

# Southern Ishikawa Area

New Industry Creation from Both Traditional Industry and State-of-the-art Technology.  
 " Industry Creation Project of Rediscovering Tradition by Studying New Technology "

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## Project Promotion

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## Core Research Organizations

Japan Advanced Institute of Science and Technology  
 Industrial Research Institute of Ishikawa

## Major Participating Research Organizations

Industry...Ishikawa Kutani Pottery Commerce and Industry Association, Yamanaka Lacquerware Cooperative Association, Wajima Urushi Ware Commerce and Industry Cooperative Society, TAKEO TOUKI POTTERY, I-PLUS CO. LTD., TATSUMIYA SHIKKI CO.,LTD., MICHIBA Corporation LTD., SHOWA inc., NOSAKU, Inc., HAKUICHI, Inc., Goshimaya Corp., Ohmukaikoshudo, Shioyasu Urushi Ware Company, Painting Pavilion Company, COMANY Inc., SINCOL CO., LTD., CPU Inc., Matsushita Electric Works, Ltd., SILICON STUDIO CORPORATION, ntechnology,Inc., digital fashion ltd., I-DESIGN co.,ltd. and others  
 Academia...Japan Advanced Institute of Science and Technology, Kanazawa College of Art  
 Government...Industrial Research Institute of Ishikawa, Ishikawa Prefectural Institute for Kutani Pottery, Design Center Ishikawa, Foundation of Yamanaka Lacquerware Technical Center

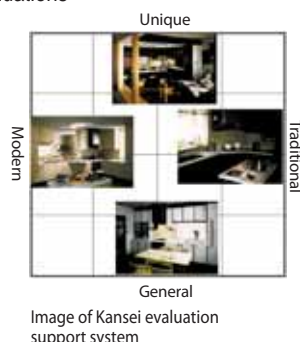
## Aim of research and development

This business attempts the creation of "Rediscovering old, studying new" that recognizes the value of traditional craft again through the other use and technology by a fusion of the traditional industry, other industries and the state-of-the-art technologies, which is one of the features of industry of this prefecture. Recently, the tendency to request not only the convenience of living but also sensibility value becomes strong by the diversification of lifestyle. Under these circumstances, this project is to aim development of the tools that support the product development and marketing in a new field. Particularly, these attempts include development of the technology to make textures of the lacquer paint and gold leaf on an object with a difficult expression in high detailed by the Computer Graphics with the conventional IT technologies, as well as development of the Kansei evaluation support system concerning the craft material. In order to meet the needs of customers, a design development support system incorporating the accurate visual simulation system and the Kansei evaluation support system which enable various design simulations. \* "Rediscovering old, studying new" is the meaning of the words "ONSINCHIKO" (Trademark 4767763) based on the concept that the ceramic artist of the Ishikawa Prefecture.

## Contents of research

1. Development of Kansei evaluation support system concerning craft materials for design development to meet the user needs

- (1) Development of Kansei analysis of data considering ambiguous and situation dependency of personal evaluations  
 The Kansei analysis of data on "complexity of the target objects" in addition to "gcomplexity in the recognition of the individual" should be differentiated.
- (2) Development of response model of texture data and Kansei evaluation based on Kansei analysis of data  
 User's Kansei evaluation database according to the texture database is collected, and the relation is modeled.
- (3) Texture - Development of Kansei evaluation support system based on one texture Kansei response model.  
 Objective facts, relationship with the society and data and the knowledge (model) that are designed and constructed in the Kansei evaluation support system incorporated to a digital showroom, which should show relationship between an object and the society, and related to the recognition of the individual are collected and integrated.



2. Development of multi-dimensional measurement and appearance representation of craft material

- (1) Measuring optical property of craft material  
 The measurement technique of the optical property of the surface is developed, and it aims at the expression of the craft materials with complex optical property such as the lacquer and gold leaf.
- (2) Database construction for craft materials  
 The texture database that can be retrieved by sensibility information is constructed to apply the measured data efficiently.
- (3) Visual simulation of craft material  
 Textures of the craft materials are faithfully expressed, and the visual simulation technique for the design verification is researched.



3. Texture expression of craft material and research of design exploration's approach using Kansei evaluation

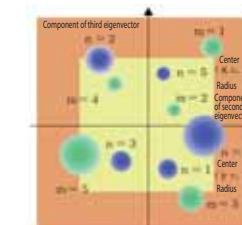
- (1) Research of texture methods for representing of craft material  
 Texture and the case database of the traditional craft material are created for design development.
- (2) Research of design exploration's approach that uses Kansei evaluation data  
 The Kansei model and the texture database are integrated to create the design support system that suits user's needs.
- (3) Evaluation of the system and development of new field commodity  
 The trial manufacture of the new field commodity that uses the craft material is done, and the verification evaluation of the design support system is done through the development process.



Image for design support system

## The main study results

1. Development of a Kansei analysis method of data considering ambiguous and situation dependency  
 The study and the preliminary experiment of the Kansei data collection method were conducted by executing the theoretical study of man's Kansei analysis of data technique for textures of the traditional craft material using the sample of the craft material. The design study on the Kansei evaluation support system also started. In addition, the in-situ survey related to the new product of the tradition industry were conducted nationwide.
2. Development of measurement technique of physical property of craft material in surface  
 The technique for measuring high-quality optical anisotropies of the traditional craft materials such as gold leaf and lacquers, and the texture methods for representing by CG that used the measured data were developed. In this representation, the color variation to gold leaf by the angle of incidence of light was confirmed and perfectly reproduced. If the fine form data of the measured surface is applied, a peculiar wrinkle to gold leaf was expressed, and the fine textures of materials were also expressed. Furthermore, the parallel computing ability of the graphic chip mounted to PC was effective to express the textures on a real time basis for its optical anisotropy.
3. Research of texture methods for representing of craft material  
 For about 150 kinds of samples of the traditional crafts such as the lacquer, gold leaf and Kutani ware in Ishikawa Prefecture, textures of the materials were measured with the texture measurement device for application to CG drawing. The industry needs were also investigated to develop the design support system, and the basic design of the system was done. In addition, the trial manufacture of products in the new fields was conducted in cooperation with local companies to identify issues for the system need to be concerned.



Kansei evaluation support system under development



Texture expression of gold leaf by CG



(above) Design support system under development  
 (below) Samples and new production development

