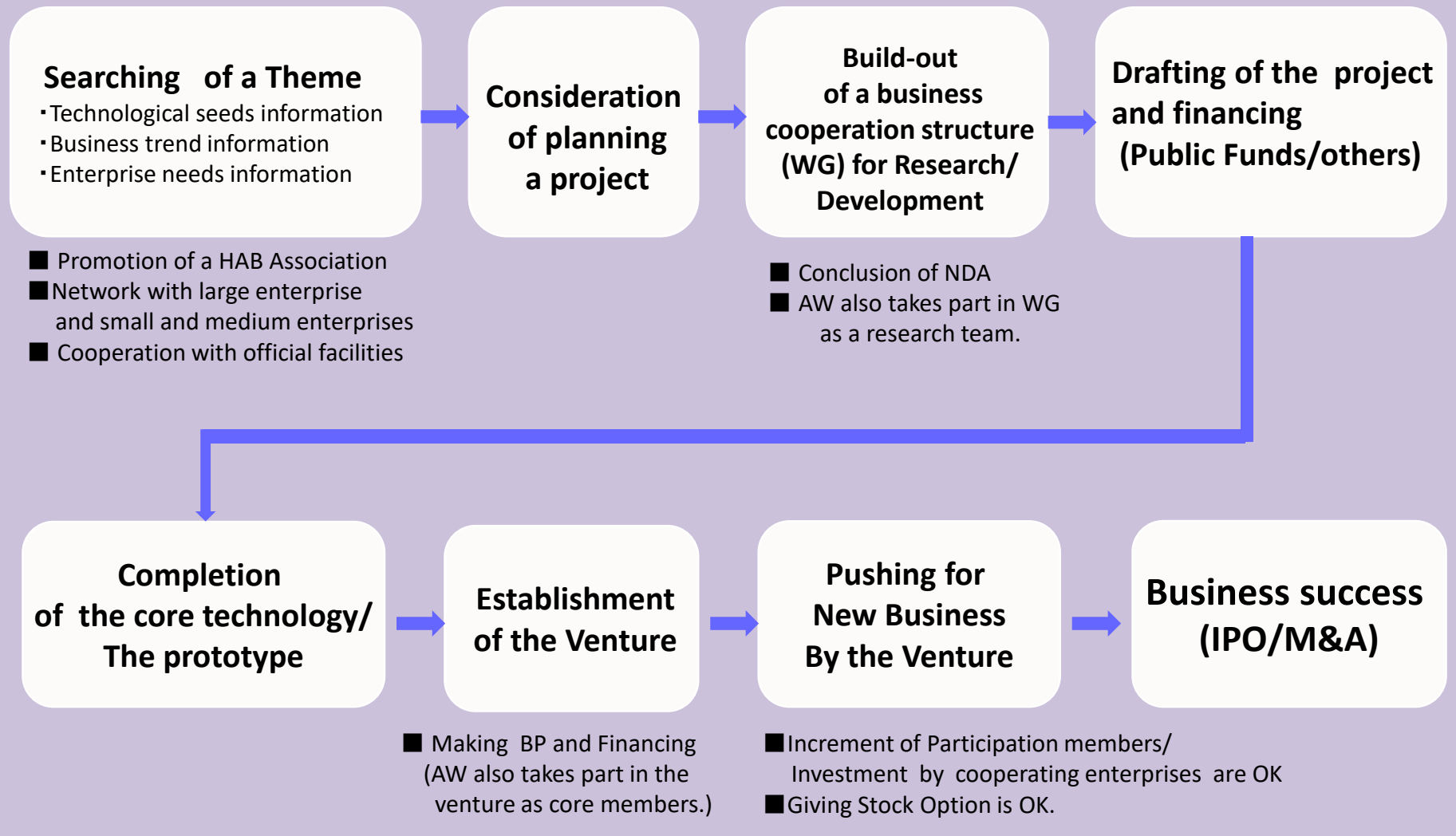
WG
Energy
 Wide -Gap Semiconductors, (SiC/GaN) Power Devices
 LED Lightings, Solar Cells

WG
Next generation broadband
 Analog/Digital Mixed
 RF-CMOSLSI

WG
Fundamental Technologies
 Packaging
 Wide -Gap Semiconductors

Creating new business & promoting ventures

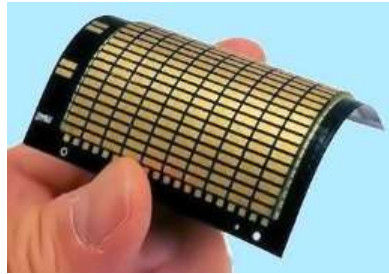
◆ New business creation Business method



'E-ThermoGentek' which is the venture came out of HAB-A

Novelty; Unique Module Structure "Flexina"

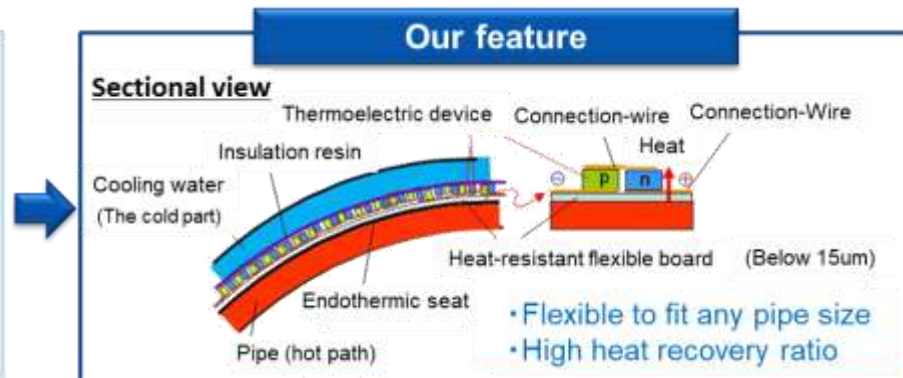
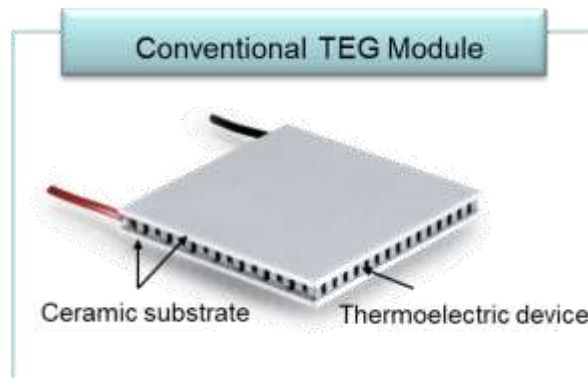
- High Speed / High Density Mounting of BiTe chips used practically on flexible and thin substrate → **Low Cost**
- Flexible Structure to fit any round surface → **High Performance**



Thermoelectric Generating(TEG) Module Flexina with the Flexible Structure

Feature

- ✓ High Heat Recovery Ratio (about 3 times higher than conventional).
- ✓ High Thermoelectric Conversion Efficiency (about two times higher than conventional).
- ✓ Low Cost and High Reliability, owing to the mature semiconductor manufacturing technology.
- ✓ Various TEG Chips can be used for the module.

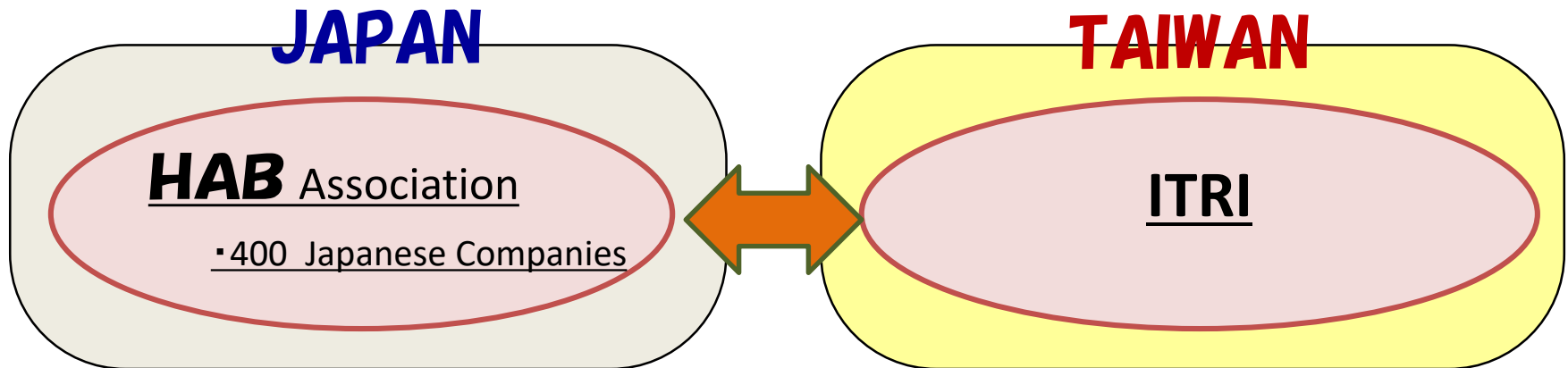


3) Promotion of Business Cooperation between Japan and Taiwan

Contents

- 1, Promotion of Business Cooperation for Japan and Taiwan utilizing about 400 companies Personnel network of the HAB Association with ITRI ,
- 2, Development of new business based on new technologies with companies participating in HAB Association.
- 3, Establishing a joint venture company with companies participating in the HAB Association and Taiwanese companies.
- 4, Basic philosophy is to build long and deep trusting relationships in both Japan and Taiwan.

Promotion system for collaboration with Taiwan

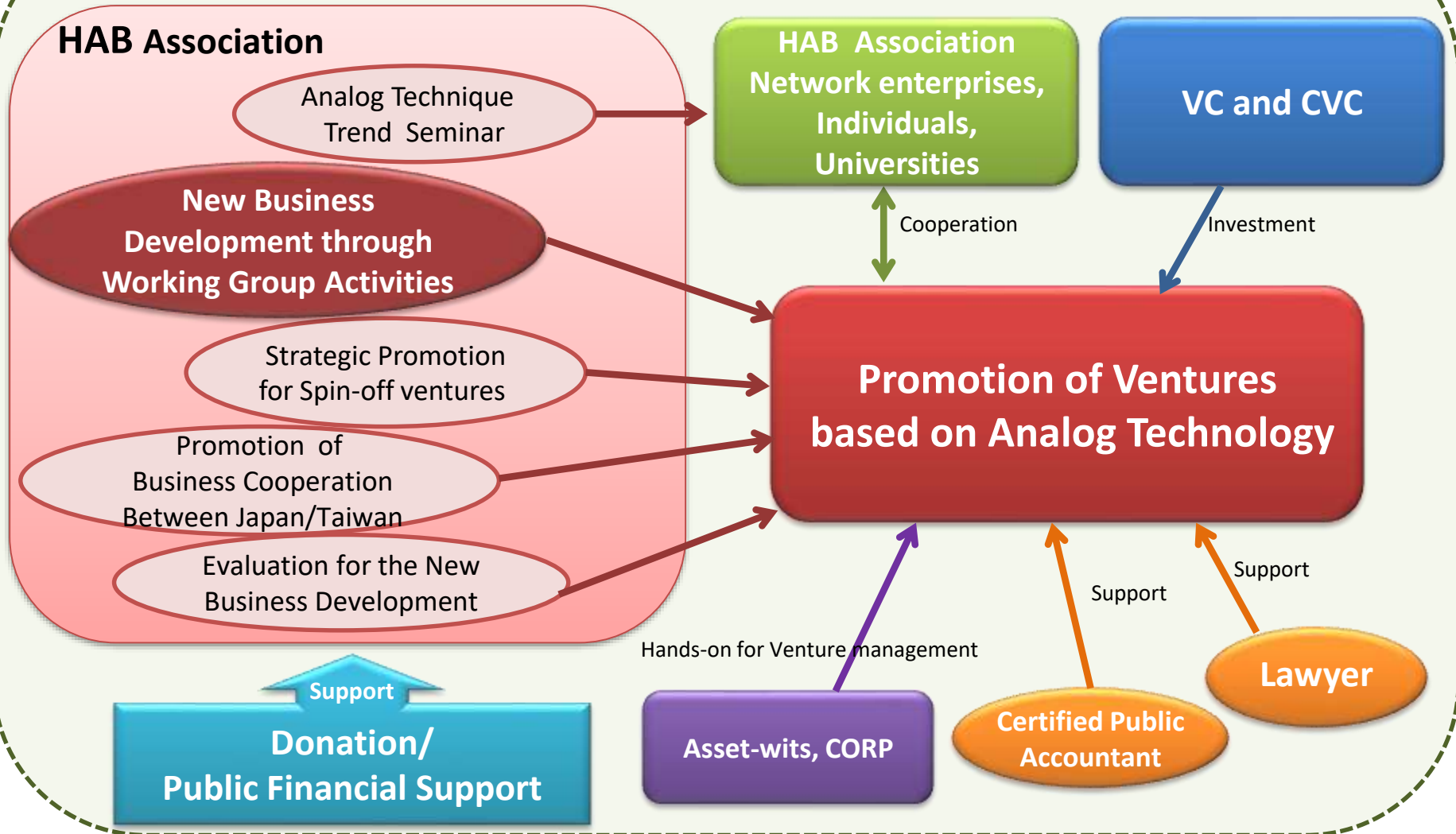


Grant Achievements

- 2012 / Interregional Exchange Support (RIT) Project (FS) / Japan External Trade Organization (JETRO)
- 2016 / Japan Taiwan Industry Cooperation Bridge Project / Japan Taiwan Exchange Association
- 2017 / Japan Taiwan Industry Cooperation Bridge Project / Japan Taiwan Exchange Association

4) Creation / Promotion of Analog Technology Venture

Creation of the new technological venture ecosystem by the HAB Association



Organization profile

Corporate name	Specified nonprofit organization (NPO) High-Frequency/Analog Semiconductor Business Research (HAB) Association
Representative	Chairman &CEO Shutaro Nambu
location	102 Kujo CID Bldg. 13 Higashikujo-shimotonodacho, Minami-ku, Kyoto 601-8047 JAPAN.
Establishment	2005 (December 2005) * In April 2010, it became a non-profit organization (NPO) incorporated.
Officer	Chairman &CEO Shutaro Nambu (President & CEO, Asset-Wits Corporation) (Former affiliation: Panasonic Corp.)
	Vice Chairman Keiichi Ohata (Former affiliation: NEC Corp) Nobuyuki Kaminaka (Former affiliation: Panasonic Corp.)
	Directors Daisuke Ueda (Former affiliation: Panasonic Corp.) Shoji Uegaki (ASE Marketing & Service Japan Co., Ltd.) (Former affiliation: Kyocera Corp.) Hirokazu Shimizu (Specially Appointed Professor, Osaka University) (Former affiliation: Panasonic Corp)
	Hideharu Takebe (Former affiliation: Renesas Technology Corp.) Kazuo Hayashi (Mitsubishi Electric Corporation) Yutaka Hirano (MACOM Technology Solutions)(Former President & CEO, FCSI, Fujitsu Corp.) Yuji Horino (The National Institute of Advanced Industrial Science and Technology) Akira Matsuzawa (Former affiliation:Tokyo Institute of Technology Graduate School : Professor) Tadatoshi Yamada (Former affiliation: Mitsubishi Electric)
	Auditor Yoshiaki Kobayashi (Former affiliation: Panasonic Corp.)

《 Organization chart 》

