Digital Archive Program of the Songjiang Battle Array

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Abstract

"Song-jiang Battle Array," which has been developed and preserved in Neimen, Kaohsiung County for three hundred years, is a precious cultural heritage. With the transformation of the society, however, Song-jiang Battle Array is now facing problems concerning its preservation, distribution, and its distance with people's lives in the rapid modern society. This project, therefore, aims to preserve and spread Song-jiang Battle Array with digitized content development through the collaboration between Go-ping Community Association (the archive sector) and National Taiwan University of Arts (the academic sector).

This project aims to construct a "Digital Culture & Art Village of Song-jiang Battle Array" through six goals of digital content development—digital preservation, public demonstration, culture education, academic research, cultural inheritance, and value-added application planning. Through the six goals of digital content developments with the collaboration between the academic sector and the archive sector, it is expected that the project would not only preserve and spread the cultural heritage "Song-jiang Battle Array," but also remove the barrier between traditional culture and modern life. Furthermore, it would create new commercial values for traditional culture, and a new business model would be created with the combination between digital archive and cultural creative designing industry.

1. Introduction

Taiwan started to approve a national digital archive program in July 1999 during the 9th Executive Yuan Strategic Review Board (SRB) for the Electronics, Communications and Information Sectors. Promulgated on 1st January 2001, the program is in its second stage. This paper focuses on the "Digital of Songjiang Battle Array- digital content development" (hereafter, the SBA Digital Archives) project implemented by the Department of Graphic Communication Arts, National Taiwan University of Arts (NTUA) during 2007 to illustrate the process by which an academic organization, using digital archiving technology and social science research methods, coordinated the efforts of several entities (Gou-Ping Community Development Association, Gou-Ping Elementary School, temples in Kaohsiung County and Tainan County, and other information repositories) to collect, organize and digitalize images, personal recollections and documents dispersed in the community at large and to make such publicly available through a purpose-built digital archive website. Please refer to Table 1 for an illustration of the participants and responsibilities.

Table 1. Participants and Responsibility

Participants	Responsibility
1. Gou-Ping Community Development Association 2. Gou-Ping Elementary School	1. Provides battle array artifact 2. Provides battle array consultation 3. Performs meta-consultation and writing of information
Department of Graphic Communication Arts, National Taiwan University of Arts	1. Editing and compilation of battle array artifact data 2. Digitization of battle array artifact 3. Color management 4. Establishment of Digital Archive Web Platform

1.1 Background and Motivation

The Songjiang Battle Array has been through an uninterrupted history in Neimen Township since the Qing Dynasty (1644-1911). Owning to the elderly practitioners gradually passing away, population outflow, urban development and the weakening bonds of traditional religious practices, all represents several important factors endangering the continuance of the Songjiang Battle Array. Its disappearance would seriously threaten the development of the local history, culture and religious practice as well.

In the beginning, Neimen citizens were given martial training in order to protect their community against the frequent bandit raids that vexed this isolated corner of southwestern Taiwan. Later, choreography inspired by the classic novel "Outlaws of the Marsh" was added to Array performances as part of regular Matsu Goddess procession ceremonies held by Zi-ziu Temple in Neimen. Transformed into a wholly voluntary martial art performance troupe, the Songjiang Battle Array quickly became an important element in Taiwan's distinctive homegrown cultural inheritance.

Problems facing the Songjiang Battle Array in urgent need of resolution can be summarized as follows:
1. Preserve and continue the Songjiang Battle Array art form;
2. Cultivate the next / future generations of practitioners;
3. Overcome difficulties faced in bridging traditional Battle Array art form modern / current cultural expectations.

Implementation of the SBA digital archives project was approved for the one-year period between 1st August 2007 and 31st July 2008. The project brought archival organizations including the Gou-Ping Community Development Association and Gou-Ping Elementary School together with NTUA's Department of Graphic Communication Arts. Project work benefited from input and direction from Kuo-chao Ho (10th Inheritance Award recipient); Ming-hung Huang (White Crane Array Master for Gou-Ping Elementary) and many other experienced SBA practitioners.

In addition, the project co-leader, Professor Tsai, Zong-Xin (Physical Education Dept., National University of Tainan) and his team of EMBA students helped shepherd the project to a successful conclusion.

1.2 Project Objectives

The three objectives of the SBA digital archives project were: 1) Digital archive records for preservation and display; 2) Establish a database applicable for use by researchers and educators on local culture/traditions; and 3) Apply results to cultural inheritance work and value-added products.

1. Digital Archiving and the Preservation / Display of Records

The project collected objects used in SBA performances; original photographs and documents from Gou-Ping Elementary School and the Community Development Association; photographs / video of elderly SBA practitioners taken during field research; A/V recordings of expert interviews; and SBA-related photographs from temples and the general public for inclusion in the digital archive. Once provider consent for public display of such was confirmed, a standard procedure was used to digitalize and publish collected materials onto a purpose-built website in order to ensure long-term preservation and enhance the overall digitalized knowledge database.

2. Metadata Configuration

Metadata content refers to the above mentioned digitally archived material and covers background information on items, item descriptions and related historical source information. Creating a complete and comprehensive repository for knowledge is a key intent of digital archiving and a core value of the SBA digital archives website. The metadata was designed to be available free-of-charge to both researchers and the general public and is intended as a resource for educators and others for creative inspiration and as an important reference source for teaching local culture and traditions.

3. Cultural Inheritance and Planning for Value-Added products

In addition to preserving knowledge for posterity, digital archiving should effectively promote the revitalization of national culture and art. As such, the final objective of this project is the most important. A website was designed and launched to present project results and serve as the window for public access and long-term impact. In the future, linkages between SBA digital archives content and industry resources can be expected to facilitate development and commercialization of useful/market-tailored products, creation of enhanced teaching aids and materials, and design of attractive cultural activities in order to earn broad-based

appreciation for traditional battle array artistry and ensure such continues to be taught and practiced.

1.3 Significance

Historical information on the Songjiang Battle Array was dispersed widely in the community, with no formal organization or coordination. The significance of this project was its use of digital archiving technologies and social science research methods to organize and present historical information and objects in a well-structured, publicly-accessible website. Doing so represents an effective way of preserving such information over the long-run, making such available for use in research and the development of related educational materials, helping disseminate knowledge regarding the Songjiang Battle Array amongst the general public, and facilitating the promotion of this art form and of generated value added products. Please refer to Figure 1 for the significance of SBA digital archive project.
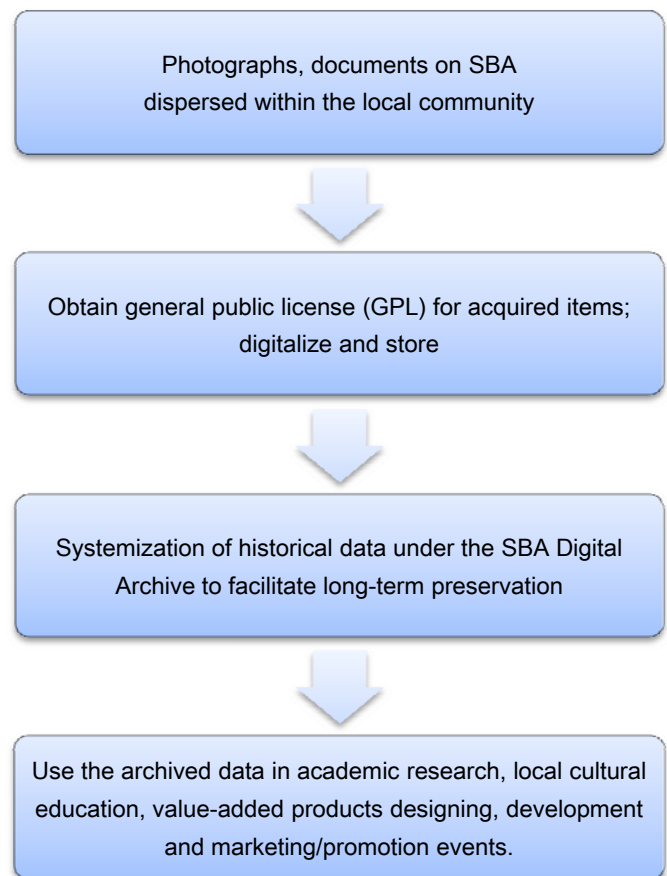
Photographs, documents on SBA dispersed within the local community

Obtain general public license (GPL) for acquired items; digitalize and store

Systemization of historical data under the SBA Digital Archive to facilitate long-term preservation

Use the archived data in academic research, local cultural education, value-added products designing, development and marketing/promotion events.

Figure1. *the Significance of SBA digital archive project*

1.4 Structure and Scope of Research

Project digital archive content addresses Taiwan history and as such incorporates tangible documents and artifacts as well as intangible emotional and spiritual elements. Reflecting such, project structure, management and approach were guided by experts in digital archiving and content development. Details follow below:
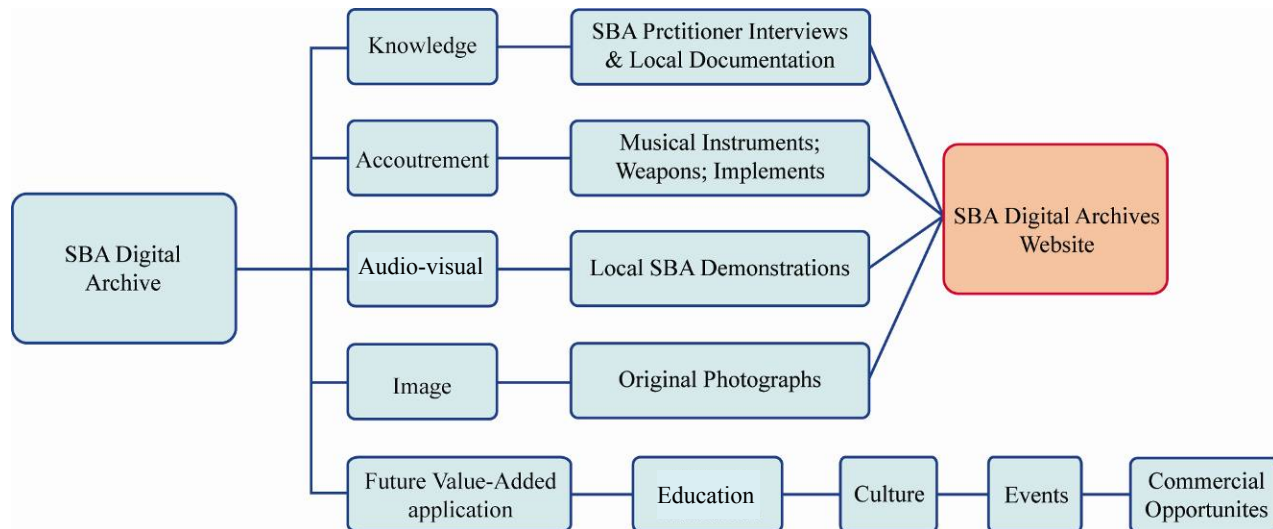
2. Methodology and Description of Digitalization Procedures

This section describes the approach taken to project implementation and procedures employed to digitalize objects, images and A/V material.

Figure 2. *Organizational chart*

1.4.1 Organizational Chart

Digital content development was organized under the four categories of Knowledge, Accoutrement, Demonstration and Appreciation in order to give full expression to all key aspects of the Songjiang Battle Array within an online environment. The overall organization chart is shown in Figure 2.

1.4.2 Research Scope

The original scope of this project was limited to the Songjiang Battle Array as performed in Neimen Township, Kaohsiung County. However, field research and discussions with SBA practitioners recommended expanding research scope to include material on the Songjiang Battle Array performed in Tainan County. Therefore, research work targeted the SBA art form in both areas. As researchers filmed and followed SBA preparation work and performances during the one-year period from 1st August 2007 to 31st July 2008, project information relies heavily on SBA activities during this period.

2.1 Project Implementation

Project implementation integrated digitalization technologies and social science research methods. For the former, in addition to referencing material on such technology used in Taiwan's national digital archive program, project managers also referenced the approach to file handling advocated by the National Digital Archives of Datasets (NDAD) program in the United Kingdom. Social science research methods, including field research, oral histories and statistics, were employed to maximize the amount of SBA-related documents and records recovered from both public and private sources. A bottom-up approach was used for data collection.Archival organizations, including Gou-Ping Elementary School in Neimen Township, were key sources for archived information. Such was enhanced within the SBA digital archives metadata using the results of field research and materials collected from various archive data providers. Content was drafted by content development specialists, added to the metadata and uploaded onto the project's website for public access. Please refer to Figure 3. for an illustration of the process of research method.

Figure 3. Research method

2.2 Digitalization Procedures

Digitalization procedures may be subdivided into processes used to digitalize archival artifact, images and audio-video material. Implements were obtained largely through designated archival organizations and field research.

2.2.1 Digitalizing Archival Artifact

Most items in this category were obtained from archival organizations such as Gou-Ping Elementary School, the private collection of 10th Inheritance Award recipient, Kuo-chao Ho, and the Hongcuo Village management committee in Tainan County. The digital photography process is outlined in Figure 4. below.
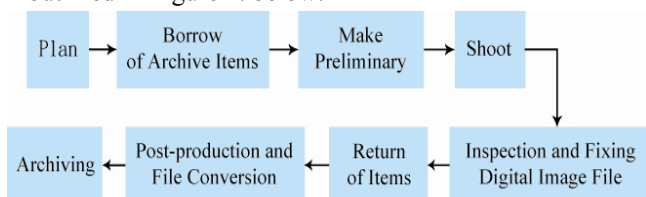

Figure 4. Flowchart of digitalizing archival artifact

2.2.2 Digitalizing Images

Images obtained for this project included digital images photographed by SBA experts and original photographs that were scanned by project staff into the proper digital format. The scanning / digitalization process for original photographs is outlined in Figure 5. below.
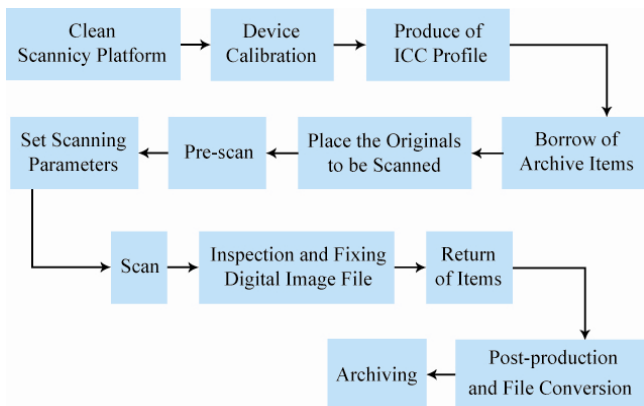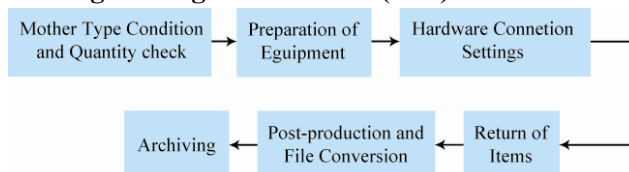

## 2.2.3 Digitalizing Audio-Video (A/V) Material

A/V materials collected for this project include primary interviews with SBA practitioners and video of SBA performances provided by local temples. The A/V digitalization process is outlined in Figure 6. below.

Figure 6. Flowchart of digitalizing Audio-Video Material

2.3 The Metadata

The metadata lies at the heart of the SBA digital archives web side and represents the system's knowledge base. Differences in metadata content sources reflect differences in the project nature. All records are covered by general public licenses, primarily for the convenience of
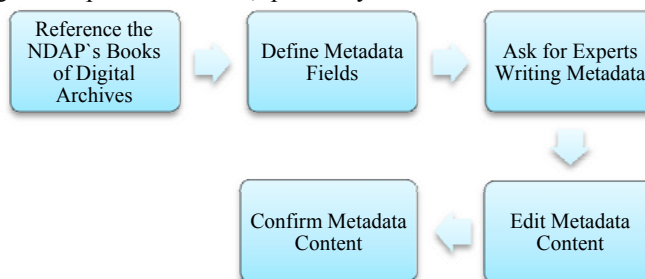
applying such in academic research and school education. The process to define metadata fields and write metadata content is outlined in Figure 7. below.

Figure 7. Flowchart of produce metadata content

3. Results

3.1 Digitalization

After nearly one year of hard effort, the SBA Digital Archives program has collected archive material in four categories (documents; accoutrements; images &

photographs; and video). The total size of project files is approximately 287.3 gigabytes, with searchable information in the metadata totaling more than 300 items. Results previously described (Table 2.) have all been uploaded, and are accessible through, the SBA Digital Archives website.

Eighty-six files of items photographed or scanned for inclusion in project work were subjected to randomize testing for color differences in comparison with corresponding original items. Test results showing E Lab values all less than six demonstrate the stability of color quality in project files.

Item	No. of Digitalized Items (file size)	Average ∆E lab Color Diffefence		
		∆E original &digital image	∆E digital image& proof	∆E original & proof
Artifacts/ Accoutrements	62 items (5.3 Gigabytes)	3.75	4.36	5.58
Images	188 items (2 Gigabytes)	4.44	3.87	4.7
Adio/Video Material	58 items (280 Gigabytes)			
Total	302 items (287.3 Gigabytes)			

Table 2. Compared Color Differentials Between Digital Images and Original Items Collected for Inclusion in the SBA Digital Archives Project

Note: the   E Lab color differential value refers to the level of perceptible color difference between two items. Instruments were used to measure L*a *b values, which were input into the following formula   E = [(L1*-L2*)2 + (a1*-a2*)2 + (b1*-b2*)2]1/2

3.2 The Digital Archive Website

An SBA Digital Archives website was designed to organize and display information and materials collected under the SBA Digital Archives project. The website, designed on a Web 2.0 interactive foundation, supports cross-searching, message forwarding and page printing. Engaging Q&A activities and wallpaper / calendar downloads enhance website attractiveness and educational value. Website design, presentation and music encompass Songjiang Battle Array themes. Website language options include Chinese (traditional) and English. The calligraphy used on the website title, "Masterful Folk Performances: the Songjiang Battle Array Digital Archives," was done by NTUA President Kuang-nan Huang. Refer to Figure 8. for website architecture.

3.2.1 Knowledge Gallery

The SBA Knowledge Gallery covers the three areas of Personal Stories & Remembrances, the History Behind the Songjiang Battle Array, and Typical SBA Performances, with information primarily in the form of A/V files documenting practitioner oral histories and various papers and textual references to the SBA. The 22 A/V files in the gallery include a documentary on the SBA made by 10th Inheritance Award recipient Kuo-chao Ho; an interview with Pa Kuo, a former SBA practitioner now over 90 years of age; video clips of battle flag performances; and an interview with an SBA master from Sinjia Village, a town where Songjiang Battle Array performances have nearly ceased. Oral histories, related by experienced SBA masters, represent a significant body of material made available to researchers and educators interested to restore and reinvigorate the battle array art form and rich local cultural traditions.

3.2.2 Accoutrement Gallery

The SBA Accoutrement Gallery includes digital photographs of accoutrements used in SBA performances along with narrative descriptions and other supporting information. The Gallery is subdivided into subsections dealing with props, weapons and musical instruments. Most items in this Gallery were provided by Gou-Ping Elementary School (Neimen Township, Kaohsiung County), which continues to support and train the only children's White Crane Array troupe in the world under the direction of Master Kuo-chao Ho and his assistant Ming-hung Huang.

3.2.3 Audio-Visual Gallery

This Gallery currently includes 36 digital files, with A/V content covering SBA performances in Kaohsiung and Tainan Counties. By presenting different array styles in the same gallery, researchers have a ready basis to compare local variations and assess the degree of interaction between SBA troupes located in different towns.

The opening of the Audio-Visual Gallery inspired several owners of personal photographs and video records to agree to share such with the public for the first time ever in hopes they will be useful to researchers and enjoyed by all website visitors.

3.2.4 Image Gallery

Most of the 188 digitalized original photographs in the Image Gallery were provided by local SBA masters. Photographs cover the entire spectrum of the SBA performance, from set-up to pull-down, as well as associated numinous rites. As many of the issues addressed in this gallery touch on religious and spiritual issues, narrative descriptions in the gallery metadata were developed cooperatively by SBA practitioners and academic researchers.

3.2.5 Innovation Gallery

The purpose of this gallery is to promote understanding of the Songjiang Battle Array and, as a result, reinvigorate traditions and save SBA as a living art form. Therefore, this gallery includes subsections including wallpaper / calendar downloads, MSN icon downloads and interactive "brain games". Images and text used in the design of this Gallery are sourced from the other galleries.
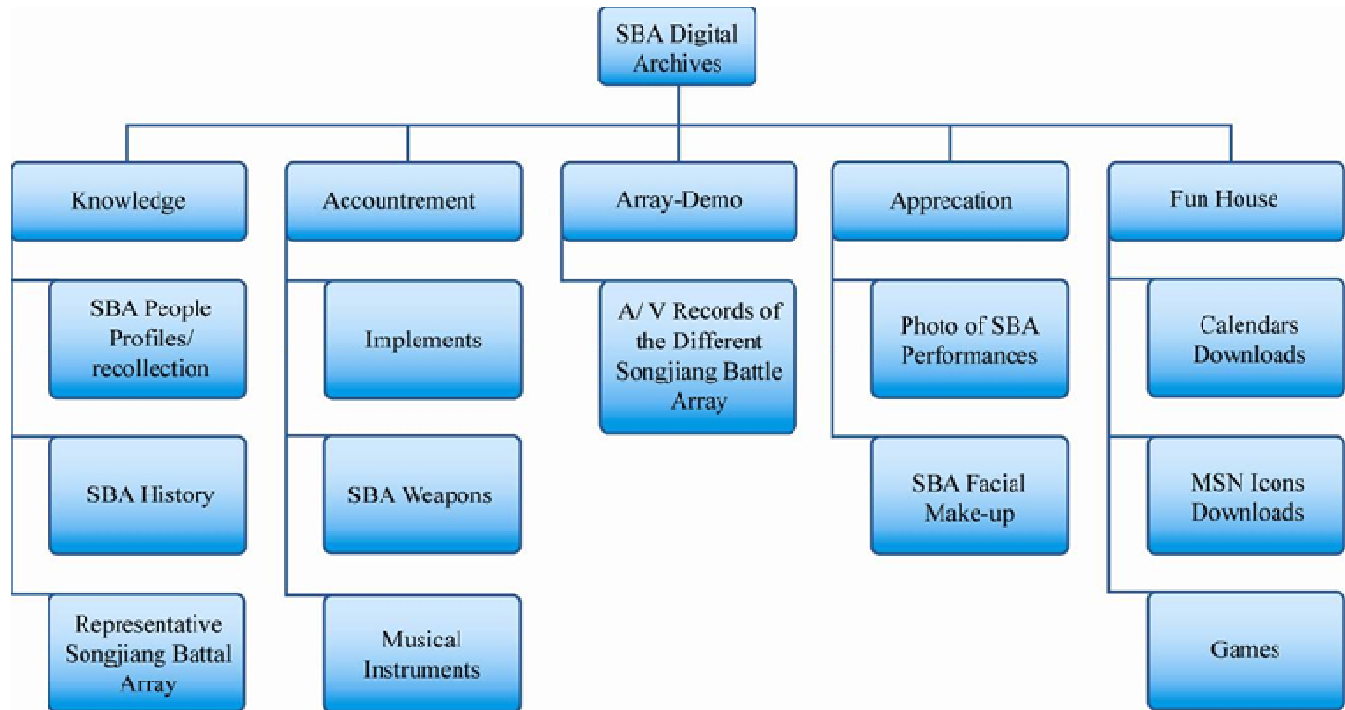
Figure 8. *Website architecture*

4. Conclusions and Recommendations

The SBA Digital Archives project organized materials and information related to the Songjiang Battle Array art form and its historical and cultural background, and reproduced such in high quality digital format, which was made publicly available. The project conclusions and recommendations that follow below are provided in the hope that efforts do in the long run succeed in restoring this art form to its former position as a highly refined, widely respected local tradition. It is hoped that even more local practitioners will be willing to share their personal collections to help in SBA preservation efforts and facilitate its popularization.

4.1 Cultural Inheritance

This project brought the NTUA Department of Graphic Communication Arts together with the National University of Tainan Department of Physical Education, the Neimen Township Gou-Ping Community Development Association, and Gou-Ping Elementary School into a multidisciplinary team for the purpose of conducting cooperative research. Original pictures and video materials in the hands of SBA practitioners and others were collected, and demonstrations of key performance techniques by SBA masters were recorded. All were then processed, digitalized and stored in an effort to prevent the disappearance of the SBA as a living art form due to the death of elderly practitioners with no apprentices to take their place and no documentary records left behind. The project achieved its objectives to preserve and extend knowledge of the Songjiang Battle Array.

4.2 Creating Added Economic Value

In the future, it is recommended that the SBA digital archives project help further facilitate community development in the Gou-Ping area by planning an appropriate cultural festival centered on the SBA, developing peripheral products (e.g., digital books, figurines, commemorative t-shirts, novelty items, naturally-dyed fabric items, game software, interactive educational multimedia CDs), and planning package SBA excursion tours featuring local cuisine, home stays and SBA "experience camps". Such should be geared to turn local Gou-Ping character into marketable tourist activities, improve local economic conditions, enhance overall revenues and raise income levels. The development of new innovative products should also help raise business earnings. By explaining a shared cultural heritage, this project delivers new opportunities to add value, which can generate greater economic advantage.

4.3 Academic Research and Local Cultural Education

Five galleries (Knowledge, Tools, A/V, Image and Innovation) were developed in accordance with this project, offering digital image, A/V and text files developed specifically for the project. These files are open to the public for searches and downloads. Results are anticipated to increase the effective use of cultural resources.

In the future, we recommend conducting a more comprehensive investigation of all battle array performances in Taiwan. Such should include relevant interviews and the collection / preservation of information. Apart from helping to resolve difficult problems related to the preservation of traditional art forms and the recruitment of new apprentices, such should facilitate the transmission of this art form to future generations of practitioners. Concurrently, such an expansion of project scope should ensure a more comprehensive knowledge base and ore content available for researcher and educator use.

5. Reference:

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Author Biography

Dr. Yung-Cheng Hsieh is the Chair and Dean of Department and the Graduate School of Graphic Communication Arts at National Taiwan University of Arts (NTUA). Dr. Hsieh earned his Ph.D. degree from Iowa State University. Dr. Hsieh specializes in graphic communication technology, digital archives and e-Learning, digital content development and application. Dr. Hsieh established the ACT Media Lab at NTUA in 2006. He received Top 100 Manager by International Project Management Association (IPMA) in 2008. Dr. Hsieh has participated in more than 75 seminars and published more than 65 refereed conference papers and peer-reviewed journal articles. Dr. Hsieh also conducts researches to assist the development of industrial technology and has published more than 19 reports.

Hui-Wen (Griet) Cheng is a graduate student in the Department of Graphic Communication Arts at the National Taiwan University of Arts (NTUA). She specialized in graphic communication technology, digital content creation and application, digital archives and project management. She obtained a level D project management and training course certification and of International Project Management Association(IPMA). She is also a board member of alumni of department of Graphic Communication Arts at the NTUA. She is currently involved in more than 20 Government Sponsored Projects and Education-industry collaboration projects, and has published more than 32 refereed conference papers and journal articles.

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