

Examples of Development Derived from Research Results Attained through Collaboration with Concerned Ministries, etc.

MEXT promotes the active use of measures taken by the Ministry of Economy, Trade and Industry (METI) and other concerned ministries, for the purpose of facilitating the smooth commercialization of R&D achievements that positively exploit local potential and resources. Some resulting cases of successful commercialization in various areas are:

Nagano Prefecture Region

In the Nagano Prefecture Region, a world-class cluster is being formed through the development of super-advanced-functional devices achieved by connecting the high-precision processing technology and precision molding technology offered by the local industry with the nanotechnology research platform of the local academia spearheaded by Shinshu University.

Development of large-current inductors using press work and new insulating material

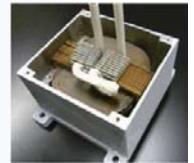
Results achieved by the Knowledge Cluster Initiative

The Faculty of Textile Science and Technology at Shinshu University applied original technologies to the sol-gel method (a technique used for the low-temperature fabrication of organic-inorganic compounds, glass, ceramics, etc. from solutions) and developed an insulating film that can be used to coat metal plates. This insulating film consists of ceramic particles and a substance that connects those particles, and offers excellent flexibility, insulating performance and heat dissipating characteristics.



Industrialization using METI's program

The results of the Knowledge Cluster Initiative were further advanced through the projects of METI, and led to the development of a new-structure coil made by press work and bending process, a bonding agent with excellent heat conduction and workability used for filling the gap between container and coil and a high-performance insulating film with excellent heat resistance and heat dissipating characteristics for use in the large-current inductor in the voltage converters for hybrid automobiles.



Large-current inductor

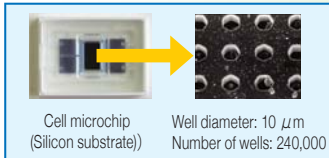
Toyama/Ishikawa

In the Toyama and Ishikawa Area, a life science research and development center for preventive medicine and healthcare is being established by maximizing the diverse manufacturing industries concentrated in the area and the accumulated intellectual assets in the fields of medicine, pharmaceuticals and biotechnology.

Development of a high-speed antibody search system

Results achieved by the Knowledge Cluster Initiative

The University of Toyama, the Industrial Technology Center and local companies collaborated to successfully develop a cell microchip with several tens of thousands of micro-wells, each capable of containing a single human lymph cell (approx. 7 μm in diameter), arranged in an array, as well as equipment that quickly detects target cells and a system that collects single cells.



Cell microchip (Silicon substrate)

Well diameter: 10 μm
Number of wells: 240,000



Industrialization using METI's program

The results of the Knowledge Cluster Initiative were utilized for the development of an integrated cell screening system (Cellporter). This system can complete a series of processes, including the dispensing of cells onto a micro-array chip and the recognition and collection of specific cells, in a single day. These processes previously took several months to complete.



Automatic cell collection system, "Cellporter"

Fukuoka Kitakyushu Iizuka

The Fukuoka Kitakyushu Iizuka is conducting research on an environment-friendly, power-saving, low-cost, and installable wireless communications system with the aim of making high-speed large-capacity communications more accessible.

Operation of one of the world's largest wireless indoor relay networks

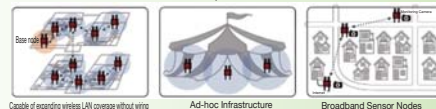
Results achieved by the Knowledge Cluster Initiative

An ultra-small wireless base/relay station dubbed the "picoMeshLunchBox", which is a palm-size device featuring a high link capacity that automatically establishes a wireless relay network between base stations when set in place, to enable easy expansion of the wireless LAN communications area, has been produced experimentally. The device was then commercialized under the name of "PCWL-0100" by a venture company from Kyushu University by the name of "PicoCELA Co., Ltd."



picoMeshLunchBox

PCWL-0100



State road

Ad-hoc Infrastructure

Broadband Sensor Nodes

How to use the PCWL-0100

Demonstration using measures by the MIC

The PCWL-0100, made commercially available through the Knowledge Cluster Initiative, saw positive use in advanced demonstration experiments by communication platforms conducted under the Ministry of Internal Affairs and Communications (MIC). The related technological issues have been verified in a large commercial complex in Fukuoka City, in an effort toward the creation of new businesses, etc.