



Fukuoka Cluster for Advanced System LSI Technology Development

# Fukuoka Kitakyushu Iizuka

## To be a World-Class R&D Hub of Advanced System LSI

### Cluster Vision

Based on market needs and potential in the region, the Fukuoka region (Fukuoka, Kitakyushu, Iizuka) actively promotes research and development of advanced system LSI in major strategic fields like fundamental technology for system LSI (embedded software, information communications), application technology (automobile, biotechnology, robot), and system packaging technology (packaging, design, advanced materials). To be a world-class cluster as well as to be an R & D hub of leading-edge system LSI, we have been provided training programs for embedded software engineers so that they can possess adaptable fighting potential.

### Project Overview

#### The goal of the Fukuoka cluster

We aim to become a world-class hub of advanced system LSI design and development to serve as the core of the Silicon Sea Belt region, which has grown to become the world's largest area for semiconductor manufacturing and consumption. We will further promote and accelerate "Silicon Sea Belt Fukuoka Project (SSB Project)" by making the best of potential resources such as intelligent resources of universities or semiconductor-related companies and automotive-related companies in the Fukuoka, Kitakyushu, and Iizuka areas.

**(Goals) Accumulate 300 system LSI development-related companies in the next 5 years**

To achieve this goal, we plan to:

- For R & D, carry out 100 themes of industry-academia-government R & D projects each year, including application related-fields, to stimulate research and development of advanced system LSI throughout the regions.
- For human resources development, train 1000 engineers related to system LSI each year at the College of System LSI, Fukuoka and Hibikino Semiconductor Academy to promote accumulation.
- For global expansion, strengthen cooperation on a global level, conduct 20 joint R & D programs in 5 years with overseas organizations (companies, universities, research institutions, etc.), and mutually encourage foreign direct investment.

#### \*Silicon Sea Belt Fukuoka Project (SSB Project)

The concept of the SSB project is to aim to become a hub of system LSI design and development in the Asian region ("the Silicon Sea Belt," the region linking South Korea, Kyushu (Japan), Shanghai, Taiwan, Hong Kong, Singapore, etc.) with intelligent resources and accumulation of industry in the system LSI design field.



Fukuoka area  
Fukuoka Institute of System LSI Design Industry



Kitakyushu area  
Kitakyushu Science and Research Park Collaboration Center



Iizuka area  
Kyushu Institute of Technology Center for Microelectronic System

#### Project Director Eisaku Ohtsuru



Eisaku Ohtsuru is a former manager of Texas Instruments Japan Limited, deputy manager of Sony Semiconductor Kyushu Corporation, and guest Professor at Kyushu University. He has extensive experience in areas like new enterprise creation and management of technology in the semiconductor field.

## Promotion of Silicon Sea Belt Fukuoka Project To be a World-class Cluster

We have already accumulated approximately 190 system LSI development-related companies in the Fukuoka and Kitakyushu Science Park areas, a total which represents a near ninefold increase compared to the initial year. To become a world-class advanced system LSI hub, the Fukuoka, Kitakyushu, and Iizuka areas, based on the results of the latest development, will play key roles to promote the "knowledge cluster initiative" program in the second stage. To achieve the final goal in the second stage of "the knowledge cluster initiative," we will target the promotion of strategic R & D, strengthen human resources development, and collaborate with companies and various public research institutes both at home and abroad.

We are mainly involved in driving the system LSI design and development related twenty-two projects such as automotive and robot projects. In particular, there has been remarkable growth in the LSI-vehicle-related industry in recent years in Fukuoka, and automotive digital electrical systems are also in the spotlight. As one portion of reinforced development of human resources, we have been providing training programs for embedded software engineers so that they can possess adaptable potential. We also link-up actively with the Kitakyushu Foundation for the Advancement of Industry, Science and Technology (FAIS), to ensure Fukuoka remains a regional talent pool for LSI-related industry. In addition, we have established a team to promote global expansion, who collaborate with both of international and domestic partners to exchange information and promote joint research, and direct investment.

### Cluster Headquarters

- President ..... Wataru Aso (Governor, Fukuoka Prefecture)
- Project Director ..... Eisaku Ohtsuru
- Chief Scientist ..... Hiroto Yasuura (Trustee, Vice President, Kyushu University)
- Adviser ..... Toyoki Kunitake (President, Kitakyushu Foundation for the advancement of Industry Science and Technology)
- Senior Manager ..... Tomotugu Rikitake, Reiji Oda
- Senior Scientist ..... Yukitaka Murakami (Trustee, Vice President, Kyushu University)  
Yasunori Matsufuji (Vice President, University of Kitakyushu)  
Yuji Oie (Dean, Kyushu Institute of Technology Faculty of Computer Science and System Engineering)
- Science and Technology Coordinators ..... Masato Tsuru, Toshihiko Ohta, Yoshikazu Mikuriya, Tatsunori Murai
- Human resources development coordinator ..... Kazuyuki Hirakawa
- Leader of Expansion Program ..... Megumi Takata (Director, Intellectual Property Management Center, Kyushu University)
- International Science and Technology Coordinator ..... Akihiro Kawaguchi

### Core Organization

Fukuoka Industry, Science & Technology Foundation

### Participating Research Organizations (Bold: Core Research Organization)

- Industry...CATS CO.,LTD, Toyota Motor Corporation, RAIDRIX Co.,Ltd, STANLEY ELECTRIC CO., LTD, Denso Corporation, Mazda Motor Corporation, Nissan Motor Co., Ltd, Renesas Technology Corporation, Toshiba Corporation Semiconductor Company, Central Uni Co., Ltd, RoboPlus Hibikino Co.,Ltd, Miyazaki Oki Electric Co.,Ltd, Walts Co., Ltd, Nakaya Microdevices Corporation, NEC Micro Systems, LTD, Jedat Innovation Inc, PicoCELA Co., Ltd, and etc.
- Academia...**Kyushu University, Kyushu Institute of Technology, The University of Kitakyushu, Fukuoka University, Waseda University,** and etc.
- Government...Fukuoka Industrial Technology Center, Kitakyushu Foundation for the Advancement of Industry, Science and Technology, Fukuoka Industry, Science & Technology Foundation.

### Main Results

#### 1. Micromini Wireless Mesh Station 'PicoMesh LunchBox' Completed-Easily Expanding with high-capacity Wireless LAN's Communications Area

This is small enough to be placed on the palm and includes a high-level wireless multihop relay. Its self-configurable mesh network capability immediately ensures a broadband communications area can be created upon its installation. The "PicoMesh LunchBox" is a product of the MIMO-MESH point development team, led by Dr. Hiroshi Furukawa, Associate Professor at Kyushu University, who utilized research results to launch a venture company, PicoCELA Inc., in August 2008.



A Prototype for PicoMesh SHELL

#### 2. Commercialization of "Devices to Prevent Dispensing Errors" and establishment of a venture business.

Pharmacists are under pressure to carry out accurate prescription checks, the final preparation stage when dispensing medication, due to long hours and apprehension about prescription errors. To reduce this psychological burden on pharmacists, a device has been commercialized to prevent such errors by checking the prescription information and the consistency of the type and amount of medicine that has been prescribed. This device is highly accurate and can rapidly recognize tablets and other types of medication using an ultra-high-density camera with a device that can be set up even on small surfaces. The device determines and displays the consistency of the medication with the prescription information. This function can also recognize consistencies where various tablets are included in a single packet, which would have been difficult to recognize to date, as well as uniform tablets. The results of this study were used to develop a venture company, Hybrid Recognition Technologies, Ltd., in July 2009.



Devices to Prevent Dispensing Errors

